

ACADEMIC GUIDEBOOK

BACHELOR DEGREE
PROGRAMME
ACADEMIC SESSION
2025/2026



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Puan Wan Andrina Osman
Puan Ruhaida Ismail
Puan Salwana Hafizah Mohamad Saman
Puan Noor Afiza Ibrahim
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Puan Marzura Mat Arib
Puan Nor Fadlita Ayu Razi
Cik Wan Robiha Rozali

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Puan Azilah binti Abidin
Puan Nazzatul Riesha binti Ahmad Yani

Sekalung Penghargaan/Acknowledgements:

Prof. Ir. Dr. Rizalafande Che Ismail,
Prof. Dr. Mohd Mustafa Al Bakri Abdullah,
Cik Norsyahiza Hamzah,
En. Rusdi Puteh dan Pn. Mazmin Mat Akhir.

dan/and

semua Dekan-dekan Fakulti dan Pengarah Pusat di Universiti Malaysia Perlis.
all Deans and Directors of Centres in Universiti Malaysia Perlis.

serta/and

kepada semua staf di Pusat Pengurusan Akademik (AMC), Universiti Malaysia Perlis.
all the staff at Academic Management Centre (AMC), Universiti Malaysia Perlis.

ISI KANDUNGAN / CONTENTS

	Muka Surat/ <i>Page No.</i>
Pengenalan / <i>Introduction</i>	6
Misi, Visi, Lagu UniMAP / <i>Mission, Vision and UniMAP Anthem</i>	9
Canselor / <i>Chancellor</i>	10
Pro Canselor / <i>Pro Chancellor</i>	11
Pengurusan Universiti / <i>Exco Committee</i>	12
Kalendar Akademik / <i>Academic Calendar</i>	13
Sistem Akademik / <i>Academic System</i>	15
Direktori / <i>Directory</i>	36
Fakulti Kejuruteraan & Teknologi Elektrik / <i>Faculty of Electrical Engineering & Technology</i>	37
Fakulti Kejuruteraan & Teknologi Elektronik / <i>Faculty of Electronic Engineering & Technology</i>	117
Fakulti Kejuruteraan & Teknologi Mekanikal / <i>Faculty of Mechanical Engineering & Technology</i>	201
Fakulti Kejuruteraan & Teknologi Kimia / <i>Faculty of Chemical Engineering & Technology</i>	334
Fakulti Kejuruteraan & Teknologi Awam / <i>Faculty of Civil Engineering & Technology</i>	437
Fakulti Perniagaan & Komunikasi / <i>Faculty of Business & Communication</i>	505
Fakulti Komputeran Cerdas / <i>Faculty of Intelligent Computing</i>	589
Pusat Kokurikulum / <i>Co-curriculum Centre</i>	632

PENGENALAN

Buku Panduan Program Sarjana Muda ini disediakan untuk membantu pelajar baharu dalam memahami proses dan prosedur yang berkaitan dengan pengajian mereka di UniMAP. Pelajar perlu menggunakan buku ini sebagai panduan utama dalam merancang dan membuat keputusan mengenai kursus yang akan diambil dari semester pertama sehingga semester akhir pengajian. Buku panduan ini juga memberikan beberapa maklumat asas mengenai sistem akademik, struktur program, senarai kursus yang ditawarkan bersama-sama dengan sinopsis, sumber rujukan, senarai kakitangan dan maklumat berkaitan yang lain. Diharapkan pelajar akan mendapat manfaat daripada maklumat yang diberikan dalam buku panduan untuk merancang pengajian mereka di UniMAP.

Senarai Fakulti:

1. Fakulti Kejuruteraan & Teknologi Elektrik
2. Fakulti Kejuruteraan & Teknologi Elektronik
3. Fakulti Kejuruteraan & Teknologi Mekanikal
4. Fakulti Kejuruteraan & Teknologi Kimia
5. Fakulti Kejuruteraan & Teknologi Awam
6. Fakulti Perniagaan & Komunikasi
7. Fakulti Komputeran Cerdas

INTRODUCTION

The Academic Guidebook for Bachelor Degree Programme is prepared to assist newly-enrolled UniMAP students in understanding processes and procedures that are related to their studies in UniMAP. Students should use this book as the main guide in the planning and selection of courses to be taken starting from the first semester until the final semester of their studies. This guidebook also provides some basic information on the academic system, programme structures, list of courses offered (with the synopsis), references, list of staff members and other related information. It is hoped that students will benefit from the information provided in this guidebook and use the information to plan their studies in UniMAP.

List of Faculties:

1. Faculty of Electrical Engineering & Technology
2. Faculty of Electronic Engineering & Technology
3. Faculty of Mechanical Engineering & Technology
4. Faculty of Chemical Engineering & Technology
5. Faculty of Civil Engineering & Technology
6. Faculty of Business & Communication
7. Faculty of Intelligent Computing

Senarai Program Sarjana Muda / List of Degree Programmes:

1. Sarjana Muda Kejuruteraan Mikroelektronik dengan Kepujian / *Bachelor of Microelectronic Engineering with Honours*
2. Sarjana Muda Kejuruteraan Elektronik dengan Kepujian / *Bachelor of Electronic Engineering with Honours*
3. Sarjana Muda Kejuruteraan Komputer dengan Kepujian / *Bachelor of Computer Engineering with Honours*
4. Sarjana Muda Kejuruteraan Mekatronik dengan Kepujian / *Bachelor of Mechatronic Engineering with Honours*
5. Sarjana Muda Kejuruteraan Mekanikal dengan Kepujian / *Bachelor of Mechanical Engineering with Honours*
6. Sarjana Muda Kejuruteraan Elektronik Bioperubatan dengan Kepujian / *Bachelor of Biomedical Electronic Engineering with Honours*
7. Sarjana Muda Kejuruteraan Elektrik dengan Kepujian / *Bachelor of Electrical Engineering with Honours*
8. Sarjana Muda Kejuruteraan Pembuatan dengan Kepujian / *Bachelor of Manufacturing Engineering with Honours*
9. Sarjana Muda Kejuruteraan Bahan dengan Kepujian / *Bachelor of Material Engineering with Honours*
10. Sarjana Muda Kejuruteraan Polimer dengan Kepujian / *Bachelor of Polymer Engineering with Honours*
11. Sarjana Muda Kejuruteraan Kimia dengan Kepujian / *Bachelor of Chemical Engineering with Honours*
12. Sarjana Muda Kejuruteraan Pertanian dengan Kepujian / *Bachelor of Agricultural Engineering with Honours*
13. Sarjana Muda Kejuruteraan Alam Sekitar dengan Kepujian / *Bachelor of Environmental Engineering with Honours*
14. Sarjana Muda Kejuruteraan Awam dengan Kepujian / *Bachelor of Civil Engineering with Honours*
15. Sarjana Muda Teknologi Kejuruteraan Kimia (Bioteknologi Industri) dengan Kepujian / *Bachelor of Chemical Engineering Technology (Biotechnology Industry) with Honours*
16. Sarjana Muda Teknologi Kejuruteraan Elektronik (Reka Bentuk Rangkaian Elektronik) dengan Kepujian / *Bachelor of Electronic Engineering Technology (Electronic Network Design) with Honours*
17. Sarjana Muda Teknologi Kejuruteraan Elektrik (Kuasa Industri) dengan Kepujian / *Bachelor of Electrical Engineering Technology (Industrial Power) with Honours*
18. Sarjana Muda Teknologi Kejuruteraan Mekanikal (Pemesinan) dengan Kepujian / *Bachelor of Mechanical Engineering Technology (Machining) with Honours*
19. Sarjana Muda Teknologi Kejuruteraan Mekanikal (Sistem Pertanian) dengan Kepujian / *Bachelor of Mechanical Engineering Technology (Agricultural Systems) with Honours*
20. Sarjana Muda Teknologi Kejuruteraan Awam (Pembinaan) dengan Kepujian / *Bachelor of Civil Engineering Technology (Construction) with Honours*
21. Sarjana Muda Teknologi Kejuruteraan Mekanikal (Reka Bentuk Produk) dengan Kepujian / *Bachelor of Mechanical Engineering Technology (Product Design) with Honours*

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22. Sarjana Muda Teknologi Kejuruteraan Mekanikal (Pemprosesan Bahan) dengan Kepujian / *Bachelor of Mechanical Engineering Technology (Materials Processing) with Honours*
 23. Sarjana Muda Teknologi Kejuruteraan Elektrik (Teknologi Robotik dan Automasi) dengan Kepujian / *Bachelor of Electrical Engineering Technology (Robotic and Automation Technology) with Honours*
 24. Sarjana Muda Teknologi Kejuruteraan Elektronik (Sistem Elektronik) dengan Kepujian / *Bachelor of Electronic Engineering Technology (Electronic Systems) with Honours*
 25. Sarjana Muda Teknologi Kejuruteraan Elektronik (Rekabentuk Telekomunikasi Elektronik) dengan Kepujian / *Bachelor of Electronic Engineering Technology (Electronic Telecommunication Design) with Honours*
 26. Sarjana Muda Teknologi Kejuruteraan Kimia (Proses Kimia Industri) dengan Kepujian / *Bachelor of Chemical Engineering Technology (Industrial Chemical Process) with Honours*
 27. Sarjana Muda Teknologi Kejuruteraan Kimia (Teknologi Makanan) dengan Kepujian / *Bachelor of Chemical Engineering Technology (Food Technology) with Honours*
 28. Sarjana Muda Teknologi Penyelenggaraan Sistem Elektrik dengan Kepujian / *Bachelor of Technology In Electrical System Maintenance with Honours*
 29. Sarjana Muda Teknologi Automasi Elektronik Industri dengan Kepujian / *Bachelor of Technology In Industrial Electronic Automation with Honours*
 30. Sarjana Muda Teknologi Automotif dengan Kepujian / *Bachelor of Technology in Automotive with Honours*
 31. Sarjana Muda Teknologi Kimpalan dengan Kepujian / *Bachelor of Technology in Welding with Honours*
 32. Sarjana Muda Teknologi Pemesinan Industri dengan Kepujian / *Bachelor of Technology in Industrial Machining with Honours*
 33. Sarjana Muda Teknologi Pembinaan Bangunan dengan Kepujian / *Bachelor of Technology in Building Construction with Honours*
 34. Sarjana Muda Perniagaan (Keusahawanan Kejuruteraan) dengan Kepujian / *Bachelor of Business (Engineering Entrepreneurship) with Honours*
 35. Sarjana Muda Perniagaan (Perniagaan Antarabangsa) dengan Kepujian / *Bachelor of Business (International Business) with Honours*
 36. Sarjana Muda Komunikasi Media Baharu dengan Kepujian / *Bachelor of New Media Communication with Honours*
 37. Sarjana Muda Teknologi Media Interaktif dengan Kepujian / *Bachelor of Interactive Media Technology with Honours*
 38. Sarjana Muda Sains Data (Kecerdasan Buatan) dengan Kepujian / *Bachelor in Data Science (Artificial Intelligence) with Honours*
 39. Sarjana Muda Perakaunan dengan Kepujian / *Bachelor in Accounting with Honours*
 40. Sarjana Muda Sains Gunaan (Teknologi Bahan dan Metalurgi) dengan Kepujian / *Bachelor of Applied Science (Materials and Metallurgical Technology) with Honours*

MISI / MISSION:

Melahirkan insan kamil yang menyumbang kepada agenda pembangunan dan daya saing industri negara.

To produce exemplary individuals who contribute to the nation's development and industrial competitiveness agenda.

VISI / VISION:

Universiti Teknikal yang berdaya saing di persada antarabangsa.

An internationally competitive technical university.

NILAI TERAS / CORE VALUES

Ilmu, Keikhlasan, Kecemerlangan
Knowledge, Sincerity, Excellence

LAGU UniMAP / UniMAP ANTHEM:

WAWASANKU

Universiti Malaysia Perlis

Alam Kejuruteraan

Ilmu Keikhlasan Kecemerlangan

Wawasan Jiwa Kita

Berdikari rohaniah

Berteknologi

Pemimpin Berbestari

Untuk Bangsa Insan Dan Umat dunia

Negara Yang Tercinta

Universiti Malaysia Perlis

Alam Kejuruteraan

Ilmu Keikhlasan Kecemerlangan

Wawasan Jiwa Kita



**D.Y.T.M. TUANKU SYED FAIZUDDIN PUTRA IBNI
TUANKU SYED SIRAJUDDIN PUTRA JAMALULLAIL
D.K., S.P.M.P., P.A.T.**

*RAJA MUDA PERLIS / CROWN PRINCE OF PERLIS
(CANSELOR / CHANCELLOR)*

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AKASHAH KHALIL
S.P.M.P.**

*RAJA PUAN MUDA PERLIS / CROWN PRINCESS OF PERLIS
(PRO CANSELOR / PRO CHANCELLOR)*



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Naib Canselor / *Vice Chancellor*



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Timbalan Naib Canselor (Akademik & Antarabangsa) /
Deputy Vice Chancellor (Academic & International)



Prof. Ir. Dr. Rizalafande Che Ismail
Timbalan Naib Canselor (Penyelidikan & Inovasi) /
Deputy Vice Chancellor (Research & Innovation)



Prof. Dr. Mohd Mustafa Al Bakri Abdullah
Timbalan Naib Canselor (Hal Ehwal Pelajar & Alumni) /
Deputy Vice Chancellor (Students Affairs & Alumni)



Cik Norsyahiza Hamzah
Pendaftar / *Registrar*



En. Rusdi Puteh
Bendahari / *Bursar*



Pn. Mazmin Mat Akhir
Ketua Pustakawan / *Chief Librarian*



En. Zainudin Zainon
Penasihat Undang-Undang / *Legal Advisor*

KALENDAR AKADEMIK SARJANA MUDA / BACHELOR DEGREE ACADEMIC CALENDAR
SIDANG AKADEMIK / ACADEMIC SESSION 2025/2026

AKTIVITI / ACTIVITIES	SEMESTER PERTAMA / FIRST SEMESTER 6 Oktober 2025 – 15 Februari 2026 (19 minggu / weeks)		
	JANGKA MASA / DATE	TEMPOH / DURATION	CATATAN / NOTES
Pendaftaran Pelajar Baharu & Minggu Suai Kenal / <i>New Intake Registration & Orientation Week</i>	27 Sept – 5 Oktober 2025	1 minggu / week	-
Kuliah / <i>Lectures</i>	6 Oktober – 30 November 2025	8 minggu / weeks	Hari Deepavali / Deepavali 20.10.2025 [Isnin / Monday]
Cuti Pertengahan Semester / <i>Mid Semester Break</i>	1 – 7 Disember 2025	1 minggu / week	-
Kuliah / <i>Lectures</i>	8 Disember 2025 – 18 Januari 2026	6 minggu / weeks	Hari Krismas / Christmas 25.12.2025 [Khamis / Thursday] Israk Mikraj 16.01.2026 [Jumaat / Friday]
Minggu Ulangkaji / <i>Revision Week</i>	19 – 25 Januari 2026	1 minggu / week	-
Peperiksaan / <i>Examination</i>	26 Januari – 15 Februari 2026	3 minggu / weeks	-
Cuti Antara Semester / <i>Mid Semester Break</i>	16 Februari – 15 Mac 2026	4 minggu / weeks	Tahun Baru Cina / Chinese New Year 17 – 18.02.2026 [Selasa - Rabu / Tuesday - Wednesday] Nuzul Al-Quran 17.03.2026 [Sabtu / Saturday]

KALENDAR AKADEMIK SARJANA MUDA / BACHELOR DEGREE ACADEMIC CALENDAR
SIDANG AKADEMIK / ACADEMIC SESSION 2025/2026

AKTIVITI / ACTIVITIES	SEMESTER KEDUA / SECOND SEMESTER 16 Mac – 26 Julai 2026 (19 minggu / weeks)		
	JANGKA MASA / DATE	TEMPOH / DURATION	CATATAN / NOTES
Kuliah / Lectures	16 Mac – 24 Mei 2026	10 minggu / weeks	Hari Raya Aidilfitri / Eid-ul Fitr 20 - 21.03.2026 [Jumaat – Sabtu / Friday - Saturday] Hari Pekerja / Labour Day 1.05.2026 [Jumaat / Friday] Hari Keputeraan Raja Perlis / Birthday of DYMM Perlis 17.05.2026 [Ahad / Sunday]
Cuti Pertengahan Semester / Mid Semester Break	25 – 31 Mei 2026	1 minggu / week	Hari Raya Haji / Eid-ul Adha 27 - 28.05.2026 [Rabu – Khamis / Wednesday - Thursday] Hari Wesak / Wesak Day 12.05.2026 [Ahad / Sunday]
Kuliah / Lectures	1 – 28 Jun 2026	4 minggu / weeks	Hari Keputeraan YDP Agong / Birthday of YDP Agong 1.06.2026 [Isnin / Monday] Awal Muharram 16.06.2026 [Selasa / Tuesday]
Minggu Ulangkaji / Revision Week	29 Jun – 5 Julai 2026	1 minggu / week	-
Peperiksaan / Examination	6 – 26 Julai 2026	3 minggu / weeks	-
Cuti Akhir Sidang Akademik / End of Academic Year Break	27 Julai – 27 Sept 2026	9 minggu / weeks	Hari Kebangsaan 31.08.2026 [Isnin / Monday] Hari Malaysia 16.09.2026 [Rabu / Wednesday]

SISTEM AKADEMIK

Tahun Akademik Universiti mempunyai gabungan dua(2) semester panjang dan satu(1) semester pendek. Penawaran semester pendek bergantung kepada keperluan program dan kelulusan Senat. Setiap semester panjang mengandungi 18 minggu termasuk kuliah, ulang kaji, cuti pertengahan semester dan peperiksaan. Manakala setiap semester pendek mengandungi sembilan(9) minggu termasuk minggu pembelajaran, ulang kaji dan peperiksaan. Pelajar perlu lulus semua kursus dan mendapat jumlah kredit yang diperlukan mengikut program pengajian masing-masing serta PNGK sekurang-kurangnya 2.00 untuk berijazah.

PRA-PENDAFTARAN KURSUS

- Pra-pendaftaran kursus membolehkan pelajar membuat pra-pendaftaran atas talian untuk kursus-kursus di semester seterusnya pada tempoh masa yang lebih awal. Tempoh masa yang ditetapkan untuk pra-pendaftaran ini adalah sebelum bermula cuti semester pada semester semasa. Semua pelajar adalah **DIWAJIBKAN** untuk melakukan pra-pendaftaran kursus ini.
- Pelajar **DIKEHENDAKI** mendaftar pada tarikh yang ditetapkan. Kursus yang perlu didaftarkan adalah kursus yang akan diambil pada semester akan datang (semua kursus termasuk kursus Ko-kurikulum). Pelajar digalakkan berjumpa Rakan Pendamping Siswa (RPS) terlebih dahulu sebelum membuat Pra-pendaftaran kursus secara atas talian. Pelajar yang gagal mendaftar dalam tempoh yang ditetapkan, akan menyebabkan pendaftaran rasmi kursus bagi semester hadapan terjejas berikutan keutamaan pendaftaran kursus diberi kepada pelajar yang membuat proses pra-pendaftaran. Pelajar digalakkan untuk mencetak slip pra-pendaftaran ini sebagai bukti pendaftaran.

ACADEMIC SYSTEM

The University Academic Year consists of two (2) long semesters and one (1) short semester. The short semester is offered based on programme requirements and Senate approval. Each long semester has 18 weeks, while the short semester has nine (9) weeks. To graduate, students need to pass all courses and obtain the required number of credits according to their respective programmes of study as well as a CGPA of at least 2.00.

PRE-REGISTRATION

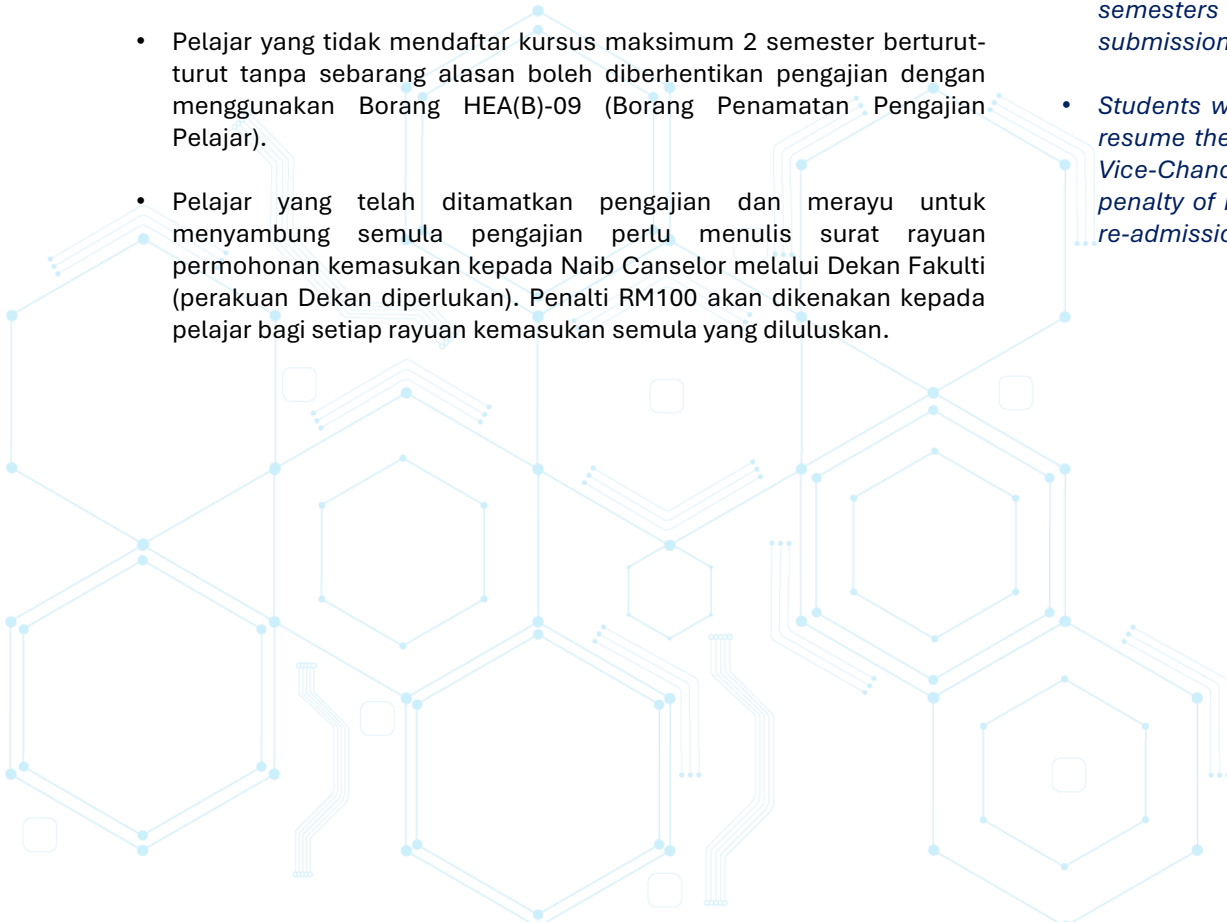
- *Pre-registration enables student to pre-register their courses online for all the courses to be taken in the following semester at an earlier period. The pre-registration period is set before the semester break of each semester. All students are **REQUIRED** to perform the course pre-registration.*
- *Students **MUST** pre-register before the end of the pre-registration period. Courses to be registered are courses to be taken in the following semester (all courses including Co-curriculum Courses). Students are encouraged to consult with their Rakan Pendamping Siswa (RPS) before pre-registering their courses online. Students who fail to pre-register their courses within the set time will risk their official registration being adversely affected, as priority will be given to those who have pre-registered. Students are encouraged to print their pre-registration slip as a proof of registration.*

PENDAFTARAN KURSUS

- Semua pelajar yang aktif adalah diwajibkan mendaftar kursus untuk setiap semester. Pendaftaran kursus ini dilakukan secara dalam talian (online) oleh semua pelajar. Pendaftaran kursus mesti dibuat mengikut tarikh yang telah ditetapkan seperti hebahan yang dikeluarkan oleh Unit Kemasukan dan Rekod Pelajar melalui emel dan portal.
- Pelajar adalah diwajibkan untuk bertemu dan berbincang dengan Rakan Pendamping Siswa (RPS) berkaitan kursus-kursus yang perlu didaftar. Selepas mendaftar, pelajar perlu membawa bersama slip pendaftaran kursus untuk disahkan oleh RPS dalam sistem pada sesi tersebut. Kursus-kursus yang didaftarkan tanpa mendapat pengesahan dari RPS adalah dianggap **TIDAK SAH**.
- Sekiranya berlaku perubahan pada pendaftaran kursus sama ada pelajar menambah kursus, menggugurkan kursus atau tarik diri kursus dalam tempoh yang ditetapkan, pelajar perlu mendapatkan pengesahan semula daripada RPS.
- Pelajar yang gagal mendaftar kursus dalam tempoh masa yang ditetapkan adalah tertakluk kepada penalti berjumlah RM50. Pendaftaran lewat tidak boleh melebihi minggu ketiga (3) semester. Pelajar perlu mengisi Borang HEA(B)-02[b] (Borang Pendaftaran Kursus Lewat) dan mesti memperoleh kelulusan daripada Dekan Fakulti.
- Manakala pelajar yang baru mendaftar bagi satu-satu sidang akademik baru akan mendaftar secara online pada tarikh yang dinyatakan pada Minggu Suai Kenal mengikut Fakulti masing-masing. Pelajar akan diberi taklimat tentang kursus dalam Minggu Suai Kenal di Fakulti masing-masing.

COURSE REGISTRATION

- *All active students are required to register for courses allocated for each semester. The courses should be registered online by all students. Course registration must be completed within the dates specified by the Student Admissions and Records Unit via email or the UniMAP Portal.*
- *Students are required to discuss with their Rakan Pendamping Siswa (RPS) regarding courses that they will have to register for each semester. After registration, students must bring the registration slip for verification by the RPS in the system during the discussion session. Course registration without RPS verification is considered **INVALID**.*
- *If there are any changes in student course registration, i.e. add, drop or withdraw courses within the prescribed period, the student must also obtain verification from the RPS.*
- *Students who fail to register within the prescribed period shall be subject to a penalty of RM50. Late registration must not exceed the 3rd week of the semester. Students must complete the HEA(B)-02[b] Late Registration Form and obtain approval from the Dean.*
- *New students will register online on the specified date during the orientation week according to their school. Students will be briefed by their school on their programme courses during the orientation week.*

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- Adalah menjadi tanggungjawab pelajar untuk menyemak dan memastikan bahawa semua butir-butir yang dinyatakan dalam Slip Pendaftaran Kursus adalah betul. Sebarang permohonan pendaftaran kursus/penambahan kursus/pengguguran kursus/tarik diri di luar tempoh yang ditetapkan tanpa sebab-sebab yang boleh diterima oleh Universiti, boleh dikenakan denda kecuali pelajar yang mempunyai alasan yang tertentu sahaja akan dipertimbangkan oleh Dekan Fakulti. Pelajar tidak dibenarkan membuat pendaftaran kursus/penambahan kursus/pengguguran kursus / tarik diri kursus semasa minggu peperiksaan.
 - Pelajar yang tidak mendaftar kursus maksimum 2 semester berturut-turut tanpa sebarang alasan boleh diberhentikan pengajian dengan menggunakan Borang HEA(B)-09 (Borang Penamatan Pengajian Pelajar).
 - Pelajar yang telah ditamatkan pengajian dan merayu untuk menyambung semula pengajian perlu menulis surat rayuan permohonan kemasukan kepada Naib Canselor melalui Dekan Fakulti (perakuan Dekan diperlukan). Penalti RM100 akan dikenakan kepada pelajar bagi setiap rayuan kemasukan semula yang diluluskan.
 - *Students are responsible for checking and ensuring that all the particulars stated in their Course Registration Slips are correct. Student who applied to add/drop/withdraw registration after the prescribed period without reasons accepted by the university may be fined. Registration after the prescribed period will only be considered by the Dean of the Faculty for students with specific reasons. Students are not allowed to register add/drop/withdraw during the examination weeks.*
 - *Students who do not register for a maximum of 2 consecutive semesters without any reason can be terminated through the submission of the HEA(B)-09 Termination of Study Form.*
 - *Students who have been terminated and wish to place an appeal to resume their studies may do so by submitting an appeal letter to the Vice-Chancellor through the Dean (Dean's verification required). A penalty of RM100 will be imposed on students whose application for re-admission has been approved.*

Pendaftaran Kursus Pelajar Berstatus Aktif & Percubaan

- Pelajar berstatus Aktif boleh mendaftar kursus secara atas talian tidak melebihi 20 kredit dan tidak kurang daripada 12 kredit kecuali pelajar yang mengikuti Latihan Industri (LI), Projek Tahun Akhir (FYP) dan pelajar Semester Akhir yang akan menamatkan pengajian. Pelajar yang ingin mendaftar melebihi 20 kredit perlu mendapatkan pengesahan daripada RPS dan kelulusan daripada Dekan Fakulti.
- Pelajar dengan status Percubaan tidak dibenarkan untuk mendaftar sendiri secara dalam talian (online). Pelajar ini perlu bertemu dengan RPS untuk mendapatkan nasihat dan mengisi Borang HEA(B)-02[a] (Borang Pendaftaran Kursus: Status Percubaan) sebelum menyerahkannya kepada Penolong Pendaftar Fakulti untuk didaftarkan. Hanya Penolong Pendaftar Fakulti atau Unit Kemasukan & Rekod sahaja yang boleh mendaftarkan kursus bagi pelajar ini.
- Keterangan mengenai jumlah kredit yang boleh didaftarkan setiap semester mengikut status pelajar seperti Jadual 1.

Course Registration for Students with Active & Probation Status

- *Students who do not take FYP or LI can take more than 20 credits but with the approval from the Dean. All Active students are allowed to register for not more than 20 credits and not less than 12 credits except for those who are involved in Industrial Training and the Final Year Project. Student who wish to register for more than 20 credits, need to obtain verification from their RPS and approval by the Dean.*
- *Student with the Probation status are not allowed to register online by themselves. The students must meet their RPS to discuss about the course registration and to complete the HEA(B)-02[a] Course Registration Form: Probation Status before handing it to the Assistant Registrar. Only the Assistant Registrar of Faculty/Admissions and Student Records Unit is allowed to register the subjects for the students in this case.*
- *Table 1 summarises the credits that students can register for each semester based on their status.*

Jadual 1 : Ringkasan Beban kredit Minimum dan Maksimum per Semester

Table 1 : Summary of Minimum and Maximum Credit Load per Semester

Status Pelajar / Student Status	Semester Lazim / Common Semester		Semester Pendek / Short Semester	
	Kredit Minimum / Minimum Credits	Kredit Maksimum / Maximum Credits	Kredit Minimum / Minimum Credits	Kredit Maksimum / Maximum Credits
Aktif (Sepenuh Masa) / Active (Fulltime)	12	20	7	10
Percubaan / Probation (P1/P2/P2*)	10	12	5	7

PENAMBAHAN, PENGGUGURAN ATAU TARIK DIRI KURSUS

1. Tambah Kursus

- Tempoh yang dibenarkan untuk penambahan kursus adalah sehingga minggu ke-2 minggu pembelajaran. Pelajar yang lewat mendaftar perlu mengisi Borang HEA(B)-02[b] (Borang Pendaftaran Kursus Lewat) dan menyerahkannya kepada Penolong Pendaftar Fakulti untuk dikemas kini dalam sistem. Permohonan untuk tambah kursus adalah tertakluk kepada kelulusan dan kekosongan kuota.

2. Gugur Kursus

- Tempoh yang dibenarkan untuk menggugurkan kursus adalah sehingga minggu ke-7 minggu pembelajaran. Pelajar perlu mengisi Borang HEA(B)-03 (Borang Permohonan Gugur Kursus). Borang perlu ditandatangani oleh pensyarah kursus, Dekan Fakulti dan diserahkan kepada Penolong Pendaftar Fakulti untuk dikemas kini dalam sistem.

3. Tarik Diri Kursus

- Pelajar dengan persetujuan Pensyarah Kursus dan Dekan Fakulti boleh memohon untuk menarik diri daripada kursus yang telah didaftarkan pada semester yang berkenaan tidak lewat dari hari akhir bekerja pada minggu ke-12 minggu pembelajaran. Pelajar yang ingin menarik diri daripada kursus perlulah mengisi Borang HEA(B)-04 (Borang Permohonan Tarik Diri Kursus).
- Kebenaran untuk pelajar menarik diri daripada mengikuti sesuatu kursus adalah tertakluk kepada jumlah kredit minimum, kecuali dengan kebenaran Dekan.
- Status Tarik Diri (TD) akan dicatatkan dalam rekod pendaftaran kursus dan transkrip akademik pelajar. Walau bagaimanapun, gred tidak akan diambil kira dalam pengiraan PNG dan PNGK.

ADD COURSES, DROP COURSES OR COURSE WITHDRAWAL

1. Adding Courses

- The time period allowed for the adding of courses is up to the second week of study). The students are required to fill in the HEA(B)-02[b] Late Course Registration Form and submit it to the Assistant Registrar of the Faculty to be updated in the system. Applications for additional courses are subject to quota approval and vacancy.*

2. Dropping Courses

- The time period allowed to drop courses is up to week 7 (week of study). Students must use the HEA(B)-03 Drop Courses Application Form to be signed by the course lecturer, Dean of the Faculty and submit it to the Assistant Registrar of the Faculty to be updated in the system.*

3. Course Withdrawal

- With the consent of course lecturer and Dean of the Faculty, a student may apply to withdraw from a course registered in a semester no later than the last working day of week 12 (week of study). To apply for a withdrawal from a course, the student must fill in HEA(B)-04 Withdrawal Courses Application Form.*
- Permission to allow students to withdraw from a course is subject to the minimum credits allowed except with permission from the Dean.*
- Withdrawal status (TD) will be recorded in the record of registration and academic transcript. However, the grade will not be included to contribute towards the GPA and CGPA.*

JENIS-JENIS KURSUS

1. KURSUS WAJIB UNIVERSITI

Kursus-kursus luar bidang pengkhususan yang diwajibkan oleh universiti kepada pelajar bagi memperkukuhkan pengetahuan dan kemahiran pelajar. Kursus-kursus ini ditawarkan oleh Jabatan Bahasa & Pengajian Umum dan Pusat Ko-Kurikulum.

Kursus-kursus Wajib Universiti bagi program Sarjana Muda ialah:

a) Falsafah Dan Isu Semasa (SMU13002) – (2 kredit)

Semua pelajar wajib mengambil SMU13002 Falsafah Dan Isu Semasa. Kursus ini ditawarkan kepada pelajar warganegara dan antarabangsa dengan mengikut kepada struktur kursus dalam penawaran kurikulum program masing-masing.

b) Penghayatan Etika Dan Peradaban (SMU13102) – (2 kredit)

Semua pelajar wajib mengambil kursus SMU13102 Penghayatan Etika dan Peradaban. Kursus ini ditawarkan kepada pelajar warganegara dan antarabangsa dengan mengikut kepada struktur kursus dalam penawaran kurikulum program masing-masing.

c) Integriti dan Anti Rasuah (SMU12102) – (2 kredit)

Semua pelajar wajib mengambil kursus SMU12102 Integriti dan Anti Rasuah. Kursus ini ditawarkan kepada pelajar warganegara dengan mengikut kepada struktur kursus dalam penawaran kurikulum program masing-masing.

d) Keusahawanan Kejuruteraan (SMU22402) – (2 kredit)

Semua pelajar daripada program kejuruteraan, teknologi kejuruteraan dan teknologi wajib mengambil kursus SMU22402 Keusahawanan Kejuruteraan. Kursus ini ditawarkan kepada pelajar warganegara dan antarabangsa dengan mengikut kepada struktur kursus dalam penawaran kurikulum program masing-masing.

TYPES OF COURSES

1. UNIVERSITY REQUIREMENT COURSES

The University Requirement Courses are courses outside the field of specialisation that are required by the university to strengthen students' knowledge and skills. These courses are offered by the Languages & General Studies Department and the Co-Curriculum Centre.

The University Requirement Courses for Bachelor Degree programmes are:

a) Philosophy And Current Issues (SMU13002) – (2 credits)

All students are required to enrol SMU13002 Philosophy And Current Issues. This course is offered to local and international students by following the course structure of their respective programme.

b) Appreciation Of Ethics And Civilization (SMU13102) – (2 credits)

All students are required to enrol SMU13102 Appreciation of Ethics And Civilization. This course is offered to local and international students by following the course structure of their respective programme.

c) Integrity and Anti-Corruption (SMU12102) – (2 credits)

All students are required to enrol SMU12102 Integrity and Anti-Corruption. This course is offered to local students by following the course structure of their respective programme.

d) Engineering Entrepreneurship (SMU22402) – (2 credits)

All students from engineering, engineering technology and technology programmes are required to enrol SMU22402 Engineering Entrepreneurship. This course is offered to local and international students by following the course structure of their respective programme.

e) Kemahiran Berfikir (SMU32202) – (2 kredit)

Semua pelajar daripada program komunikasi media baharu dan perniagaan wajib mengambil kursus SMU32202 Kemahiran Berfikir. Kursus ini ditawarkan kepada pelajar warganegara dan antarabangsa dengan mengikut kepada struktur kursus dalam penawaran kurikulum program masing-masing.

f) Pengajian Malaysia (SMU13202) – (2 kredit)

Semua pelajar antarabangsa wajib mengambil kursus SMU13202 Pengajian Malaysia untuk melengkapkan keperluan kredit. Kursus ini ditawarkan kepada pelajar antarabangsa dengan mengikut kepada struktur kursus dalam penawaran kurikulum program masing-masing.

g) Ko-kurikulum (SMZXXXXX) – (2 kredit)

Semua pelajar UniMAP **DIWAJIBKAN** untuk mendaftar sekurang-kurangnya dua (2) unit kredit bagi kursus kokurikulum dalam tempoh pengajian sebagai syarat umum untuk bergraduasi. Dua (2) unit kredit tersebut perlu didaftarkan secara berturutan (Semester 1 dan 2) mengikut pilihan pelajar dan jumlah kouta yang disediakan. Antara kursus yang ditawarkan adalah kursus KoKurikulum Badan Beruniform berpakej lengkap, kursus KoKurikulum Badan Beruniform berpakej pilihan atau kursus KoKurikulum bukan badan beruniform berpakej lengkap.

Pelajar yang mengambil kursus KoKurikulum badan beruniform berpakej lengkap adalah **DIWAJIBKAN** untuk melengkapkannya mengikut jumlah kredit kursus tersebut bagi tujuan pentauliahian/tamat latihan. Bagi kursus Kokurikulum Badan Beruniform berpakej pilihan, satu (1) kredit kursus badan beruniform perlu diambil pada semester 1. Manakala, satu (1) kredit kursus badan beruniform yang sama atau bukan badan beruniform perlu diambil pada semester 2. Bagi kursus KoKurikulum bukan badan beruniform berpakej lengkap, hanya tiga kursus sahaja yang ditawarkan iaitu Gamelan, Kumpulan Jazz dan Angklung. Pelajar juga **DIWAJIBKAN** untuk melengkapkan jumlah kredit bagi kursus-kursus tersebut. Adalah menjadi tanggungjawab sepenuhnya bagi setiap pelajar untuk hadir dan melengkapkan setiap unit kursus KoKurikulum.

e) Thinking Skills (SMU32202) – (2 credits)

All students from new media communication and business programmes are required to enrol SMU32202 Thinking Skills. This course is offered to local and international students by following the course structure of their respective programme.

f) Malaysian Studies (SMU13202) – (2 credits)

All international students are required to enrol SMU13202 Malaysian Studies to complete the credit requirement. This course is offered to international students by following the course structure in the curriculum offerings of their respective programs.

g) Co-curriculum (SMZXXXXX) – (2 credits)

*All UniMAP students are **COMPULSORY** to register for at least two (2) credits Co-Curriculum courses during their studies as a general requirement for graduation. These two (2) credits must be registered consecutively according to the student's choice and the availability of quota. The courses offered include complete uniformed body Co-Curriculum courses, optional uniformed body Co-Curriculum courses, or complete non-uniformed body Co-Curriculum courses.*

*Students who take the complete uniformed body Co-Curriculum course are **COMPULSORY** to complete it according to the credit requirements for certification/completion of training. For optional uniformed body Co-Curriculum course, one (1) credit unit of uniformed body course must be taken in the 1st. Meanwhile, one (1) credit unit of uniformed body course or non-uniformed body course must be taken in the 2nd semester. For complete non-uniformed body Co-Curriculum courses, only three courses are offered: Gamelan, Jazz Band, and Angklung. Students are **COMPULSORY** to complete the total credits for that courses. It is the full responsibility of each student to attend and complete every unit of the Co-Curriculum course.*

h) Bahasa Melayu (SMB41002) – (2 kredit)

Kursus ini wajib diambil oleh semua pelajar tempatan (termasuk pelajar antarabangsa daripada negara-negara di mana bahasa Melayu diamalkan sebagai bahasa kebangsaan atau bahasa pertuturan mereka, seperti pelajar dari Indonesia, Brunei dan Singapura).

i) Bahasa Inggeris Persediaan (SMB10102) – (2 kredit)

Pelajar dengan salah SATU kriteria berikut perlu mendaftar kursus ini iaitu :

- Memperolehi keputusan MUET Band 1, Band 2 dan Band 2.5.
- Memperolehi keputusan MUET dibawah Band 3 / IELTS 4.0 ke bawah / TOEFL 4.5 ke bawah bagi Program Persediaan Pra-Universiti (untuk pelajar-pelajar antarabangsa sahaja).

j) Bahasa Inggeris untuk Komunikasi Umum (SMB20102) – (2 kredit)

Pelajar dengan salah SATU kriteria berikut perlu mendaftar kursus ini iaitu;

- Memperolehi keputusan MUET Band 3 dan Band 3.5.
- Lulus Bahasa Inggeris Persediaan (SMB10102) dengan minimum gred C.

h) Malay Language (SMB41002) – (2 credits)

This course is compulsory for all local students (including international students from countries where the Malay Language is either their national language or home language, e.g. students from Indonesia, Brunei and Singapore).

i) Preparatory English (SMB10102) – (2 credits)

Students with ONE of the following criteria must register for this course;

- *Obtained either a Band 1, Band 2 and Band 2.5 for the Malaysian University English Test (MUET).*
- *Scored below a Band 3 for the Malaysian University English Test (MUET) / scored 4.0 and below for IELTS / scored 4.5 and below for TOEFL for Pre-University Preparatory Programme (EPPP) (applicable to international students only).*

j) English for General Communication (SMB10102) – (2 credits)

Students with ONE of the following criteria must register for this course.

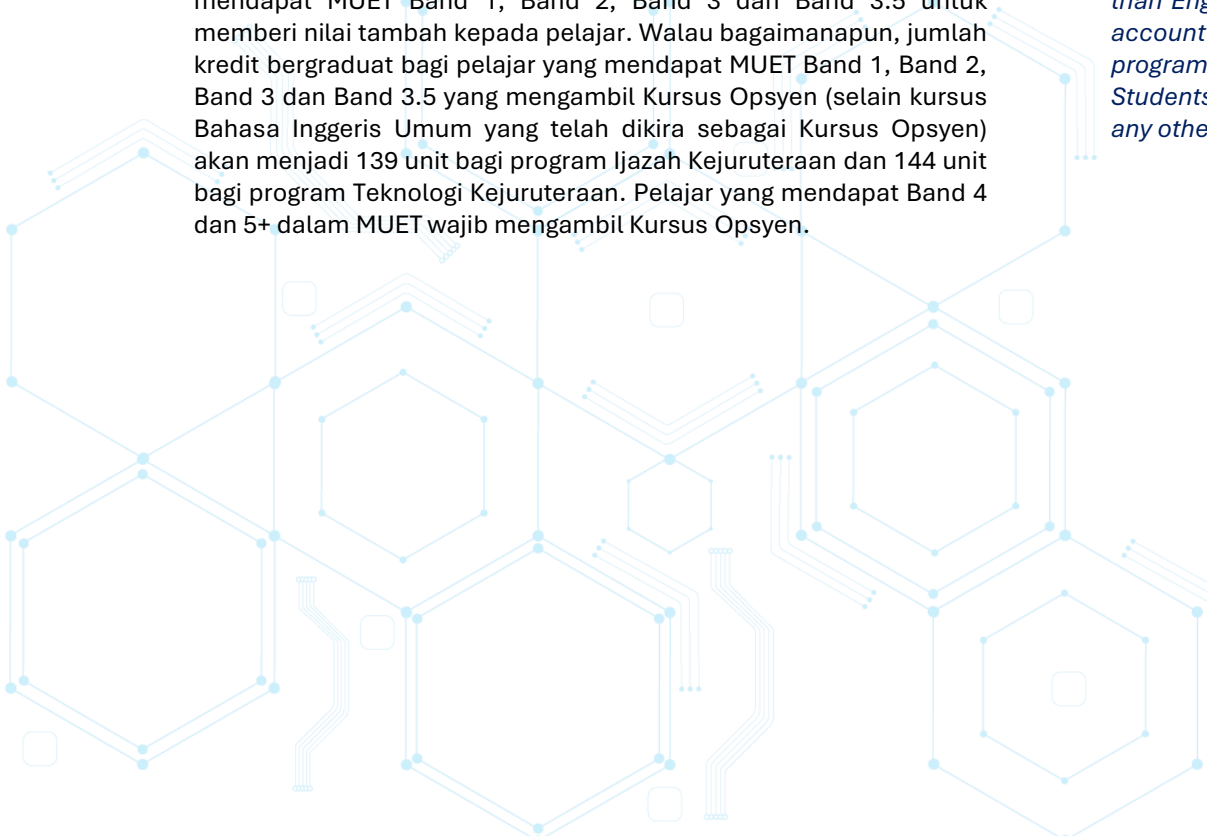
- *Obtained a Band 3 and Band 3.5 for the Malaysian University English Test (MUET).*
- *Passed Preparatory English (SMB10102) with a minimum of grade C.*

k) Bahasa Inggeris untuk Komunikasi Teknikal (SMB31202) / Bahasa Inggeris Akademik (SMB31302) – (2 kredit)

- Semua pelajar wajib mengambil kursus **Bahasa Inggeris untuk Komunikasi Teknikal** (bagi program Sarjana Muda Kejuruteraan, Sarjana Muda Teknologi Kejuruteraan dan Sarjana Muda Teknologi) atau kursus **Bahasa Inggeris Akademik** (bagi program Sarjana Muda Perniagaan dan Sarjana Muda Komunikasi Media Baharu). Bagaimanapun, bergantung kepada keputusan MUET, pelajar-pelajar diwajibkan mengikuti beberapa kursus Bahasa Inggeris lain terlebih dahulu sebelum dibenarkan mengambil kursus Bahasa Inggeris untuk Komunikasi Teknikal atau kursus Bahasa Inggeris Akademik seperti ditunjukkan dalam Jadual 3.
- Pelajar yang memperolehi Band 1, Band 2 atau Band 2.5 dalam MUET diwajibkan terlebih dahulu mengambil Bahasa Inggeris Persediaan (Preparatory English) iaitu kursus 2 kredit tidak berkredit (audit) dan perlu mendapat kelulusan minimum gred D+ sebelum dibenarkan mengambil kursus Bahasa Inggeris Umum (English for General Purposes) sebanyak 2 kredit dan kursus Bahasa Inggeris untuk Komunikasi Teknikal (English for Technical Communication) atau Bahasa Inggeris Akademik (English for Academic Purposes) sebanyak 2 kredit. Gred Lulus minimum bagi semua kursus Bahasa Inggeris ialah gred D+.
- Bagi pelajar yang memperolehi Band 3 dan Band 3.5 dalam MUET diwajibkan mengambil mengambil kursus Bahasa Inggeris Umum (English for General Communication) iaitu kursus 2 kredit sebelum dibenarkan mengambil kursus Bahasa Inggeris untuk Komunikasi Teknikal (English for Technical Communication) atau Bahasa Inggeris Akademik (English for Academic Purposes). Pelajar yang memperolehi Band 3 dan Band 3.5 dalam MUET tidak perlu mengambil kursus Bahasa Inggeris Persediaan (Preparatory English).

k) English for Technical Communication (SMB31202) / English for Academic Purposes (SMB31302) – (2 credits)

- All students are required to take **English for Technical Communication** (for Bachelor of Engineering, Bachelor of Engineering Technology and Bachelor of Technology) or **English for Academic Purposes** (for Bachelor of Business and Bachelor of New Media Communication). However, depending on their MUET results, students are required to attend and pass prerequisite English language courses first before they are allowed to take English for Technical Communication or English for Academic Purposes, as illustrated in Table 3.
- Students who obtained a Band 1, Band 2 or Band 2.5 in MUET, first and foremost, are required to take Preparatory English, which is a 2 credit non-accredited (audited) course, and pass with a minimum of grade D+, before being allowed to continue and take 2 credits of English for General Communication and later another 2 credits of either English for Technical Communication or English for Academic Purposes. The minimum Passing Grade for all English language courses is grade D+.
- Students who obtained a Band 3 and Band 3.5 in MUET are required to take and pass 2 credits of English for General Communication before being allowed to continue and take either English for Technical Communication or English for Academic Purposes. These students are not required to take the Preparatory English course.

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- Pelajar yang memperolehi Band 4 atau Band 5+ dalam MUET pula hanya diwajibkan mengambil kursus Bahasa Inggeris untuk Komunikasi Teknikal (English for Technical Communication) atau Bahasa Inggeris Akademik (English for Academic Purposes). Pelajar yang memperolehi Band 4 atau Band 5+ dalam MUET tidak perlu mengambil Bahasa Inggeris Persediaan (Preparatory English) atau kursus Bahasa Inggeris Umum (English for General Communication).
 - Bagi pelajar yang mendapat Band 1, Band 2, Band 3 dan Band 3.5 dua (2) kredit yang diperolehi melalui kursus Bahasa Inggeris Umum (English for General Communication) boleh dikira sebagai Kursus Opsyen. Kursus Opsyen lain juga dibuka kepada pelajar yang mendapat MUET Band 1, Band 2, Band 3 dan Band 3.5 untuk memberi nilai tambah kepada pelajar. Walau bagaimanapun, jumlah kredit bergraduat bagi pelajar yang mendapat MUET Band 1, Band 2, Band 3 dan Band 3.5 yang mengambil Kursus Opsyen (selain kursus Bahasa Inggeris Umum yang telah dikira sebagai Kursus Opsyen) akan menjadi 139 unit bagi program Ijazah Kejuruteraan dan 144 unit bagi program Teknologi Kejuruteraan. Pelajar yang mendapat Band 4 dan 5+ dalam MUET wajib mengambil Kursus Opsyen.
 - *Students who obtained a Band 4 or Band 5+ in MUET are only required to take either English for Technical Communication or English for Academic Purposes. These students are not required to take both Preparatory English and English for General Communication.*
 - *For students who obtained a Band 1, Band 2, Band 3 and Band 3.5, the two (2) credits obtained via English for General Communication will be included as part of Optional Courses. Other Optional Courses are also open to those who obtained a Band 1, Band 2, Band 3 and Band 3.5 in MUET for added value to students. As such, the number of credits required for graduation for students with a Band 1, Band 2, Band 3 and Band 3.5 in MUET who are taking Optional Courses (other than English for General Communication which is already taken into account as an Optional Course) are 139 units for Engineering programme and 144 units for Engineering Technology programme. Students who have obtained a Band 4 and Band 5+ in MUET must take any other Optional Courses offered.*

Jadual 2 : Kursus Wajib Bahasa Inggeris
Table 2 : English Requirement Courses

MUET BAND	Kursus Wajib Bahasa Inggeris / English Requirement Courses			
	SMB10102 Bahasa Inggeris Persediaan / <i>Preparatory English</i> (Tidak Berkredit/ <i>Non-Accredited</i>)	SMB20102 Bahasa Inggeris Umum / <i>English For General Communication</i>	SMB31202 Bahasa Inggeris untuk Komunikasi Teknikal / <i>English for Technical Communication</i> ATAU/OR SMB31302 Bahasa Inggeris Akademik / <i>English for Academic Purposes</i>	Kursus-kursus Opsyen/ <i>Optional Courses</i> (Bahasa-bahasa Asing <i>/ Foreign Languages</i>)
BAND 1, BAND 2, & BAND 2.5	/	/	/	Pendaftaran dibuka kepada pelajar / <i>Registration is open to students</i>
BAND 3 & BAND 3.5		/	/	
BAND 4, BAND 4.5, BAND 5.0, & BAND 5+			/	/

2. KURSUS TERAS

Kursus Teras adalah kursus-kursus utama bagi sesuatu bidang atau disiplin program pengajian.

3. KURSUS ELEKTIF

Kursus Elektif adalah kursus-kursus pilihan yang boleh diambil oleh pelajar bagi memperdalam atau memperluas pengetahuan sama ada di dalam atau luar bidang pengkhususan. Kursus elektif merangkumi kursus yang diwajibkan oleh program pengajian atau kursus luar struktur kurikulum program yang boleh diambil bagi tujuan menambah pengetahuan.

4. KURSUS OPSYEN

Kursus Opsyen adalah kursus-kursus yang boleh diambil oleh pelajar bagi tujuan melengkapkan kredit pengijazahan susulan daripada pengecualian kursus.

5. KURSUS AUDIT

Kursus audit merujuk kepada kursus-kursus yang diwajibkan kepada sebahagian pelajar sebagai prasyarat sesuatu program pengajian bagi memenuhi keperluan syarat tertentu. Kursus Audit tidak memberikan implikasi kepada pengiraan kredit berijazah dan nilai PNG/PNGK.

2. CORE COURSES

Core courses are the main courses of a particular field or discipline within a study programme.

3. ELECTIVE COURSES

Elective courses are courses chosen by students to either deepen or broaden their knowledge, whether within or outside their field of specialisation. They include courses required by the programme of study as well as courses outside the programme curriculum structure that may be taken to enhance knowledge.

4. OPTIONAL COURSES

Optional courses are courses that students may take to complete the graduation credit requirements resulting from course exemptions.

5. AUDIT COURSES

Audit Courses refers to courses that are compulsory for certain students as a prerequisite for a programme of study in order to meet specific requirements. Audit courses do not contribute to the calculation of graduation credits or GPA/CGPA.

PENDEKATAN PEMBELAJARAN DAN PENGAJARAN DI UniMAP

- Kebanyakan Kursus Teras yang ditawarkan merangkumi komponen teori dan komponen praktikal dengan nilai jam.
- Komponen praktikal terdiri daripada bentuk-bentuk pembelajaran dan pengajaran berikut:
 - i. Pembelajaran di dalam makmal dan bengkel** - sepasukan pelajar yang terdiri dari 2-3 orang, menjalankan satu eksperimen. Di dalam beberapa program makmal asas, setiap pelajar menjalankan eksperimen secara individu (1:1) dan bukannya dalam pasukan.
 - ii. E-pembelajaran** – pendekatan pembelajaran yang diperkukuhkan dengan ICT, yang melengkapkan pendekatan pembelajaran konvensional. Pelajar mempelajari kursus atau topik-topik tertentu menggunakan modul yang boleh diakses dari laman web UniMAP. Modul mengandungi nota kuliah dalam bentuk multimedia, yang merangkumi audio, video, grafik, animasi, simulasi, permainan, dan pelbagai lagi aktiviti berbentuk interaksi.
 - iii. Pendedahan kepada industri** – pelajar menjalankan lawatan ke industri selama tempoh masa tertentu beberapa kali sepanjang pengajiannya di UniMAP. Ini termasuklah program InTra (Latihan Industri), Keusahawanan Industri, dan lain-lain lagi.

TEACHING AND LEARNING APPROACHES AT UniMAP

- *Many of the Core Courses offered include theory component and practical component, the values of contact hours for each.*
- *The practical components consist of the following teaching and learning modes:*
 - i. Lab and workshop Intensive Learning** – *two or three students carry out an experiment in a group. In some basic lab intensive programmes, each student will conduct an experiment individually (1:1) and not in a group.*
 - ii. E-Learning** – *Learning approach that is reinforced using ICT to complement the conventional approach. Students obtain access to course modules and topics via the UniMAP website. The modules consist of lecture notes in multimedia format such as audio, video, graphic, animation, simulation, games and other interactive activities*
 - iii. Exposure to Industry** – *Students will make multiple visits to industry for a certain period of time throughout their study at UniMAP. These include InTra (Industrial Training), Industrial Entrepreneurship Exposure and others.*

LATIHAN INDUSTRI

- Latihan Industri merupakan salah satu syarat/kursus wajib Universiti bagi setiap pelajar Universiti Malaysia Perlis (UniMAP) sebelum dianugerahkan pengijazahan. Latihan Industri ini memberi peluang kepada pelajar-pelajar Universiti merasai konsep pembelajaran dan pengajaran serta pengalaman industri dalam dunia pekerjaan sebelum menempuhi alam pekerjaan kelak. Disamping itu juga, dengan kemahiran dan pengetahuan yang telah diadaptasikan dapat memenuhi hasrat dan keperluan kebolehpasaran graduan demi kemajuan negara.
- Tujuan utama Latihan Industri dilaksanakan adalah:-
 - i. Menyemai sikap profesional di kalangan pelajar.
 - ii. Menyedarkan pelajar tentang kepentingan dan kaitan yang kuat antara latihan industri, makmal/amali dan teori yang dipelajari.
 - iii. Memberi pendedahan awal kepada pelajar tentang persekitaran dan keadaan di industri serta amalannya. Pelajar berpeluang melengkapkan diri sebagai bekalan untuk menghadapi cabaran akan datang, baik di dalam pengajian akademik mahupun rintangan yang mendatang.

INDUSTRIAL TRAINING

- *Industrial Training is one of the University compulsory courses for student of University Malaysia Perlis (UniMAP) before graduating. The Industrial Training Course gives an opportunity for students to experience the working llife at industrial world for the preparation in the future. In addition, the adaptation of industrial experience will meet the needs of graduate employment worldwide and the progress of the country.*
- *The main objectives of the Industrial Training are to:-*
 - i. *Instill professionalism in students*
 - ii. *Raise students' awareness on the importance and connection between industrial and lab-intensive training, and engineering theories.*
 - iii. *Provide students with early exposure to industrial environment and practices. Students also are given the opportunity to equip themselves with the necessary skills and knowledge needed in their respective academic and training fields.*

- Tempoh Latihan Industri ditentukan mengikut bidang pengajian seperti Jadual 3.
- *The period of Industrial Training is determined according to the field of study as in Table 3.*

Jadual 3 : Tempoh Latihan Industri
Table 3 : Industrial Training Period

Program Pengajian / Programme	Kredit / Credits	Tempoh Latihan Industri / Industrial Training Period
Sarjana Muda Kejuruteraan / <i>Bachelor of Engineering</i>	5	10 Minggu / weeks
Sarjana Muda Teknologi Kejuruteraan / <i>Bachelor of Engineering Technology</i>	12	24 Minggu / weeks
Sarjana Muda Teknologi / <i>Bachelor of Technology</i>	12	24 Minggu / weeks
Sarjana Muda Perniagaan / <i>Bachelor of Business</i>	4	8 Minggu / weeks
Sarjana Muda Komunikasi Media Baharu / <i>Bachelor of New Media Communication</i>	6	12 Minggu / weeks
Sarjana Muda Teknologi Media Interaktif / <i>Bachelor of Interactive Media Technology</i>	12	48 Minggu / weeks
Sarjana Muda Perakaunan / <i>Bachelor of Accounting</i>	12	24 Minggu / weeks
Sarjana Muda Sains Data / <i>Bachelor in Data Science</i>	12	24 Minggu / weeks
Sarjana Muda Sains Gunaan / <i>Bachelor of Applied Science</i>	12	24 Minggu / weeks

PEMINDAHAN KREDIT

- Pemindahan kredit ditakrifkan sebagai pengiktirafan sejumlah kredit yang telah diperolehi oleh seseorang pelajar dalam sesuatu program terdahulu ke program yang sedang diikuti di UniMAP. Terdapat 2 kategori pemindahan kredit iaitu:

1. Pemindahan Kredit Vertikal atau Pengecualian Kredit

Pemindahan kredit daripada peringkat rendah ke peringkat yang lebih tinggi seperti Sijil ke Diploma ATAU Diploma ke Sarjana Muda. Pemindahan Kredit yang dibenarkan adalah Pemindahan Kredit Tanpa Gred (Pengecualian Kredit).

2. Pemindahan Kredit Horizontal

Pemindahan kredit daripada program pada tahap kelayakan yang sama seperti daripada Diploma ke Diploma ATAU Sarjana Muda ke Sarjana Muda. Pemindahan Kredit yang dibenarkan adalah Pemindahan Kredit Dengan Gred atau Pemindahan Kredit Tanpa Gred (Pengecualian Kredit) berdasarkan situasi.

- Syarat umum pemindahan pemindahan kredit adalah:
 - i. Gred lulus – Gred lulus minimum bagi kursus yang layak dipertimbangkan untuk pemindahan kredit ialah Gred C atau nilai gred 2.00.
 - ii. Nilai kredit – nilai kredit bagi kursus yang layak dipertimbangkan untuk pemindahan kredit mestilah sama atau lebih tinggi daripada nilai kredit kursus yang dipohon.
 - iii. Kesetaraan kandungan kursus-kursus yang terlibat dengan pemindahan kredit mestilah tidak kurang daripada 80%.

CREDIT TRANSFER

- *Credit transfer is defined as the accreditation of the credits accumulated by a student from his/her previous programme to the current programme pursued at UniMAP.*

1. Vertical Credit Transfer or Credit Exemption

Credit transfer from a lower to a higher level of qualification such as from Certificate to Diploma OR from Diploma to Bachelor's Degree. The credit transfer permitted is the Credit Transfer Without Grade (Credit Exemption).

2. Horizontal Credit Transfer

Credit transfer from one programme to another programme at the same academic level, i.e., from Diploma to Diploma OR Bachelor's Degree to Bachelor's Degree. The credit transfer permitted is either the Credit Transfer with Grades or Credit Transfer without Grades (Credit Exemption) based on the situation.

The general requirements for credit transfer are as follow:

- Passing Grade – Minimum passing grade of either a C grade or a 2.00 grade points for courses that are eligible for credit transfer.*
- Credit value – credit value point of the equivalent course must be equal or higher than the credit value point of the course being applied.*
- The content of the courses involved with credit transfer must be equal to or more than 80% with the course being applied.*

PENTAKSIRAN KURSUS

- Pentaksiran pelajar biasanya ditentukan berdasarkan pentaksiran berterusan atau gabungan pentaksiran berterusan dan peperiksaan akhir atau kaedah lain yang dibuat dalam sesuatu semester tertakluk kepada kelulusan Senat.
- Peperiksaan akhir diadakan pada hujung semester. Setiap pelajar mestilah terlebih dahulu memenuhi syarat kehadiran ke kuliah, tutorial, amali dan sebagainya sebelum layak menduduki peperiksaan. Pelajar yang gagal memenuhi syarat kehadiran 80% boleh dihalang daripada menduduki peperiksaan akhir.
- Prestasi pelajar dalam sesuatu kursus dinilai oleh gred yang diperoleh. Hubungan antara gred dan mata nilai adalah seperti dalam Jadual 4 :

Gred / Grade	Nilai Gred / Point Value
A	4.00
A-	3.75
B+	3.50
B	3.00
B-	2.75
C+	2.50
C	2.00
C-	1.75
D+	1.50
D	1.00
D-	0.75
F	0.00

COURSE ASSESSMENT

- *Student assessment is normally determined based on continuous assessment, or a combination of continuous assessment and a final examination, or other methods conducted within a semester, subject to the approval of the Senate.*
- *The final exam is conducted at the end of the semester. Every student must first meet the attendance requirements for lectures, tutorials, practical and so on before being eligible to sit for the exam. Students who fail to meet the 80% attendance requirement may be barred from sitting the final exam.*
- *Student performance in a course is presented by the grades obtained. The relationship between grade and point value is as shown in Table 4 :*

Jadual 4 : Hubungan Antara Gred dan Mata Nilai
Table 4 : Relationship Between Grade and Point Value

- Gred Lulus untuk sesuatu kursus dan setiap komponen pentaksiran adalah Gred D+ dan ke atas (Gred A hingga D+). Gred Lulus hendaklah dibaca bersama dengan Peraturan Akademik UniMAP : Bahagian 14 Penganugerahan.
- Pencapaian akademik pelajar dinilai menggunakan dua (2) ukuran iaitu Purata Nilai Gred (PNG) dan Purata Nilai Gred Kumulatif (PNGK). Formula pengiraan PNG dan PNGK dipaparkan dalam Jadual 5.
- The passing grade for a course and for each assessment component is Grade D+ and above (Grades A to D+). The passing grade shall be read in conjunction with the UniMAP Academic Regulations: Part 14 – Conferment of Awards.*
- A student's academic performance is assessed using two (2) measures, namely the Grade Point Average (GPA) and the Cumulative Grade Point Average (CGPA). The formulas for calculating the GPA and CGPA are presented in Table 5.*

KURSUS/ COURSE	KREDIT/ CREDIT	NILAI GRED/ GRADE VALUE [NG]	GRED/ GRADE [G]	JUMLAH/ TOTAL NG
QDQ10103	3	3.75	A-	11.25
EDJ16002	2	2.50	C+	5.00
EDJ17303	3	3.50	B+	10.50
SDU12302	2	4.00	A	8.00
SDB10102	2	1.75	C-	3.50
EDJ17703	3	2.75	B-	8.25
EDJ28003	3	3.00	B	9.00
	18			55.50
PNG [GPA] = $55.50/18 = 3.08$				
QDQ20303	3	3.50	B+	10.50
EDJ29403	3	2.00	C	6.00
EDJ28503	3	4.00	A	12.00
SDB30102	2	3.50	B+	7.00
SDU12902	2	3.75	A-	7.50
EDJ29703	3	2.50	C+	7.50
	16			50.50
PNG [GPA] = $50.50/16 = 3.16$				
PNGK [CGPA]	= <u>Jumlah NG Terkumpul [Total Accumulated Grade Value]</u> <u>Jumlah Bil. Kredit Terkumpul [Total Accumulated Credits]</u> = $\frac{55.50 + 50.50}{18 + 16}$ = 3.12			

Jadual 5 : Pengiraan PNG dan PNGK
Table 5 : Calculation of GPA and CGPA

RAYUAN SEMAKAN SEMULA KEPUTUSAN PEPERIKSAAN

- Atas sebab-sebab tertentu, pelajar mungkin ingin memohon untuk penyemakan dijalankan ke atas keputusan peperiksaan akhir semester pelajar. Pelajar hanya dibenarkan memohon menyemak semula keputusan peperiksaan akhir semester dalam tempoh 10 hari bekerja selepas keputusan rasmi peperiksaan dikeluarkan oleh Pusat Pengurusan Akademik. Permohonan selepas tempoh ini tidak akan dipertimbangkan.
- Pelajar perlu menghantar Borang HEA(C)-02(a) (Borang Rayuan Semakan Semula Keputusan Peperiksaan) kepada Unit Peperiksaan & Pengijazahan (UPP), Bahagian Pengurusan Akademik, Pusat Pengurusan Akademik. Borang rayuan hendaklah dikemukakan dalam tempoh 10 hari bermula dari hari keputusan rasmi diumumkan. Pelajar perlu mengisi borang dalam dua (2) salinan. Kadar bayaran rayuan ialah RM50 untuk setiap kursus.

PENGUNAAN BAHASA INGGERIS

- Bahasa Melayu adalah bahasa rasmi universiti. Walau bagaimanapun Bahasa Inggeris digunakan secara meluas dalam proses pembelajaran dan pengajaran. Ini adalah untuk membantu pelajar dalam kerjaya mereka. Bagi kursus-kursus yang diajar dalam bahasa Inggeris, peperiksaan akan dijalankan dalam bahasa yang sama.

APPEAL FOR EXAMINATION RESULTS REVISION

- *In certain cases, a student might wish to apply for a revision of their examination results. Students are only allowed to appeal for a revision within the duration of 10 days after the examination results are officially released by the Academic Management Centre (AMC). Application after this duration will not be considered.*
- *Students must submit the HEA(C)-02(a) form (Appeal for Review of Examination Results) to the Examination & Graduation Unit, Academic Management Division, and Academic Management Centre (AMC). The appeal form must be submitted within 10 working days after the official result is announced. Students will have to fill in their details in two (2) copies, one of which is the student copy. Students will be charged RM50 per course for each course appealed.*

ENGLISH LANGUAGE USE

- *Malay is the official language of the university. However English is used widely in the teaching and learning process at UniMAP. This is to help students in their future career. For courses that are taught in English, the examination will be conducted in the same language.*

SISTEM RAKAN PENDAMPING SISWA (RPS)

- Sistem Penasihat Akademik menjadi penghubung antara pelajar dengan pensyarah untuk berbincang dan membuat keputusan berkenaan rancangan pengajian pelajar. Walaupun pelajar mendaftar sendiri secara dalam talian (*on-line*), pelajar perlu berjumpa dengan Rakan Pendamping Siswa (RPS) untuk mendapatkan nasihat semasa tempoh pendaftaran.
- RPS adalah satu sistem di mana staf akademik menyelia sekumpulan kecil pelajar sepanjang tempoh pengajian pelajar di UniMAP. 'Penyeliaan' di sini melibatkan perjumpaan yang kerap secara tidak formal, di mana pelajar boleh bersantai dengan staf yang berperanan sebagai "rakan" bagi membincangkan isu-isu akademik dan sosial yang berkenaan dengan mereka. Pelajar yang mempunyai prestasi akademik yang tidak memuaskan boleh merujuk kepada RPS sebagai 'mentor', dan pelajar tersebut menjadi 'mentee', di mana ini akan benar-benar membantu pelajar dalam setiap perkara yang memerlukan penyelesaian.

Maklumat lanjut berkaitan peraturan-peraturan boleh dirujuk kepada Peraturan Akademik (Sarjana Muda & Diploma) yang terkini.

BUDDY SYSTEM (RAKAN PENDAMPING SISWA)

- *Buddy System (Rakan Pendamping Siswa) or RPS is a system which connects students and lecturers to allow them to discuss and decide on students' study plan. Even though course registration is done via online by students, they are advised to meet their RPS during the registration exercise for advisory purposes.*
- *In the system, an academic staff supervises a small group of students for the whole duration of the students' study period at UniMAP. 'Supervision' here entails frequent meetings under informal settings, where students are able to discuss about academic and social issues with their lecturers who act as a 'buddy' to them. Students who have unsatisfactory academic performance may refer to their RPS as a mentor, and the student is a 'mentee'.*

More information related to the regulations can be referred to the latest Academic Regulations (Bachelor Degree & Diploma).

UniMAP Academic Guide



Online Student Information



DIREKTORI / DIRECTORY

Pejabat Timb. Naib Canselor (Akademik & Antarabangsa) / <i>Deputy Vice Chancellor (Academic & International) Office</i>	04-941 4159
Pusat Pengurusan Akademik (AMC) / <i>Academic Management Centre</i>	04-941 4158
• Bahagian Pemantapan Akademik (AED) / <i>Academic Enhancement Division</i> • Bahagian Pendidikan Fleksibel / <i>Flexible Education Division</i> • Bahagian Pengurusan Dasar TVET / <i>Management Policy TVET Division</i> • Bahagian Kerjasama Strategik Akademik / <i>Strategic Academic Collaboration Division</i> • Bahagian Pengurusan Akademik (AMD) / <i>Academic Management Division</i> ▪ Unit Kemasukan dan Rekod Pelajar / <i>Student Admissions & Records Unit</i> ▪ Unit Peperiksaan dan Pengijazahan / <i>Examination & Convocation Unit</i> ▪ Unit SENAT / <i>Senat Unit</i>	04-941 4157 04-9414321 04-9414322 04-9414414 04-941 4056/4065 04-941 4057/4058 04-941 4060
Jabatan Bendahari / <i>Bursary Department</i>	04-941 4020/4021/4022
Jabatan Pendaftar / <i>Registrar Department</i>	04-941 4081
Jabatan Hal Ehwal Pelajar (JHEP) / <i>Center for Student Development & Services</i>	04-941 4434
Perpustakaan Tuanku Syed Faizuddin Putra (PTSFP) / <i>Tuanku Syed Faizuddin Putra Library</i>	04-988 5422/5410

FACULTY OF ELECTRICAL ENGINEERING & TECHNOLOGY (FKTE)

Address:

FACULTY OF ELECTRICAL ENGINEERING & TECHNOLOGY

Universiti Malaysia Perlis

Kampus Alam UniMAP Pauh Putra

02600 Arau Perlis

Tel: 04-941 4191/4263



Programmes Offered:

- Bachelor of Electrical Engineering with Honours
- Bachelor of Mechatronic Engineering with Honours
- Bachelor of Electrical Engineering Technology (Industrial Power) with Honours
- Bachelor of Electrical Engineering Technology (Robotic And Automation Technology) with Honours
- Bachelor of Technology in Electrical Maintenance System with Honours
- Diploma in Electrical Engineering
- Diploma in Mechatronic Engineering

EXCO DIRECTORY



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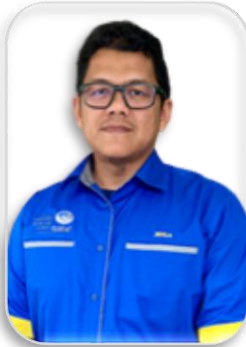


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UR6522001

Bachelor of Electrical Engineering with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

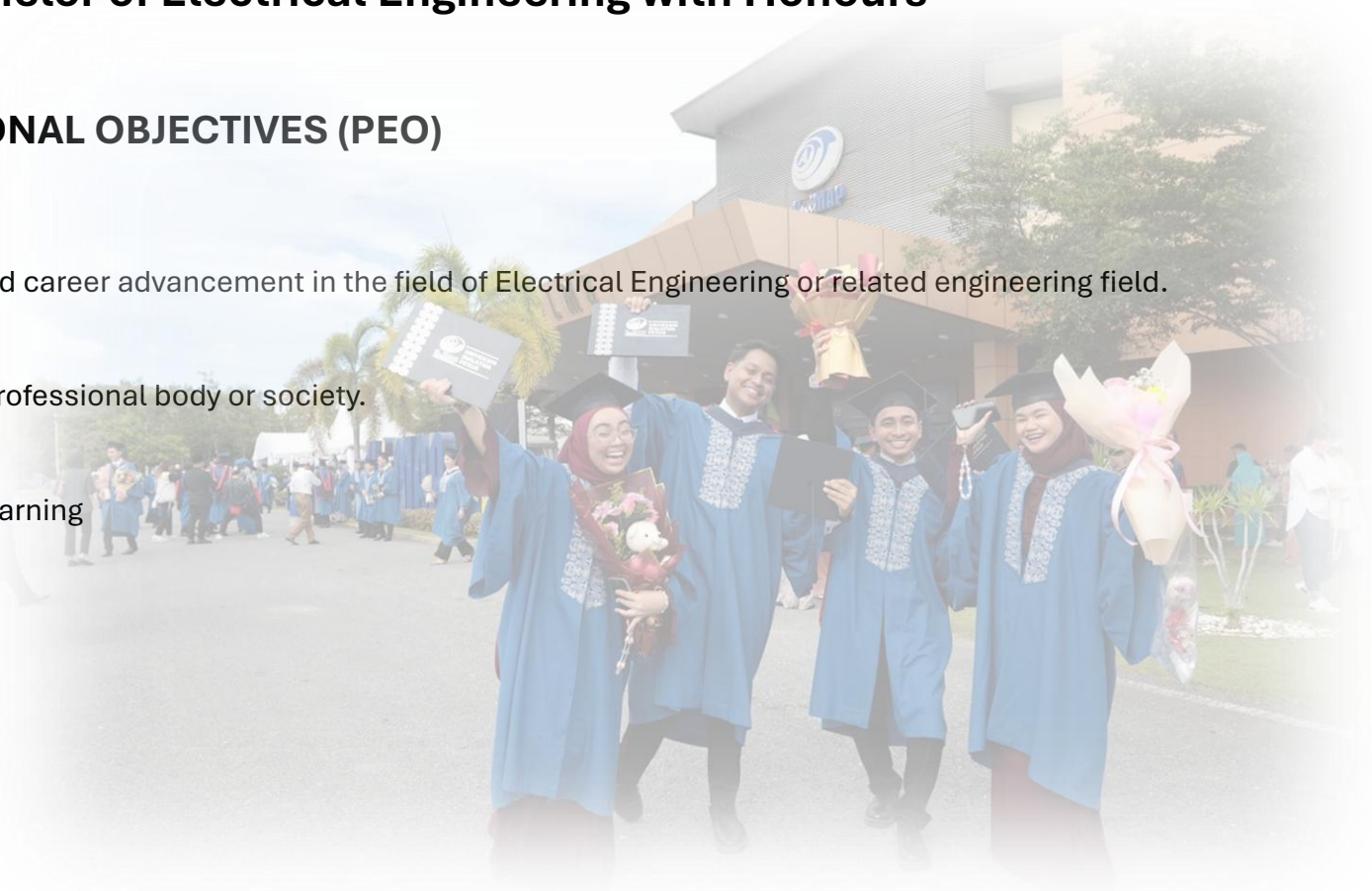
Graduates who have demonstrated career advancement in the field of Electrical Engineering or related engineering field.

PEO 2

Graduates who are involved in a professional body or society.

PEO 3

Graduates who pursue life-long learning



PROGRAMME OUTCOMES (PO)

PO1

Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialisation to develop solutions to complex engineering problems.

PO2

Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development.

PO3

Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO4

Conduct investigation of complex engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5

Create, select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems.

PO6

Analyse and evaluate sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving complex engineering problems.

PO7

Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO8

Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings.

PO9

Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO10

Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments.

PO11

Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change.

CURRICULUM STRUCTURE
UR6522001 BACHELOR OF ELECTRICAL ENGINEERING WITH HONOURS INTAKE 2025/2026

YEAR	FIRST		SECOND		THIRD			FOURTH	
SEMESTER	1	2	3	4	5	6	BREAK	7	8
DISCIPLINE CORE & ELECTIVE COURSES (102 CREDITS)	EMJ12002 Engineering Science	EMJ13003 Electronic Devices	EMJ22003 Instrumentation and Measurements	EMJ23204 Microcontroller Systems Design	EMJ32004 Power System Engineering	EMJ33504 Power Electronics	EMJ30105 Industrial Training	EMJ40002 Final Year Project 1	***EMJ40004 Final Year Project 2
	EMJ12103 Electric Circuit 1	EMJ10003 Computer Programming	EMJ22204 Analog Electronics	EMJ23003 Electrical Power Technology	EMJ32204 Electrical Machine	***EMJ33103 Power System Analysis		***EMJ42202 Electrical Installation Design 2	EMJ43003 Electrical Drives
	EMJ12304 Digital Electronics	***EMJ13103 Electric Circuit 2	EMJ22403 Signals and Systems	EMJ22303 Electromagnetic Theory	EMJ32403 Control Systems Engineering	EMJ33303 Electrical Energy Utilization		EMJ42003 High Voltage Engineering	EMJ44X03 Elective 3
		EMJ13203 Electrical Engineering Practices	EMJ22503 Communication System Engineering		EMJ32503 Energy Literacy	EMJ33404 Electrical Installation Design 1		EMJ44X03 Elective 1	
						EMJ33603 Renewable Energy System		EMJ44X03 Elective 2	
COMMON CORE COURSES (17 CREDITS)	IMQ10103 Engineering Mathematics 1	IMQ10203 Engineering Mathematics 2	IMQ20303 Engineering Mathematics 3	IMQ27103 Engineering Statistics	EMJ41003 Management for Engineers				EMJ41102 Professional Engineers
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMU13002 Philosophy and Current Issues	SMB20102 English for General Communication ^[2]	SMB41002 University Malay Language ^[3]	SMB31202 English for Technical Communication	SMB1XX02 Option				
	SMU13102 Appreciation of Ethics and Civilization	SMZXXX01 Co-Curriculum 2		SMU12102 Integrity and Anti-Corruption ^[4]					SMU22402 Engineering Entrepreneurship
	SMZXXX01 Co-Curriculum 1								
TOTAL CREDITS (135 CREDITS)	17	18	18	17	16	17	5	13	14
AUDIT COURSES	SMB10102 Preparatory English ^[1]								
PROGRAMME AUDIT COURSES	EMJ11001 Introduction to Electrical Engineering								
	EMJ11101 Introduction to Artificial Intelligence								

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).

SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

ELECTIVE COURSE :

EMJ44103 Power System Operation & Control, EMJ44203 Electrical Machine Design, EMJ44503 Industrial Electronic Control, EMJ44603 Substation Design, EMJ44803 Power System Protection, EMJ44903 Switched Mode Power Supply, EMJ45003 Power Electronics for Photovoltaic System, EMJ45104 Advanced Power System Analysis and Control, EMJ45204 Power System Protection and Reliability, EMJ45303 Advanced Power Electronics, EMJ45403 Electric Vehicle Systems, EMJ45503 Grid-Connected Photovoltaic, EMJ45603 Off-Grid Photovoltaic

Courses with prerequisite

Courses	Prerequisite
EMJ13103	EMJ12103
EMJ42202	EMJ33404
EMJ40004	EMJ40002
EMJ33103	EMJ32004

UR6523003

Bachelor of Mechatronic Engineering with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates who have demonstrated career advancement in the field of Mechatronic Engineering or related engineering field.

PEO 2

Graduates who are involved in a professional body or society.

PEO 3

Graduates who pursue lifelong learning.



PROGRAMME OUTCOMES (PO)

PO 1

Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialisation to develop solutions to complex engineering problems.

PO 2

Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development.

PO 3

Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO 4

Conduct investigation of complex engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO 5

Create, select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems.

PO 6

Analyse and evaluate sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving complex engineering problems.

PO 7

Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO 8

Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings.

PO 9

Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO 10

Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments.

PO 11

Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change.

CURRICULUM STRUCTURE UR6523003 BACHELOR OF MECHATRONIC ENGINEERING WITH HONOURS INTAKE 2025/2026									
YEAR	FIRST		SECOND		THIRD			FOURTH	
SEMESTER	1	2	3	4	5	6	BREAK	7	8
DISCIPLINE CORE & ELECTIVE COURSES (103 CREDITS)	EMJ10003 Computer Programming	EMJ17103 Analogue Electronics	EMJ26103 Signals & Linear Systems	EMJ27103 Electromagnetic Field Theory	EMJ36103 Control Engineering I	EMJ37103 Control Engineering II	EMJ30105 Industrial Training	EMJ40002 Final Year Project I	EMJ40004 Final Year Project II
	EMJ16103 Electric Circuit Theory	EMJ17303 Computer Aided Drawing	EMJ26203 Digital Logic Circuit	EMJ27204 Embedded System and Interfacing	EMJ36203 Machine Vision	EMJ37203 Mechatronic Systems Design I		EMJ47204 Mechatronic Systems Design II	EMJ47002 Production & Quality Control
	EMJ16203 Engineering Statics	EMJ17402 Principle of Engineering Thermofluids	EMJ26403 Engineering Dynamics	EMJ26303 Instrumentation & Measurements	EMJ36303 Fluid Power Systems	EMJ37303 Robotic Systems		EMJ47303 Artificial Intelligence for Mechatronic Engineering	
	EMJ16302 Principle of Engineering Materials	EMJ16403 Mechatronic Engineering Practices	EMJ26503 Data Communication & Networking	EMJ26703 Design of Machinery	EMJ36404 Electrical Machines & Power Systems	EMJ37603 Automation System		EMJ47402 Automation System Application	
			EMJ27303 Power Electronics					EMJ4XX03 Elective I	EMJ4XX03 Elective II
COMMON CORE COURSES (17 CREDITS)	IMQ10103 Engineering Mathematics 1	IMQ10203 Engineering Mathematics 2	IMQ20303 Engineering Mathematics 3	IMQ27103 Engineering Statistics				EMJ41102 Professional Engineers	EMJ41003 Management for Engineers
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMZXXX01 Co-Curriculum 1	SMZXXX01 Co-Curriculum 2		SMB20102 English for General Communication ^[2]	SMU12102 Integrity and Anti- Corruption ^[4]	SMU22402 Engineering Entrepreneurship			
	SMU13002 Philosophy and Current Issues	SMU13102 Appreciation of Ethics and Civilization			SMB31202 English for Technical Communication	SMB41002 University Malay Language ^[3]			
TOTAL CREDITS (136 CREDITS)	17	17	18	18	17	16	5	16	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]								

Elective I : EMJ47603 Autonomous Mobile Robots, EMJ47703 IoT & Data Analytics, EMJ47803 Advanced Control Design.

Elective II : EMJ48603 Advanced PLC Systems, EMJ48703 Smart System Design, EMJ48803 System Identification Modelling.

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).

SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
EMJ12002	Sains Kejuruteraan [Engineering Science]	SDG 12
EMJ12103	Litar Elektrik 1 [Electric Circuit 1]	-
EMJ12304	Elektronik Digit [Digital Electronics]	SDG 9
EMJ13003	Peranti Elektronik [Electronic Devices]	-
EMJ10003	Pengaturcaraan Komputer [Computer Programming]	-
EMJ13103	Litar Elektrik 2 [Electric Circuit 2]	SDG 7
EMJ13203	Amalan-amalan Kejuruteraan Elektrik [Electrical Engineering Practices]	-
EMJ22003	Instrumentasi dan Pengukuran [Instrumentation and Measurements]	SDG 7, SDG 9
EMJ22204	Elektronik Analog [Analog Electronics]	-
EMJ22403	Isyarat dan Sistem [Signals and Systems]	SDG 9
EMJ22503	Kejuruteraan Sistem Perhubungan [Communication System Engineering]	SDG 7, SDG 9
EMJ23204	Rekabentuk Sistem Mikropengawal [Microcontroller Systems Design]	-
EMJ23003	Teknologi Kuasa Elektrik [Electrical Power Technology]	SDG 9
EMJ23303	Teori Elektromagnet [Electromagnetic Theory]	SDG 9
EMJ32004	Kejuruteraan Sistem Kuasa [Power System Engineering]	-
EMJ32204	Mesin Elektrik [Electrical Machines]	SDG 7
EMJ32403	Kejuruteraan Sistem Kawalan [Control Systems Engineering]	-
EMJ32502	Literasi Tenaga [Energy Literacy]	-

COURSE CODE	COURSE NAME	SDG
EMJ33504	Elektronik Kuasa [Power Electronics]	SDG 7
EMJ33103	Analisa Sistem Kuasa [Power System Analysis]	-
EMJ33303	Penggunaan Tenaga Elektrik [Electrical Energy Utilization]	SDG 7, SDG 11
EMJ33404	Reka Bentuk Pemasangan Elektrik 1 [Electrical Installation Design 1]	SDG 7
EMJ33603	Sistem Tenaga Boleh Baharu [Renewable Energy System]	SDG 7
EMJ30105	Latihan Industri [Industrial Training]	-
EMJ40002	Projek Tahun Akhir 1 [Final Year Project 1]	SDG 7, SDG 9, SDG 11, SDG 12, SDG 13
EMJ42202	Reka Bentuk Pemasangan Elektrik 2 [Electrical Installation Design 2]	SDG 7
EMJ42003	Kejuruteraan Voltan Tinggi [High Voltage Engineering]	SDG 7
EMJ41003	Pengurusan Untuk Jurutera [Management For Engineers]	SDG 7
EMJ41102	Jurutera Profesional [Professional Engineers]	SDG 7, SDG 13
EMJ40004	Projek Tahun Akhir 2 [Final Year Project 2]	-
EMJ43003	Pemacu Elektrik [Electrical Drives]	SDG 7
EMJ44103	Operasi Sistem Kuasa dan Kawalan [Power System Operation and Control]	-
EMJ44203	Rekabentuk Mesin Elektrik [Electrical Machine Design]	SDG 9
EMJ44503	Kawalan Elektronik Industri [Industrial Electronic Control]	SDG 7
EMJ44603	Rekabentuk Pencawang [Substation Design]	SDG 9
EMJ44803	Perlindungan Sistem Kuasa [Power System Protection]	-

COURSE CODE	COURSE NAME	SDG
EMJ44903	Bekalan Kuasa Mod Tersuis [Switched Mode Power Supply]	SDG 7
EMJ45003	Elektronik Kuasa untuk Sistem Fotovolta [Power Electronics for Photovoltaic System]	-
EMJ45104	Analisis Sistem Kuasa dan Kawalan Lanjutan [Advanced Power System Analysis and Control]	-
EMJ45204	Perlindungan dan Kebolehpercayaan Sistem Kuasa [Power System Protection and Reliability]	-
EMJ45303	Elektronik Kuasa Lanjutan [Advanced Power Electronics]	-
EMJ45403	Sistem Kenderaan Elektrik [Electric Vehicle Systems]	-
EMJ45503	Fotovolta Grid-Tersambung [Grid-Connected Photovoltaic]	-
EMJ45603	Fotovolta Grid- Terasing [Off-Grid Photovoltaic]	-
EMJ11001	Pengenalan Kepada Kejuruteraan Elektrik [Introduction to Electrical Engineering]	-
EMJ11101	Pengenalan kepada Kecerdasan Buatan [Introduction to Artificial Intelligence]	-
EMJ16103	Electric Circuit Theory [Teori Litar Elektrik]	SDG 9
EMJ16203	Engineering Statics [Statik Kejuruteraan]	-
EMJ16302	Principle Of Engineering Materials [Prinsip-Prinsip Bahan Kejuruteraan]	SDG 12
EMJ16403	Mechatronic Engineering Practices [Amalan-Amalan Kejuruteraan Mekatronik]	-
EMJ17103	Analogue Electronics [Elektronik Analog]	-
EMJ17303	Computer Aided Drawing [Lukisan Terbantu Komputer]	-
EMJ17402	Principle of Engineering Thermofluids [Prinsip-Prinsip Kejuruteraan Termofluid]	SDG 9
EMJ20002	Industrial Attachment [Sangkutan Industri]	-

COURSE CODE	COURSE NAME	SDG
EMJ26103	Signals & Linear Systems [Isyarat Dan Sistem Lelurus]	-
EMJ26203	Digital Logic Circuit [Litar Logik Digit]	-
EMJ26303	Instrumentation And Measurements [Instrumentasi Dan Pengukuran]	SDG 9
EMJ26403	Engineering Dynamics [Dinamik Kejuruteraan]	-
EMJ26503	Data Communication & Networking [Komunikasi Data & Rangkaian]	SDG 9
EMJ26703	Design Of Machinery [Reka Bentuk Jentera]	-
EMJ27103	Electromagnetic Field Theory [Teori Medan Elektromagnetik]	-
EMJ27204	Embedded System And Interfacing [Sistem Terbenam Dan Pengantaramuka]	SDG 3, SDG 9, SDG 11
EMJ27303	Power Electronics [Elektronik Kuasa]	SDG 7, SDG 9
EMJ36103	Control Engineering 1 [Kejuruteraan Kawalan 1]	-
EMJ36203	Machine Vision [Penglihatan Mesin]	SDG 9
EMJ36303	Fluid Power Systems [Sistem Kuasa Bendalir]	SDG 9
EMJ36404	Electrical Machines & Power Systems [Jentera Elektrik Dan Sistem Kuasa]	-
EMJ37103	Control Engineering 2 [Kejuruteraan Kawalan 2]	SDG 9
EMJ37203	Mechatronic Systems Design 1 [Rekabentuk Sistem Mekatronik 1]	SDG 2, SDG 3, SDG 9, SDG 11, SDG 13
EMJ37303	Robotic Systems [Sistem Robotik]	SDG 9
EMJ37603	Automation System [Sistem Automasi]	SDG 9
EMJ47002	Production and Quality Control [Pengeluaran dan Kawalan Kualiti]	SDG 8, SDG 12

COURSE CODE	COURSE NAME	SDG
EMJ47204	Mechatronic Systems Design 2 [Rekabentuk Sistem Mekatronik 2]	SDG 2, SDG 3, SDG 9, SDG 11, SDG 13
EMJ47303	Artificial Intelligence For Mechatronic Engineering [Kecerdikan Buatan Untuk Kejuruteraan Mekatronik]	SDG 9
EMJ47402	Automation System Application [Aplikasi Sistem Automasik]	SDG 9
EMJ47603	Autonomous Mobile Robots [Robot Tergerak Automatik]	SDG 9
EMJ47703	IoT & Data Analytics [IoT dan Analitik Data]	SDG 9
EMJ47803	Advanced Control Design [Rekabentuk Kawalan Lanjutan]	SDG 4
EMJ48603	Advanced PLC Systems [Sistem PLC Lanjutan]	SDG 9
EMJ48703	Smart System Design [Rekabentuk Sistem Pintar]	SDG 9
EMJ48803	System Identification Modelling [Permodelan Sistem Identifikasi]	SDG 4

EMJ12002 SAINS KEJURUTERAAN [ENGINEERING SCIENCE]

No of Credits: 2

Course Synopsis:

This course introduce the students the basic knowledge of the structure, properties, and performance of various classes of engineering materials. This is a crucial knowledge in materials selection decision in everyday rudimentary engineering problems.

Course Outcomes:

1. Ability to apply basic knowledge of the structure, properties, and performance of various classes of engineering materials.
2. Ability to analyze the relationship between the structure, properties, and performance of engineering materials for specific engineering applications, considering sustainability and functionality.
3. Ability to apply independent learning and critical thinking skills to explore engineering materials in engineering applications and respond to technological changes.

EMJ12103 LITAR ELEKTRIK 1 [ELECTRIC CIRCUIT 1]

No of Credits: 3

Course Synopsis:

This is an introductory circuit course that is devoted to DC circuits. It covers fundamental laws, resistive circuits, analytical techniques, passive and active elements. Students will develop analytical skills through nodal and mesh analysis techniques with dependent sources and special cases, and simplify circuits using source transformation. The course also explores key theorems including Superposition, Thevenin, Norton, and the Maximum Power Transfer principle. Finally, students will study the characteristics and behaviour of inductors and capacitors, including their voltage-current relationships and energy storage in both series and parallel configurations.

Course Outcomes:

1. Ability to apply appropriate fundamental concepts and laws to solve current, voltage and power in DC circuits.
2. Ability to analyse DC circuit using fundamental laws, circuit theorems and systematic analysis techniques.
3. Ability to apply appropriate simulation tools and techniques to analyze and interpret the behaviour of DC circuits.

EMJ12304 ELEKTRONIK DIGIT [DIGITAL ELECTRONICS]

No of Credits: 4

Course Synopsis:

This course introduces the fundamental principles of digital systems. From the importance of numbering systems and codes, it then proceeds to logic gates, their relationship to Boolean algebra, and gates' integration to form complex circuits. The course emphasizes combinational and sequential logic techniques to design, analyse, and implement simple digital systems using logic gates. The simulation software is introduced to facilitate the learning process.

Course Outcomes:

1. Ability to apply knowledge of the basic principles of the numbering systems and algebraic switching in digital systems.
2. Ability to design solutions for digital engineering problems using combinational or sequential logic design techniques.
3. Ability to design a digital system project using a valid approach with data validation.

EMJ13003 PERANTI ELEKTRONIK [ELECTRONIC DEVICES]

No of Credits: 3

Course Synopsis:

This course provides basic concepts of semiconductor materials and electronic devices. The course starts with an introduction to semiconductor materials, conduction in semiconductors, p-n-type, and pn-junction biasing. It will discuss the constructions and characteristics of the diodes, Bipolar Junction Transistor (BJT), and Field Effect Transistor (FET). Students will learn to apply circuit laws, theorems, and analytical methods to solve various biasing circuits. The course also familiarizes students with interpreting device datasheets and applying relevant parameters in circuit analysis.

Course Outcomes:

1. Ability to apply fundamental concepts of electronic devices.
2. Ability to solve the electrical circuits related to diode basic operations and its applications.
3. Ability to analyze the common biasing circuits for BJT and FET applications.

EMJ10003 PENGATURCARAAN KOMPUTER [COMPUTER PROGRAMMING]

No of Credits: 3

Course Synopsis:

This course offers a foundational introduction to computer programming using a high-level language, with a focus on procedural programming paradigms. Key topics include primitive and composite data types, control flow mechanisms, fundamental data structures, modular programming through functions, and low-level data representation. The course aims to develop students' algorithmic problem-solving capabilities, introduce formal design tools such as flowcharts, organisational charts, and pseudocode, and apply these methodologies to the development of software solutions for engineering applications.

Course Outcomes:

1. Ability to design solutions for complex engineering problems and systems using computer programming techniques.
2. Ability to utilise integrated development environments (IDEs) for compiling, debugging, and executing computer programs.

EMJ13103 LITAR ELEKTRIK 2 [ELECTRIC CIRCUIT 2]

No of Credits: 3

Course Synopsis:

This course provides an introduction to AC circuits, covering the concepts of first and second order time domain responses of RLC circuits, sinusoidal steady state analysis, phasor analysis of AC circuits, and AC power calculation including power factor correction. The final chapter introduces an advanced method of AC circuit analysis based on two-port network theory.

Course Outcomes:

1. Ability to analyze RL, RC and RLC circuits using first and second order concepts
2. Ability to analyze complex AC circuit problems involving power calculation using phasor and complex impedance methods.
3. Ability to analyze the concepts of two-port network for AC circuits.

EMJ13203 AMALAN-AMALAN KEJURUTERAAN ELEKTRIK [ELECTRICAL ENGINEERING PRACTICES]

No of Credits: 3

Course Synopsis:

This 100% practical-based course carries 3 credit hours and introduces students to essential tools and techniques in Electrical Engineering through six key modules: Electrical Wiring, AutoCAD for Engineering Design, MATLAB Programming, Arduino Microcontroller Programming, Programmable Logic Controller (PLC) Applications, and Printed Circuit Board (PCB) Design and Fabrication.

Course Outcomes:

1. Ability to perform the basic skills and standards practiced wiring to conduct single phase wiring.
2. Ability to integrate a logic system using a common controller tool (PLC).
3. CO3 Ability to perform a standard practiced of technical drawing and able to understand a standard practiced of PCB layout design and fabrication process.
4. Ability to use programming to solve basic mathematical problems related to electrical engineering (MATLAB)
5. Ability to construct interactive objects or environments by programming a microcontroller (Arduino) with sensors.

EMJ22003 INSTRUMENTASI DAN PENGUKURAN [INSTRUMENTATION AND MEASUREMENTS]

No of Credits: 3

Course Synopsis:

The course is aimed at providing an overview of modern instrumentation and measurement techniques. It is divided into several topics namely the fundamentals of electronic instrumentation and measurement systems; error in measurement and concept of analog instruments; principles and application of signal conditioning; principles of interfacing techniques and data conversion; and finally the working principles and applications of sensors and transducers.

Course Outcomes:

1. Ability to analyze the fundamental concept of electronic instrumentation and measurement system.
2. Ability to apply appropriate tools for instrumentation and measurements related problems.
3. Ability to evaluate the performance of electronic instrumentation and measurement systems through investigative analysis using theoretical or simulation-based approaches.

EMJ22204 ELEKTRONIK ANALOG [ANALOG ELECTRONICS]

No of Credits: 4

Course Synopsis:

This course exposes the students the basic knowledge in analog electronics. The exposure encompasses DC and AC analysis, frequency analysis and simple design of small-signal amplifiers. This course offers the students an exposure to the theory and applications of op-amp and frequency response. Students will learn in depth about active filters and voltage regulators.

Course Outcomes:

1. Ability to analyse the basic amplifier circuits (BJT, and operational amplifiers)
2. Ability to assess various types of filters and basic types of voltage regulators.
3. Ability to analyse various types of filters and basic types of voltage regulators through investigation.
4. Ability to communicate effectively on the basic amplifier circuits (BJT, and operational amplifiers) through technical report and presentations.

EMJ22403 ISYARAT DAN SISTEM [SIGNALS AND SYSTEMS]

No of Credits: 3

Course Synopsis:

This course aims to introduce the students to basic knowledge of signals and systems. The students will learn how certain inputs to the system will produce the required outputs. The students will be exposed to the signals spectrum concept and various methods such as Fourier Series, Fourier Transform, Laplace Transform, and Z Transform to analyze the signal and its relations. The students will also learn the skills of analyzing the linear electric circuits using those methods.

Course Outcomes:

1. Ability to apply knowledge of the characteristics and properties of signals and processes of the systems.
2. Ability to demonstrate independent learning and critical thinking in applying signal and system principles to real-life problems and emerging technologies.
3. Ability to analyze the periodic and non-periodic signals and the system responses using Fourier Series and Fourier Transform.
4. Ability to analyze the continuous- and discrete-time signals and the system responses using Laplace Transform and Z-transform.

EMJ22503 KEJURUTERAAN SISTEM PERHUBUNGAN [COMMUNICATION SYSTEM ENGINEERING]

No of Credits: 3

Course Synopsis:

This subject will cover all the basic principles and concepts of communication system including the basic elements of communications, noise, amplitude modulation, angle modulations and digital modulations, as well as transmission channels and medium. In addition, introduction to signal propagation and calculations of signal to noise ratio are also introduced to relate the students with real applications.

Course Outcomes:

1. Ability to analyze the principles of communication systems.
2. Ability to analyze signal gain, attenuation and the effect of noise in communication systems.
3. Ability to analyze analog modulation, digital modulation techniques and transmission protocols.
4. Ability to collaborate effectively in teams in solving tasks based on communication system principles.

EMJ32004 KEJURUTERAAN SISTEM KUASA [POWER SYSTEM ENGINEERING]

No of Credits: 4

Course Synopsis:

This course introduces the basic knowledge of power system engineering which covers the topics of generation, transmission and distribution systems. The sub-topics that will be emphasised are per-unit systems, transmission line parameters and models. At the end of the course, the students are expected to be able to solve engineering problems related to power system.

Course Outcomes:

1. Ability to communicate effectively on different types and operation of power system generations in a form of report and presentation
2. Ability to investigate the characteristics of power system network.
3. Ability to analyse the concept of power system generations, transmission line parameters and models, distribution and per-unit system to the solution of complex engineering problem.

EMJ23204 REKABENTUK SISTEM MIKROPENGAWAL [MICROCONTROLLER SYSTEMS DESIGN]

No of Credits: 4

Course Synopsis:

This course introduces the knowledge of microcontroller architecture, its programming language and basic interfacing with input and output devices. From the importance of input and output modules, it then proceeds to more advance modules like Timer module, Analog to Digital Converter (ADC) module and Serial module and how these modules being integrated and manipulated. The course emphasizes on understanding the basic principle of input and output interfacing as well as build-in modules and applied them to design a simple microcontroller-based system.

Course Outcomes:

1. Ability to analyse the microcontroller programming code in high level language.
2. Ability to design system using microcontroller to solve engineering problems.
3. Ability to evaluate a microcontroller based system application with valid approach.

EMJ23003 TEKNOLOGI KUASA ELEKTRIK [ELECTRICAL POWER TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course covers the fundamental concepts and applications of three-phase electrical systems, including three-phase voltages, currents, phase relationships, and the characteristics of wye- and delta-connected loads. This course also introduces the principles of electromagnetism, magnetic circuits, and the behavior of ferromagnetic materials. The operation, modeling, and analysis of single- and three-phase transformers are addressed, including copper losses, leakage flux, hysteresis and eddy current losses, as well as voltage regulation and efficiency. The per-unit system and three-phase transformer connections are also covered. Laboratory exercises using hardware and software tools complement the theoretical knowledge for a comprehensive understanding of electrical power technology.

Course Outcomes:

1. Ability to analyze the parameters of the three-phase system characteristics, the electromagnetism problem and magnetic circuit concept.

2. Ability to assess the performance of single and three-phase transformers.
3. Ability to investigate the three-phase system, electromagnetism, as well as single and three-phase transformers to provide valid conclusions.
4. Ability to explain three-phase system and electromagnetism concepts through laboratory activities, performed individually or in teams.

EMJ23303 TEORI ELEKTROMAGNET [ELECTROMAGNETIC THEORY]

No of Credits: 3

Course Synopsis:

The course provides fundamental knowledge on electromagnetic theory, covering vector calculus, electrostatics, magnetostatics, and transmission lines. Students will develop problem-solving and analytical skills to solve engineering problems involving electromagnetic phenomena. Emphasis is placed on mathematical modeling and theoretical understanding to evaluate electromagnetic behavior in various contexts.

Course Outcomes:

1. Ability to apply mathematical principles in solving electromagnetic vector analysis problems through knowledge of mathematics, science, and engineering fundamentals
2. Ability to analyze electrostatic and magnetostatic problems through first principles of mathematics and electromagnetic theory
3. Ability to analyze transmission line problems through first principles of electromagnetic theory and engineering reasoning

EMJ32204 MESIN ELEKTRIK [ELECTRICAL MACHINES]

No of Credits: 4

Course Synopsis:

This course is designed for students who are new to the field of electrical machines. It introduces the fundamental concepts behind the operation of electrical machines, including the development of force, torque, induced voltage and current. The course also lays the foundation for related areas such as electromagnetics, power electronics, control systems, modelling and electrical drives. Overall, it provide students with a comprehensive understanding on the role and application of electrical machines in modern engineering systems.

Course Outcomes:

1. Ability to analyze the operation principles and performance characteristics of electrical machines
2. Ability to evaluate test results and performance data of electrical machines using standard methods and circuit models
3. Ability to determine appropriate electrical machines for industrial or energy applications based on performance criteria
4. Ability to apply appropriate simulation tools for electrical machine analysis

EMJ32403 KEJURUTERAAN SISTEM KAWALAN [CONTROL SYSTEMS ENGINEERING]

No of Credits: 3

Course Synopsis:

This is an introduction course to control systems engineering. Students will be exposed to the mathematical modelling for electrical systems using block diagram, transfer functions, and signal-flow graphs. They will conduct system performance analysis in time and frequency domain. The course also covers system compensation design using graphical methods. This also includes a mini project/assignment for the system analysis and controller design.

Course Outcomes:

1. Ability to analyze complex engineering problem by employing appropriate control solutions.
2. Ability to design solutions for complex engineering problems/ design systems / components or processes to solve control system problems.
3. Ability to construct solutions for control system problem using appropriate simulation tool.

EMJ33504 ELEKTRONIK KUASA [POWER ELECTRONICS]

No of Credits: 4

Course Synopsis:

This course introduces power electronics as a multidisciplinary application orientated technology emphasising on the main criterion of power electronic concept and devices. Power electronic devices which include circuit topologies, semiconductor switches and protection circuits are introduced to grasp the understanding of this course. Following, topologies of AC-DC, AC-AC, DC-DC and DC-AC converters, including operational features, waveform analysis and performances are introduced and developed from theoretical followed by laboratory works.

Course Outcomes:

1. Ability to analyze power electronic converter topologies, operations and circuits protection.
2. Ability to design power electronic converter system.
3. Ability to evaluate power electronic converter topologies and performances through theoretical and simulation.

EMJ33103 ANALISA SISTEM KUASA [POWER SYSTEM ANALYSIS]

No of Credits: 3

Course Synopsis:

This course covers four significant disciplines in power system analysis. The first section introduces the power system, problems in power system, single line diagram representation of a power system and the use of the per-unit system on power system's component calculation. The second section includes the calculation of bus admittance to solve power flow problems using the Gauss-Seidel method, Newton-Raphson method and Fast-Decoupled method. The third section incorporates the construction of the bus impedance matrix to solve the symmetrical and asymmetrical fault. The last section is designed to expose the student to solving engineering problems related to power system stability.

Course Outcomes:

1. Ability to analyze load flow analysis in power system.
2. Ability to analyze the symmetrical and unsymmetrical fault in the power system network.
3. Ability to design a solution in solving power system stability.

EMJ33303 PENGGUNAAN TENAGA ELEKTRIK [ELECTRICAL ENERGY UTILIZATION]

No of Credits: 3

Course Synopsis:

This course intends to give students fair knowledge of the electrical tariffs, electrical energy calculation, energy audit and energy management. This course also introduces students to the energy efficiency and conservation in order to reduce energy costs and promote economic and environmental sustainability. At the end of the course, the students are expected to be able to solve engineering problems related to electrical energy utilization.

Course Outcomes:

1. Ability to analyze solutions related to efficient electrical energy utilization and energy management.
2. Ability to communicate effectively on energy saving design solution based on electrical energy audit through writing/oral presentation.
3. Ability to evaluate the energy saving solution based on electrical energy audit with consideration of sustainability and environmental issues.

EMJ33404 REKA BENTUK PEMASANGAN ELEKTRIK 1 [ELECTRICAL INSTALLATION DESIGN 1]

No of Credits: 4

Course Synopsis:

This course is designed to provide electrical engineers with the application skills needed in modern electrical engineering practice. This course uses a combination of theory and real project to demonstrate and reinforce the principles. A project plan with milestones shall be made, and the student shall continuously report progress/assignment and results. The project/assignments are based on actual installations and projects.

Course Outcomes:

1. Ability to design solution to the electrical installation system that comply with the standard.
2. Ability to relate any society, the economy, sustainability, health and safety, legal frameworks, and the environmental issues that are relevant to electrical installation design.
3. Ability to function effectively within a group in completing an engineering project.
4. Ability to communicate effectively in explaining an engineering project through electrical installation design.
5. Ability to integrate engineering management principles and economic decision-making in providing solution to the electrical installation systems.

EMJ33603 SISTEM TENAGA BOLEH BAHARU [RENEWABLE ENERGY SYSTEM]

No of Credits: 3

Course Synopsis:

This course introduces renewable energy technologies including solar, wind, hydro, biomass, biogas, and fuel cells. Students will learn to design energy conversion systems, perform economic analysis, and evaluate system performance for sustainable and cost-effective energy solutions aligned with SDG 7.

Course Outcomes:

1. Ability to design the conversion of solar photovoltaic, wind, hydro, biomass, biogas and fuel cell to electrical power.
2. Ability to design the energy system of solar photovoltaic, energy from wind, hydro, biomass, biogas and fuel cell for economic analysis.
3. Ability to evaluate the energy conversion of solar photovoltaic, wind, hydro, biomass, biogas, and fuel cell for system performance.

EMJ30105 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]

No of Credits: 5

Course Synopsis:

This course exposes students to a company's technical functions, organizational structure and operation such as departmental function, work procedure, safety procedure, communication, technical skills and project management. The students will be able to apply knowledge learned in the university, gain working experience and improve related skills for their future profession.

Course Outcomes:

1. Ability to demonstrate technical knowledge and practical skills.
2. Ability to adapt to health, safety, legal and cultural requirements in working environment.
3. Ability to execute tasks with professional ethics and responsibilities.
4. Ability to work independently, interact with co-workers and work in a team.
5. Ability to communicate effectively on the complex engineering activities performed in training.
6. Ability to acquire new knowledge independently, embrace life-long learning, and stay updated with emerging technologies.

EMJ40002 PROJEK TAHUN AKHIR 1 [FINAL YEAR PROJECT 1]

No of Credits: 2

Course Synopsis:

This course is designed to introduce an investigative for a small-scale research-based project to solve engineering problems. Students must identify the problems, develop techniques for information gathering, conduct a literature review and select proper methodology. In addition, students must deliver individual analysis and judgement and utilise appropriate modern technology/tools to conduct the research and be assessed independently. Students will have to prepare a written progress report and oral presentations using computers and multimedia technology at the end of the semester.

Course Outcomes:

1. Ability to analyze the engineering problems by applying relevant engineering principles and theories.
2. Ability to design the appropriate research methodology to solve the engineering problems.
3. Ability to evaluate engineering problems through investigation and data interpretation.
4. Ability to communicate effectively on engineering problem solutions through report and presentation.
5. Ability to review literature research through independent lifelong learning in solving engineering problems.

EMJ42202 REKA BENTUK PEMASANGAN ELEKTRIK 2 [ELECTRICAL INSTALLATION DESIGN 2]

No of Credits: 2

Course Synopsis:

This course is designed to provide electrical engineers with the application skills needed in modern electrical engineering practice. This course is continuing from subject Electrical Installation Design 1 (EMJ33404) where the combination of theory and real project to demonstrate and reinforce the principles. A project plan with milestones shall be made, and the student shall continuously report progress/assignment and results. The project/assignments are based on actual installations and projects.

Course Outcomes:

1. Ability to relate any society, the economy, sustainability, health and safety,

- legal frameworks, and the environmental issues that are relevant to the energy management aspect of the electrical installation design.
2. Ability to integrate ethical principles in completing an engineering project.
3. Ability to function effectively within a group in completing an engineering project.
4. Ability to communicate effectively in explaining an engineering project through electrical installation design.
5. Ability to integrate project management principles and economic decision-making in providing solution to the electrical installation systems.

EMJ42003 KEJURUTERAAN VOLTAN TINGGI [HIGH VOLTAGE ENGINEERING]

No of Credits: 3

Course Synopsis:

This course will introduce the students about insulating materials and their applications, breakdown phenomena in insulating material such as solids, liquids, and gases. The course will also cover generation and measurement of high DC, AC, and impulse voltages and currents, overvoltage phenomena, high voltage testing techniques of power apparatus and equipment.

Course Outcomes:

1. Ability to analyze various breakdown mechanisms and applications of gaseous, liquid and solid dielectrics.
2. Ability to design high voltage generation and measurement techniques for AC, DC and impulse voltages.
3. Ability to analyze overvoltage phenomena in power system, high voltage testing methods for electrical apparatus and non-destructive testing of materials.

EMJ41003 PENGURUSAN UNTUK JURUTERA [MANAGEMENT FOR ENGINEERS]

No of Credits: 3

Course Synopsis:

This course aims to teach students how to apply project management skills when undertaking engineering projects and to provide basic tools of engineering economy to enable students to carry out professional-quality economic evaluations. At the end of the course, students will be able to identify and discuss issues and challenges faced by engineers relating to project management in current economic scenarios. In addition, the course emphasizes the ability to apply ethical principles and evaluate professional ethics related to engineering management and economic decision-making, ensuring that students consider not only technical and financial aspects but also the ethical implications of their professional actions.

Course Outcomes:

1. Ability to integrate principles of engineering management to engineering project
2. Ability to integrate economic decision - making principles to engineering project and business venture.
3. Ability to communicate effectively on project management and engineering economics tools in solving engineering problems through technical report and presentation.
4. Ability to relate professional ethics in engineering management and economic decisions.

EMJ41102 JURUTERA PROFESIONAL [PROFESSIONAL ENGINEERS]

No of Credits: 2

Course Synopsis:

This course introduces students to the principles of professional ethics, sustainable development, occupational safety and health (OSH) and legal frameworks within the context of engineering practice. It emphasizes the integration of ethical conduct and established engineering norms in addressing complex engineering issues and challenges. Students will explore the societal and environmental implications of engineering decisions, with a focus on sustainable development goals. Additionally, the course equips students with the knowledge to assess workplace hazards, implement risk management strategies, and apply relevant OSH and legal frameworks on engineering issues.

Course Outcomes:

1. Ability to integrate professional ethics and norms of engineering practice in addressing engineering related issues and challenges.
2. Ability to integrate sustainable development impact of engineering practice in societal and environmental context.
3. Ability to propose assessment on hazards, risk management, occupational safety & health (OSH) and legal frameworks on engineering issues.

EMJ40004 PROJEK TAHUN AKHIR 2 [FINAL YEAR PROJECT 2]

No of Credits: 4

Course Synopsis:

This course is designed to introduce an investigative research-based project to solve engineering problems. Students must identify problems, develop techniques for information gathering, conduct literature review and select proper methodology. In addition, students must deliver individual analysis and judgement and utilise appropriate modern technology/tools to conduct the research and be assessed independently. Students will prepare and have written and oral presentations using computers and multimedia technology at the end of the semester.

Course Outcomes:

1. To analyze the engineering problem by applying relevant engineering principles and theories.
2. Ability to design the appropriate research methodology to solve engineering problems.
3. Ability to evaluate engineering problems through investigation and data interpretation.
4. Ability to demonstrate proficient and accurate use of appropriate engineering tools in solving engineering problems.
5. Ability to communicate effectively on engineering problem solving through report and presentation.
6. Ability to review literature research through independent lifelong learning in solving engineering problems.

EMJ43003 PEMACU ELEKTRIK [ELECTRICAL DRIVES]

No of Credits: 3

Course Synopsis:

This course purposes to equip students with the knowledge of DC and AC electrical drive systems which are commonly used in industries. The course covers the basic components of electrical drive systems and the speed control of the drive systems. The electrical braking and dynamics of the drive systems will also be introduced.

Course Outcomes:

1. Ability to evaluate a suitable drive solution for DC motor
2. Ability to evaluate a suitable drive solution for an AC motor.
3. Ability to analyse suitable electrical braking strategy and dynamic model for DC and AC electrical drive systems.
4. Ability to apply appropriate simulation tools for electrical drive systems.

EMJ44103 OPERASI SISTEM KUASA DAN KAWALAN [POWER SYSTEM OPERATION AND CONTROL]

No of Credits: 3

Course Synopsis:

This course aims to provide further understanding of power system operation and control. It mainly focuses on various aspects in the operation of power systems such as energy source and transfer, power plant operation and characteristics, optimal dispatch of generation, unit commitment, power system control and interconnected power systems.

Course Outcomes:

1. Ability to analyze the fundamental and operation of energy generation, power system behavior and economics of generating costs.
2. Ability to evaluate the optimal dispatch of power generation and unit commitment in thermal power plants.
3. Ability to communicate effectively on communication in Power Systems through technical reports and presentations.
4. Ability to design power system control of the power system network and the interconnected power system operation.

EMJ44203 REKABENTUK MESIN ELEKTRIK [ELECTRICAL MACHINE DESIGN]

No of Credits: 3

Course Synopsis:

This course covers the importance of magnetic materials employed in various electric machines and the fundamental of magnetic circuit. The design principle of the static electric machine, i.e. transformer, is included, and the performance of transformer is analyzed. In addition, this course consists of the fundamental design of rotating electric machines, e.g. induction machine and permanent magnet synchronous machine. Laboratory sessions explore the characteristics and performance of electric machines, reinforcing theoretical concepts. This course also comprises the heating and cooling methods in electric machines. Additionally, the design principle, simulation, performance prediction, and evaluation of electric machine using Finite Element Method (FEM) are encompassed.

Course Outcomes:

1. Ability to analyse magnetic materials and magnetic circuits for electrical machine.
2. Ability to design the transformer with cooling system and electrical machine as well as evaluate its performance.
3. Ability to design the electrical machines and its performances through investigation to provide valid conclusions.
4. Ability to communicate effectively the design principle of electrical machine in the form of presentation.

EMJ44503 KAWALAN ELEKTRONIK INDUSTRI [INDUSTRIAL ELECTRONIC CONTROL]

No of Credits: 3

Course Synopsis:

This course introduces students to the fundamental concepts and technologies used in modern industrial control and automation systems. It covers a wide range of topics, including an overview of industrial control and its applications, interfacing devices and circuits for sensors and actuators, the characteristics and operation of typical controllers, the working principles of servo and stepper motors, the essentials of process control and instrumentation, and the basics of programmable controllers (PLCs), along with other related topics and emerging trends. Through this course, students will gain both theoretical knowledge and practical insight needed to design and implement effective automated control systems.

Course Outcomes:

1. Ability to analyze the principles of industrial electronic control, devices, and circuits used in industrial automated systems.
2. Ability to evaluate the suitability and performance of various types of controllers for industrial electronic control applications.
3. Ability to design effective PLC-based solutions for industrial automation applications.

EMJ44603 REKABENTUK PENCAWANG [SUBSTATION DESIGN]

No of Credits: 3

Course Synopsis:

This course aims to introduce the student to the fundamentals of substation design which include the classifications, important equipment and their sizing. This course also covers the design of protection system of a substation that follows the industrial standard which encompasses the grounding grid system, protection relay as well as the lightning and insulation coordination. Towards the end of the course, student will also learn about substation auxiliary power supply, substation setting and equipment sizing as well as equipment testing and commissioning.

Course Outcomes:

1. Ability to evaluate the fundamentals of substation design.
2. Ability to design the substation busbar, grounding grid and protection system of substation.
3. Ability to evaluate the components of substation through investigation.

EMJ44803 PERLINDUNGAN SISTEM KUASA [POWER SYSTEM PROTECTION]

No of Credits: 3

Course Synopsis:

This course offers an advanced understanding of power system protection, focusing on its purpose, techniques, protection schemes, relays, and breakers. It begins with an introduction to the fundamentals of power system protection and progresses through key topics such as protection devices and control systems, core protection concepts, transmission line protection, and apparatus protection. Students will gain in-depth knowledge of protection strategies and their practical applications in real-world scenarios.

Course Outcomes:

1. Ability to evaluate knowledge of the protective devices and protective controls.
2. Ability to evaluate the transmission and the apparatus protection.
3. Ability to evaluate the components of protections based on the protection concepts through investigation.

EMJ44903 BEKALAN KUASA MOD TERSUIS [SWITCHED MODE POWER SUPPLY]

No of Credits: 3

Course Synopsis:

This course covers the analysis and design of DC to DC power converters with a focus on topologies, performance characteristics, and thermal management. Students will explore various converter types including buck, boost, buck boost, SEPIC, Cuk, forward, and flyback converters in both continuous and discontinuous conduction modes. The course emphasizes efficiency, component selection using datasheets, and the impact of parasitic elements and switching parameters. It also introduces thermal design considerations such as heat dissipation and cooling techniques essential for reliable converter operation in practical applications.

Course Outcomes:

1. Ability to evaluate the modulation techniques, waveforms, and effects of related parameters on switch-mode power supplies.
2. Ability to design solutions for complex engineering problems in switch mode power supplies
3. Ability to design thermal management solutions for switch mode power supplies.

EMJ45104 ANALISIS SISTEM KUASA DAN KAWALAN LANJUTAN [ADVANCED POWER SYSTEM ANALYSIS AND CONTROL]

No of Credits: 4

Course Synopsis:

This is an advanced course in power systems engineering, designed to provide a student with the knowledge of steady-state analysis in power system operation. Students will acquire a basic understanding of the theories and methodologies involved. The approach is designed to develop students thinking process, enabling them to reach a sound understanding of a broad range of topics related to an electrical power system, particularly with the aid of computing software, and motivating their interest in the electrical power industry. Topics covered include: using system modeling for large-scale power networks; network admittance and impedance matrix formation; power flow theory and analysis; symmetrical component modeling; balanced and unbalanced fault analysis; power system control, and stability studies.

Course Outcomes:

1. Ability to evaluate different load flow methodologies in a power system network
2. Ability to evaluate various faults in a power system network
3. Ability to evaluate a problem pertaining to the stability of a power system
4. Ability to evaluate power system control schemes for addressing practical issues in a power system network.

EMJ45204 PERLINDUNGAN DAN KEBOLEHPERCAYAAN SISTEM KUASA [POWER SYSTEM PROTECTION AND RELIABILITY]

No of Credits: 4

Course Synopsis:

This course provides an advanced understanding of the principles and applications of power system protection. Key topics include the purpose of protection systems, protection techniques and schemes, relay operations, and the reliability of protection mechanisms. The curriculum explores essential concepts such as protection devices and control systems, transmission line protection, and apparatus protection. In addition to lectures, students will undertake a practical project involving computer-based simulations. This hands-on experience reinforces theoretical knowledge and enhances students' ability to design and evaluate reliable protection strategies in real-world power systems. Together, the lectures and project offer a comprehensive exploration of both the

theory and practice of power system protection.

Course Outcomes:

1. Ability to evaluate the protective devices and controls using the protection concepts.
2. Ability to evaluate the transmission and apparatus protection, generation and other system aspects.
3. Ability to design the suitable protection for overcoming power system protection issues.

EMJ45303 ELEKTRONIK KUASA LANJUTAN [ADVANCED POWER ELECTRONICS]

No of Credits: 3

Course Synopsis:

This course expands power electronics as a multidisciplinary application orientated technology emphasising on the main criterion of power electronic concept and devices. Power electronic devices which include circuit topologies and semiconductor switches are explained to grasp the understanding of this course. Following, topologies of AC-DC, DC-DC, DC-AC and AC-AC converters, including operational features, waveform analysis and performances are further discussed in this course.

Course Outcomes:

1. Ability to evaluate the operation of power electronic converters.
2. Ability to design power electronic converter systems.
3. Ability to investigate the performance of power electronic converters through theoretical and simulation.

EMJ11001 PENGENALAN KEPADA KEJURUTERAAN ELEKTRIK [INTRODUCTION TO ELECTRICAL ENGINEERING]

No of Credits: 1

Course Synopsis:

This course introduces students to the fundamental principles and practices of the engineering profession, with a specific focus on electrical engineering. It provides an overview of key engineering disciplines, the functions and significance of professional bodies, and the ethical and professional responsibilities expected of engineers.

Course Outcomes:

1. Ability to apply knowledge related to fundamental principles and practices of the engineering profession relevant to the roles and career pathways of an electrical engineer.
2. Ability to assess ethics and responsible of professional engineer.

EMJ11101 PENGENALAN KEPADA KECERDASAN BUATAN [INTRODUCTION TO ARTIFICIAL INTELLIGENCE]

No of Credits: 1

Course Synopsis:

This course provides students with a foundational understanding of Artificial Intelligence (AI), emphasising its core concepts, ethical considerations, and wide-ranging applications in engineering. Students will explore essential AI topics such as machine learning, intelligent systems, and data-driven decision-making.

To ensure practical and industry-relevant learning, students are required to complete selected micro-credential courses aligned with the course outcomes. These micro-credentials provide focused training in key areas, including AI ethics, AI language models, and effective prompting skills, equipping students with both theoretical knowledge and applied competence.

By engaging with micro-credential platforms, students will gain hands-on experience and digital certification that enhances their future employability. The course also cultivates ethical awareness in AI deployment, addressing important topics such as fairness, transparency, and accountability. Upon completion, students will be prepared to critically apply AI tools and principles to solve engineering problems in a responsible and innovative manner.

Course Outcomes:

1. Ability to explain the fundamental concepts, ethical implications, and applications of Artificial Intelligence (AI) through independent and life-long learning.
2. Ability to apply foundational knowledge of Generative AI (GenAI) while engaging in independent learning.

EMJ10003 PENGATURCARAAN KOMPUTER [COMPUTER PROGRAMMING]

No of Credits: 3

Course Synopsis:

This course is designed to introduce the fundamentals of Computer Programming using high level language, C Language. It provides an introduction to the principles of procedural programming, data types, control structures, data structures and functions, data representation on the machine level. The main objective of this course is to prepare the students with the ability of problem solving with programming, familiarize with the programming tools such as organization chart, flowchart and pseudo code and then to implement them by developing C program applied to engineering problem.

Course Outcomes:

1. Ability to design solutions for complex engineering related problems and systems by using computer programming techniques.
2. Ability to apply GNU/Linux for compiling, debugging and executing computer program.

EMJ16103 TEORI LITAR ELEKTRIK [ELECTRIC CIRCUIT THEORY]

No of Credits: 3

Course Synopsis:

This course provide the fundamentals of electrical elements, basic laws such as Kirchoff's law, Nodal analysis, Thevenin's law and also circuit theorem (i.e. mesh analysis, nodal analysis and superposition theorem) to analyze and design the DC and AC circuits to meet the requirements of given applications.

Course Outcomes:

1. Ability to apply knowledge of mathematics equations to solve problems in electric circuits.
2. Ability to solve DC and AC problems using analytical method and circuit theorem.
3. Ability to design and evaluate basic circuits to meet specifications.

EMJ16203 STATIK KEJURUTERAAN [ENGINEERING STATICS]

No of Credits: 3

Course Synopsis:

The objective of the course is to investigate problems related to mechanics concepts in static conditions. This course deals with balanced force systems applied to rigid bodies that are at rest. Methods to determine support reactions and relationships between internal and external forces, as well as internal force distribution are introduced in this course.

Course Outcomes:

1. Ability to apply fundamental static theory in engineering problems.
2. Ability to evaluate static problems using the principles of equilibrium.

EMJ16302 PRINSIP-PRINSIP BAHAN KEJURUTERAAN [PRINCIPLE OF ENGINEERING MATERIALS]

No of Credits: 2

Course Synopsis:

This course introduces students to the principles of engineering materials which treat the atomic bonding, crystal structures, imperfections, mechanical properties, strengthening mechanism in metallic materials and their alloys.

Besides, the course also explore the structural properties of metal alloys, ceramics, polymers, composites, electrical, magnetic and optical properties. At the end of this course, the student will be able to analyze the structural and physical characteristic of the engineering materials as well as evaluate the properties and mechanism that affects the behavior of materials for various engineering applications.

Course Outcomes:

1. Ability to compare and categorize types of materials, bonding and crystal structure.
2. Ability to evaluate the properties and mechanism of engineering materials that affecting the behaviour of materials and its microstructure.
3. Ability to analyze the structural characteristic in metal alloys, ceramics, polymers, composites and properties behaviour of electrical and magnetic materials.

EMJ16403 AMALAN-AMALAN KEJURUTERAAN MEKATRONIK [MECHATRONIC ENGINEERING PRACTICES]

No of Credits: 3

Course Synopsis:

The purpose of this course is to provide the 1st year student with basic skill and practice in multi discipline for the used of tools, machine and instrumentations. Students will be exposed to the basic skills of electrical wiring and assembly of electronic components, use of measuring equipment and instrumentation. In addition, mechanical workshops provide exposure to machining and welding processes. The basics of microcontroller and PLC applications will prepare students for courses related to embedded systems and automation.

Course Outcomes:

1. Ability to understand and comprehends the basic skills and standard practiced of electrical wiring installation and electronic circuit assembly.
2. Ability to understand and comprehends the basic programming techniques for microcontroller & PLC and simulation software
3. Ability to understand and comprehends the basic skills and standard practiced of mechanical machine and equipment.
4. Ability to understand and practice the safety procedure in operating the electrical measurement equipment and mechanical machine.

EMJ17103 ELEKTRONIK ANALOG [ANALOGUE ELECTRONICS]

No of Credits: 3

Course Synopsis:

This course is designed to introduce basic concepts of semiconductor electronics and its applications. The course helps students to apply analogue theories for testing, designing and developing of electronic circuits.

Course Outcomes:

1. Ability to demonstrate characteristics of semiconductor devices.
2. Ability to analyze analogue circuits by using semiconductor devices.
3. Ability to evaluate analogue circuits for specific applications.

EMJ17303 LUKISAN TERBANTU KOMPUTER [COMPUTER AIDED DRAWING]

No of Credits: 3

Course Synopsis:

This course provides an introduction into Mechanical and Electronic Engineering drawing through the use of computer aided design software. The first part of the course covers Mechanical Drawing which involves sketching techniques, multi-view projections, pictorial, dimensioning, designing parts, assembling and structural analysis. The second part of the course concerns on Electronic Drawing which includes the processes of schematic drawings, designing PCB and testing the circuit in simulation. The use of Computer Aided Design software would enhance the students' understanding on the design process as well as allowing them to practice the knowledge for the forthcoming projects

Course Outcomes:

1. Ability to design 2D and 3D drawing using computer aided design software and perform structural analysis to models
2. Ability to design schematic diagram and printed circuit board for an electronic circuit using computer aided design software
3. Ability to construct the mechanical and electronic drawing prototype.

EMJ17402 PRINSIP-PRINSIP KEJURUTERAAN TERMOFLUID [PRINCIPLE OF ENGINEERING THERMOFLUIDS]

No of Credits: 2

Course Synopsis:

This course covers the fundamental of thermodynamics, fluid mechanics, and also their applications in the engineering field. In thermodynamics, fundamental principles and laws of thermodynamics and its general analysis will be covered. For fluid mechanics, attention will be given to the fundamental principles of fluid mechanics, fluid statics and fluid dynamics together with their analysis.

Course Outcomes:

1. Ability to apply basic law and principles of thermodynamics and fluid mechanics.
2. Ability to analyse theoretical concepts of thermodynamics and fluid mechanics in specific applications.

EMJ20002 SANGKUTAN INDUSTRI [INDUSTRIAL ATTACHMENT]

No of Credits: 2 (optional)

Course Synopsis:

This course exposes the Bachelor of Engineering students with industrial experience, in addition to the compulsory industrial training. This course provides students with significant skills and practical knowledge, motivating them to become professional and successful engineers. The student will be exposed to the company's technical functions, organizational structures and operations, such as departmental function, work procedure, safety procedure, communication, technical skills and project management. The student will gain theoretical and practical knowledge during the industrial attachment period. The attachment period can be as minimum as four weeks.

Course Outcomes:

1. Ability to adapt to health, safety, legal, cultural and sustainable requirements in working environment.
2. Ability to execute tasks with professional ethics and responsibilities.
3. Ability to work independently, interact with co-workers and work in a team.
4. Ability to communicate effectively on the complex engineering activities performed in training.

EMJ26103 SYARAT DAN SISTEM LELURUS [SIGNALS & LINEAR SYSTEMS]

No of Credits: 3

Course Synopsis:

This course provides the fundamentals of signals and their transformation techniques. The signal transformation methods are based on two domains (time and frequency), including the convolution integral, Laplace transform, Fourier series, Fourier transform, and Z-transform. In addition, the students are also exposed to the linear system and its characteristics. Then, the students will analyse and formulate the signal and linear systems and evaluate their performance. In the end, an introduction to digital signal processing is included to extend the student's knowledge of the signal and linear system applications.

Course Outcomes:

1. Ability to apply knowledge of signal, linear systems, and the concept of digital signal processing to solve engineering problems.
2. Ability to analyse and evaluate the performance of the signal and linear systems using time and frequency domain techniques.
3. Ability to formulate complex engineering problems using both time-domain and frequency-domain techniques.

EMJ26203 LITAR LOGIK DIGIT [DIGITAL LOGIC CIRCUIT]

No of Credits: 3

Course Synopsis:

This course provides the fundamental theory of digital logic circuits. It introduces the basic principle of digital electronics which covers the numbering systems, codes, logic gates, Boolean Algebra and logic simplification. The course also introduces logic design, particularly in combinational logic functions, bistable memory devices, sequential circuits design, programmable logic and memory units.

Course Outcomes:

1. Ability to describe and apply knowledge of the digital electronic components
2. Ability to analyse and evaluate digital logic circuits
3. Ability to design digital logic circuits to solve specific task

EMJ26303 INSTRUMENTASI DAN PENGUKURAN [INSTRUMENTATION & MEASUREMENTS]

No of Credits: 3

Course Synopsis:

This course introduces the knowledge of measurement and instrumentation with various transducers and sensors. This includes an overview of a general measurement system, errors and signal characteristics, various type of sensors and respective interfacing, with their application in measuring electronic signal, temperature, humidity, strain, displacement, velocity, acceleration, force, fluid flow, fluid velocity and fluid level.

Course Outcomes:

1. Ability to analyse error and statistical theory in a measurement.
2. Ability to analyse and evaluate interfacing concept between sensor, signal and computer obtained in a measurement.
3. Ability to apply suitable software for measurement related problems.

EMJ26403 DINAMIK KEJURUTERAAN [ENGINEERING DYNAMICS]

No of Credits: 3

Course Synopsis:

This course introduces the basic laws of motion involving kinematics and kinetics of a particle and rigid body. The concepts of force, energy, momentum, and impulse are reviewed for both particle and rigid body where several techniques are introduced to assist in the analysis of a mechanical system. At the end of the course, the students are expected to be able to solve engineering problems related to mechanisms and motions.

Course Outcomes:

1. Ability to apply basic principles of motion analysis related to law of motions and concept of mechanics
2. Ability to analyse basic principles of kinematics and kinetics of a particle involving force, work and impulse.
3. Ability to analyse and solve motion problems of planar kinematics and kinetics of a rigid body, involving force, work and impulse.

EMJ26503 KOMUNIKASI DATA & RANGKAIAN [DATA COMMUNICATION AND NETWORKING]

No of Credits: 3

Course Synopsis:

The objective of this course is to cover the fundamental concepts in data communication and networking, including OSI and TCP/IP models, data transmission methods, error-correcting techniques, and network protocols, and to investigate problems related to computer networks. Modern topics such as wireless communication, IoT, cloud computing, software-defined networks, and network security are also introduced in this course to boost student understanding of current state-of-the-art technologies.

Course Outcomes:

1. Ability to analyze networking scenarios to identify, troubleshoot, and resolve issues related to data communication protocols and networking performance.
2. Ability to evaluate the types of transmission methods and error correction techniques in communication systems as well as the network protocols in networking systems and their related apparatus.
3. Ability to design solutions for industrial communication and network technology by proposing suitable equipment, protocols, and security measures.

EMJ26703 REKA BENTUK JENTERA [DESIGN OF MACHINERY]

No of Credits: 3

Course Synopsis:

This course enables students to comprehend the design theories as well as machine elements that are necessary for the machine design processes. The course introduces the basic principles of design concept and design phases. It focuses mainly on the machine kinematics and dynamics which include the machine mechanism, velocity and acceleration analysis. The components of the machine design such as shafts, bearings, gear systems, power screws, belts, chains and cams are also discussed.

Course Outcomes:

1. Ability to apply the concepts of various machine elements and mechanisms for specific applications.
2. Ability to analyse position, velocity and acceleration of point in a linkage.
3. Ability to combine various machine elements for specific design of mechanism.

EMJ27103 TEORI MEDAN ELEKTROMAGNETIK [ELECTROMAGNETIC FIELD THEORY]

No of Credits: 3

Course Synopsis:

This course enables students to comprehend the design theories as well as machine elements that are necessary for the machine design processes. The course introduces the basic principles of design concept and design phases. It focuses mainly on the machine kinematics and dynamics which include the machine mechanism, velocity and acceleration analysis. The components of the machine design such as shafts, bearings, gear systems, power screws, belts, chains and cams are also discussed.

Course Outcomes:

1. Ability to apply the concepts of various machine elements and mechanisms for specific applications.
2. Ability to analyse position, velocity and acceleration of point in a linkage.
3. Ability to combine various machine elements for specific design of mechanism.

EMJ27204 SISTEM TERBENAM DAN PENGANTARAMUKA [EMBEDDED SYSTEM AND INTERFACING]

No of Credits: 4

Course Synopsis:

The aim of this course is to enable the students to learn the concepts and requirements, as well as design a self-contained embedded system. This includes the study on the characteristics of embedded systems, hardware and software development, single chip microcontroller, programming techniques and developing an embedded system application.

Course Outcomes:

1. Ability to analyze and prepare a structured programming language for embedded system application.
2. Ability to construct and apply input output devices to embedded system for interfacing.
3. Ability to evaluate and develop a self-contained embedded system application.

EMJ27303 ELEKTRONIK KUASA [POWER ELECTRONICS]

No of Credits: 3

Course Synopsis:

This course introduces Power Electronics as a Multidisciplinary & Interdisciplinary Applications Orientated Technology emphasising the main criterion of energy efficiency. AC-DC, AC-AC, DC-DC and DC-AC converter performance, including waveform analysis, is developed from theory. This course also will give overview different types of power semiconductor devices and their switching characteristics and also covers the operation, characteristics and performance parameters of controlled rectifiers.

Course Outcomes:

1. Ability to describe power electronic systems operation, applications area and need for efficiency design
2. Ability to analyze different types of power semiconductor device
3. Ability to analyze and design different type of converter

EMJ36103 KEJURUTERAAN KAWALAN 1 [CONTROL ENGINEERING 1]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental aspects of control engineering. It covers topic of mathematical modelling of dynamical systems (electrical, mechanical and electromechanical systems), transfer function, analysis of first-order and second-order systems, transient response, steady-state errors, stability, root locus, frequency response analysis, Bode plot, PID and Lead/Lag compensators design.

Course Outcomes:

1. Ability to apply laws of physics for mathematical modeling of control systems.
2. Ability to analyse the performance of control systems in time and frequency domains.
3. Ability to design appropriate PID controller or lead/lag compensators for system performance improvement.

EMJ36203 PENGLIHATAN MESIN [MACHINE VISION]

No of Credits: 3

Course Synopsis:

This course is designed to introduce the concepts of machine vision and its application in the industries. It provides crucial knowledge on image acquisition, image and video interfacing, color processing and the cutting-edge methods in image processing such as image noise filtering, image segmentation and edge detection, morphological image processing, feature extraction and also the introduction to classification algorithms. The course also requires the students to comprehend the components of machine vision, which will lead to the ability to develop the design of machine vision systems for industrial application and related research topics.

Course Outcomes:

1. Ability to analyze and formulate the machine vision system to solve complex engineering problems
2. Ability to design a machine vision system for a specific engineering application.
3. Ability to apply appropriate image processing techniques to develop solutions for machine vision system.

EMJ36303 SISTEM KUASA BENDALIR [FLUID POWER SYSTEMS]

No of Credits: 3

Course Synopsis:

This course is designed to provide students with fundamentals of fluid power systems, components, and devices specific to industrial, commercial, and mobile power equipment applications such as pumps, valves, actuators, electrical controls, and troubleshooting techniques. It teaches the fundamentals of fluid power and provides details on the design and operation of hydraulic and pneumatic components, circuits, and systems. Students are expected to acquire knowledge of physical behavior of pneumatics and hydraulics control system, the pneumatics and hydraulics components and applications. Knowledge on theory acquired in lecture is also enhanced with a practical work conducted in laboratory.

Course Outcomes:

1. Ability to analyze and formulate the machine vision system to solve complex engineering problems
2. Ability to analyse and evaluate pneumatic, hydraulic, electro-pneumatic and electro-hydraulic systems for various applications.
3. Ability to select and apply appropriate simulation tools to develop pneumatic, hydraulic, electro-pneumatic and electro-hydraulic circuits.

EMJ36404 JENTERA ELEKTRIK DAN SISTEM KUASA [ELECTRICAL MACHINES & POWER SYSTEMS]

No of Credits: 4

Course Synopsis:

This course is intended to introduce to the Mechatronic students both theories and applications of: 1) Fundamentals, operating principles and performance analysis of Electromechanical drives, which consists of DC and AC machines and stepper motor, 2) Three phase circuit and industrial motor control and 3) Introduction to high voltage power system in electrical management systems, safety and utilization.

Course Outcomes:

1. Ability to apply knowledge of the concept and operating principle of particular electrical machines and power systems.
2. Ability to investigate and solve the system integration of electrical machines and power systems.
3. Ability to analyse and interpret data related to characteristic of electrical machines

EMJ37103 KEJURUTERAAN KAWALAN 2 [CONTROL ENGINEERING 2]

No of Credits: 3

Course Synopsis:

This course introduces the state-space in control engineering to the students. The chapter includes system modelling and analysis for dynamic systems such as RLC circuit, spring-mass-damper and inverted pendulum in state-space. Furthermore, state-space are also converting to different forms while focusing on the controller design: the pole-placement and observer design controller. Finally, the state-space modelling is also expanding to the digital systems with the introduction to sample-data and controller design with output's performance analysis.

Course Outcomes:

1. Ability to apply knowledge of the dynamic physical systems for continuous-time and digital into state-space form.
2. Ability to analyse and evaluate the system's response for a continuous-time and digital control system.
3. Ability to design appropriate controllers via state-space to meet the desired performance specifications for the continuous-time and digital system.
4. Ability to select and apply appropriate techniques to produce engineering solutions.

EMJ37203 REKABENTUK SISTEM MEKATRONIK 1 [MECHATRONIC SYSTEMS DESIGN 1]

No of Credits: 3

Course Synopsis:

This course focuses on the methodologies, processes and elements for the design an integrated mechatronic system. It covers the philosophy of product system design including needs identification, conceptual generation and selection and embodiment design, for an optimum mechatronics system. It also reviews all elements of a mechatronic system and introduces the first part of the mechatronic system design project. This course will require students to work in a group to design a mechatronic system solving a problem based on a predefined theme. Students need to identify needs, develop design specifications, generate possible concept design. The conceptual design of the design project will be continued in EMJ47204 Mechatronic System Design 2.

Course Outcomes:

1. Ability to design solution for mechatronic system by using suitable engineering instruments with consideration of public health safety/ cultural/ societal and environmental.
2. Ability to conduct investigation and evaluate solution that meets customer needs.
3. Ability to function in a team for the successful delivery of design project

EMJ37303 SISTEM ROBOTIK [ROBOTIC SYSTEMS]

No of Credits: 3

Course Synopsis:

This course is designed to introduce various aspects of Robotics such as the Types of robots, Capabilities, Characteristics, Robot Control Systems and Software, Kinematic Analysis, Principles of Inverse kinematics, Robot Sensors and Drive mechanisms, Robot Work Cell design and various industrial applications.

Course Outcomes:

1. Ability to choose suitable robots, analyse robot object manipulations and schedule a robot work cell for maximum productivity in industrial applications.
2. Ability to choose and analyse suitable robot sensor for integration into a robot control system.
3. Ability to practice robotic systems using hardware and software applications.
4. Ability to communicate effectively on robotic programming solution through technical report and demonstration.

EMJ37603 SISTEM AUTOMASI [AUTOMATION SYSTEM]

No of Credits: 3

Course Synopsis:

The objective of this course is to impart knowledge about automation technologies. This course explores the integration of automation technology principles with assembly processes and systems, incorporating sensor, actuator, and motor technology as input/output components in automation technology. Additionally, it encompasses the utilization of automation technology and methodology in both hardware and software control. It addresses the challenges and concerns related to automation technology in areas like design, engineering analysis, planning, tooling, and manufacturing.

Course Outcomes:

1. Capability to conduct analyses on production system automation.
2. Capability to conduct evaluations and analyses of automation system components.
3. Capability to design and assess the automation system controller to ensure optimal functionality across a range of applications.

EMJ47002 PENGELUARAN DAN KAWALAN KUALITI [PRODUCTION AND QUALITY CONTROL]

No of Credits: 2

Course Synopsis:

This course introduces the concepts and practices of managing production and quality in contemporary organizations. It is designed to highlight the practical and applied techniques which can improve the organization's production and quality performances. Topics which will be covered in this course include production strategies, Just in Time production, continuous quality improvement, linear programming, statistical process control and Six Sigma concept.

Course Outcomes:

1. Ability to apply knowledge of production and quality control in operational management.
2. Ability to recommend and justify appropriate techniques for production and quality improvement.

EMJ47204 REKABENTUK SISTEM MEKATRONIK 2 [MECHATRONIC SYSTEMS DESIGN 2]

No of Credits: 4

Course Synopsis:

This course focuses on the design of an integrated mechatronic system and it is a continuation from Mechatronic System Design I. The students are expected to design a mechatronic system to solve real engineering problems on selected predefined scope, including economic and sustainability analysis, under the guidance of project supervisor

Course Outcomes:

1. Ability to design solution for mechatronic system by using suitable engineering instruments with consideration of public health safety/ cultural/ societal and environmental.
2. Ability to conduct investigation and evaluate solution that meets customer and financial needs.
3. Ability to apply ethical principles and evaluate issues and challenges related to engineering ethics.
4. Ability to communicate effectively via oral presentation and demonstration of the design solution.
5. Ability to function in a team for the successful delivery of design project

EMJ47303 KECERDIKAN BUATAN UNTUK KEJURUTERAAN MEKATRONIK [ARTIFICIAL INTELLIGENCE FOR MECHATRONIC ENGINEERING]

No of Credits: 3

Course Synopsis:

This course is designed to introduce the fundamentals of Artificial Intelligence (AI). It provides an introduction to definitions of human and artificial intelligence. The students will be introduced to Fuzzy systems, Evolutionary Computation and Artificial Neural Networks. The latter will be used as a fundamental to Deep Learning. At the end of this course students should comprehend the major techniques in AI and ability to build simple intelligent systems in Mechatronic Engineering applications.

Course Outcomes:

1. The knowledge of different AI techniques for engineering applications.
2. The ability to implement and analyse different AI techniques.
3. The ability to develop AI application in Mechatronic engineering

EMJ47402 APLIKASI SISTEM AUTOMASIK [AUTOMATION SYSTEM APPLICATION]

No of Credits: 2

Course Synopsis:

The objective of this course is to impart hand-on knowledge about automation system development for various applications. This course explores the automation system design and simulation using Automation Studio software by integration of automation technology principles with assembly processes and systems, incorporating sensor, actuator, and motor technology as input/output components in automatic sequence control. Additionally, it encompasses the utilization of PLC as main automation system controller and methodology in both hardware and software control interface. It addresses the challenges and concerns related to automation technology in areas like design, installation and engineering analysis.

Course Outcomes:

1. Capability to design and simulate pneumatic & hydraulic system application for automated sequential control.
2. Capability to design and apply the PLC programming and interface to ensure optimal functionality in automated system applications.
3. Capability to apply technologies related to PLC such as Human Machine Interface, Field Bus Communication and SCADA system.

EMJ47603 ROBOT TERGERAK AUTOMATIK [AUTONOMOUS MOBILE ROBOTS]

No of Credits: 3

Course Synopsis:

This course introduces the basic concepts of autonomous mobile robots which include the fundamentals of mobile robotics such as mechanical design, kinematics, perception, localization and planning. The course emphasizes wheeled mobile robotics and presents the recent technology on autonomous mobile robots and Automated Guided Vehicles (AGVs). At the end of the course, the students are expected to be able to construct and operate a basic autonomous mobile robot.

Course Outcomes:

1. Ability to apply basic concepts of mobile robotics such as locomotion, drive mechanisms and perception techniques.
2. Ability to solve kinematics and propose appropriate specifications for autonomous mobile robots.
3. Ability to construct and manipulate autonomous mobile robots.

EMJ47703 IOT DAN ANALITIK DATA [IOT & DATA ANALYTICS]

No of Credits: 3

Course Synopsis:

The course covers an introduction to the Internet-of-Things (IoT), IoT structures and its related environment including cloud platforms, data exploration and IoT data visualization. Furthermore, the students are introduced to data analysis within the IoT application environment such as statistic and probability theorem, hypothesis testing, regressions, dimensionality reduction and classification technique. At the end of the course, the students are expected to acquire new knowledge on IoT and data analytics and be able to apply the knowledge in real applications, particularly on the emerging IR4.0.

Course Outcomes:

1. Ability to apply knowledge of IoT structure and data analytics in engineering.
2. Ability to design IoT framework and evaluate the data structure within the designed IoT environment.
3. Ability to apply the appropriate framework to develop a functional IoT system.

EMJ47803 REKABENTUK KAWALAN LANJUTAN [ADVANCED CONTROL DESIGN]

No of Credits: 3

Course Synopsis:

The aim of this course is to introduce advanced controllers that can be used not only for linear but also nonlinear systems. Parameter estimation and an adaptive mechanism is used in self-tuning regulation and model reference adaptive control. The concept of choosing the most appropriate setting of the feedback controller is discussed in optimal control. Robustness issues in understanding control system operating conditions are also presented. At the end of the course, the students are expected to be able to solve engineering problems by using an adaptive, optimal, or robust control system.

Course Outcomes:

1. Ability to apply knowledge of nonlinear system, adaptive control systems and optimal control
2. Ability to identify and evaluate the suitability in choosing adaptive control systems and optimal control.
3. Ability to apply appropriate simulation tools for control engineering related problems.

EMJ48603 SISTEM PLC LANJUTAN [ADVANCED PLC SYSTEMS]

No of Credits: 3

Course Synopsis:

Programmable logic controllers (PLC) are the brains of complex automated production lines and process automation systems and must be properly programmed to ensure safe and reliable operation. This requires a strong familiarity with the specifics of the programming environment and languages. Controlled Development System or CoDeSys is a complete development environment for new generation of PLC. CoDeSys puts a simple approach to the powerful IEC language at the disposal of the PLC programmer. Through programming of PLC industrial application examples, students learn how to use of the editors and debugging functions based upon the proven development program environments of advanced programming languages. The student will be able establish communication between devices, program PLC routines in various languages, and transfer projects to a high-end PLC, HMI and motion control.

Course Outcomes:

1. Ability to interpret PLCs control algorithms using CoDesys programing software.
2. Ability to apply technologies related to PLCs, such as Human Machine Interface, motion control and Field Bus Communication.
3. Ability to apply advanced PLC methods in engineering problems.

EMJ48703 REKABENTUK SISTEM PINTAR [SMART SYSTEM DESIGN]

No of Credits: 3

Course Synopsis:

Smart Systems Design presents state-of-the-art technologies and available systems in the domains of smart systems and AI. The solutions from an augmented intelligence perspective show that these technologies can be used to benefit, instead of replacing humans by augmenting the information and actions of their daily lives. This course aims to introduce all smart systems which combining sensing, activation, and control functions to visualize and analyze situations and make decisions based on predictively or adaptively available data.

Course Outcomes:

1. Ability to comprehend the concepts of smart system design particularly in Mechatronic engineering application.
2. Ability to apprehend the system integration between smart devices and

instrumentations.

3. Ability to design a smart system framework particularly for Mechatronic engineering application

EMJ48803 PERMODELAN SISTEM IDENTIFIKASI [SYSTEM IDENTIFICATION MODELLING]

No of Credits: 3

Course Synopsis:

This course is an introduction to the alternative modelling using system identification and parameter estimation approach. It covers an introduction to system identification technique, acquiring and pre-processing data on parametric model estimation methods, parametric model estimation methods, partially known estimation methods, model estimation methods in closed loop systems, recursive model estimation methods, analyzing, validating, and converting models and system identification case study. This requires an in-depth understanding of control system engineering, modern control system and digital control system. The emphasis will be on the theoretical basis as well as practical implementations. Key components studied in details are time response analysis, frequency response analysis, correlation analysis, power spectrum density analysis, model structure, parametric model, parameter estimation method, test signals and model validation methods.

Course Outcomes:

1. Ability to explain the fundamental basic of system identification
2. Ability to comprehend the fundamental basic of parameter estimation
3. Ability to apply both fundamental above in real case study.

UR6522002

Bachelor of Electrical Engineering Technology (Industrial Power) with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Engineering technology graduates engaged in the field of electrical engineering technology as demonstrated through career advancement.

PEO 2

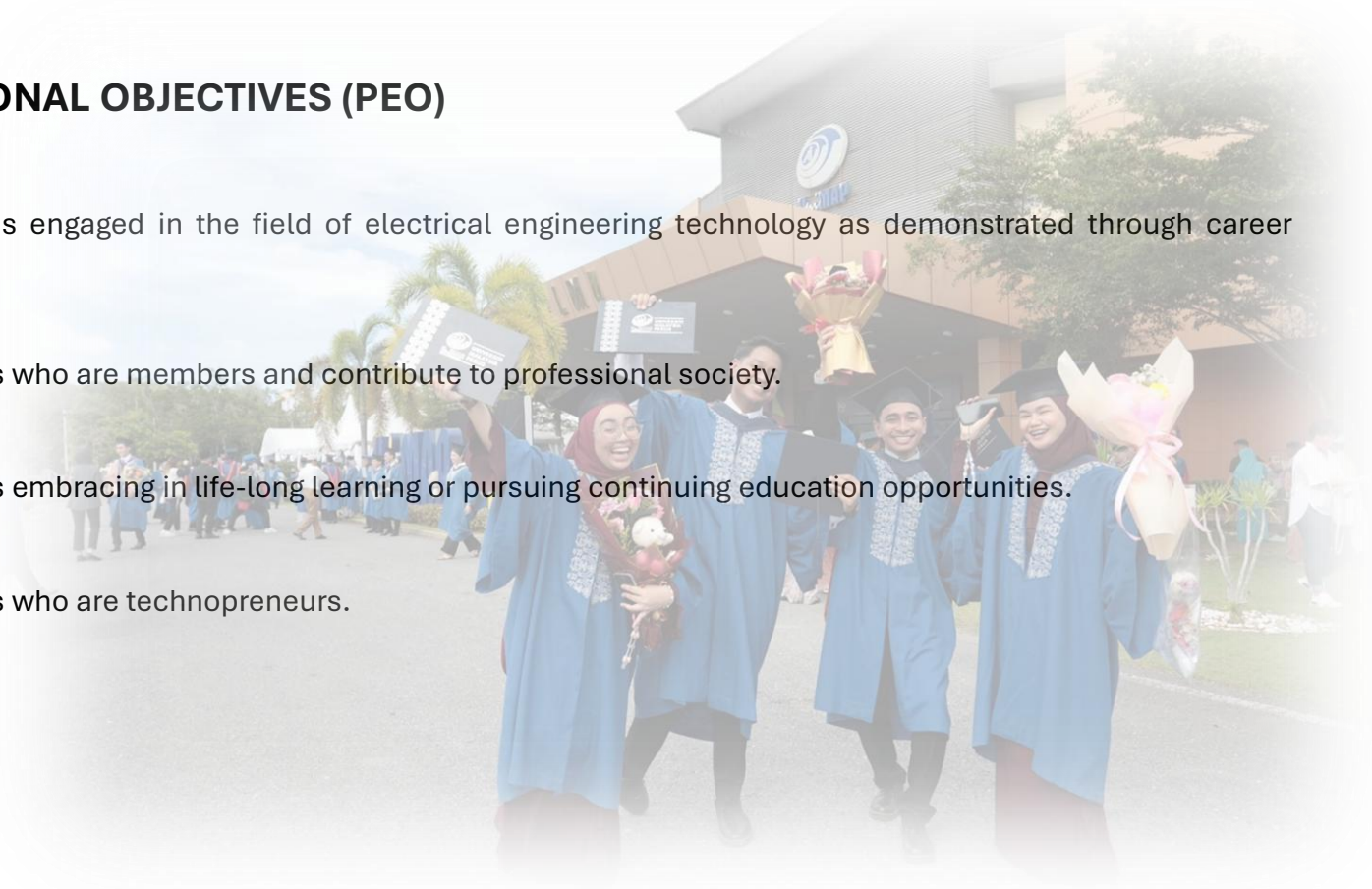
Engineering technology graduates who are members and contribute to professional society.

PEO 3

Engineering technology graduates embracing in life-long learning or pursuing continuing education opportunities.

PEO 4

Engineering technology graduates who are technopreneurs.



PROGRAMME OUTCOMES (PO)

PO 1

Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals and an engineering specialization to defined and applied engineering procedures, processes, systems or methodologies.

PO 2

Problem Analysis: Identify, formulate, research literature and analyse broadly-defined engineering problems reaching substantiated conclusions using analytical tools appropriate to their discipline or area of specialisation with considerations for sustainable development.

PO 3

Design/Development of Solutions: Design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO 4

Investigation: Conduct investigations of broadly-defined engineering problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions.

PO 5

Tool Usage: Select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to broadly-defined engineering problems.

PO 6

The Engineering Technologist and the World: Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving broadly-defined engineering problems.

PO 7

Ethics: Understand and commit to professional ethics and norms of engineering technology practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO 8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings.

PO 9

Communications: Communicate effectively and inclusively on broadly-defined engineering activities with the engineering community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO 10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making to one's own work, as a member and leader in a team and to manage projects in multidisciplinary environments.

PO 11

Lifelong Learning: Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of new specialist technologies.

PO 12

Personal and Entrepreneurial Skills: Demonstrate ability to engage effectively in self-improvement initiatives for career, professional or educational goals and engage in entrepreneurial activities.

CURRICULUM STRUCTURE
UR6522002 BACHELOR OF ELECTRICAL ENGINEERING TECHNOLOGY (INDUSTRIAL POWER) WITH HONOURS INTAKE 2025/2026

YEAR	FIRST		SECOND		THIRD		FOURTH	
SEMESTER	1	2	3	4	5	6	7	8
DISCIPLINE CORE & ELECTIVE COURSES (116 CREDITS)	EMK11003 Computer Programming	EMK11203 Electric Circuit Theory 1	EMK21203 Electric Circuit Theory 2	EMK21403 Electrical Machines Technology 1	EMK32003 Electrical Machines Technology 2	EMK33404 Final Year Project I	EMK43006 Final Year Project II	EMK40112 Industrial Training
	EMK12003 Computer Aided Drawing	EMK11403 Digital Electronics	EMK21103 Measurement and Instrumentation	EMK21503 Microcontroller System	EMK32103 Electrical Installation	EMK32303 Renewable Energy System	EMK42003 Power System Protection & Switchgear	
	EMK10103 Engineering Skills 1	EMK11303 Electronics 1	EMK21303 Electronics 2	EMK21603 Power Electronics	EMK32703 Electrical Drive Technology	EMK31203 Programmable Logic Controller	Elective II/3	
	EMK11103 Engineering Science	EMK12103 Engineering Skills II	EMK22003 Control System Technology	EMK21703 Communication System	EMK32203 Electrical Power System	Elective I/3	Elective III/3	
				EMK21803 Signal and Systems	EMK32603 Electromagnetic Field Theory	EMK31303 Engineering Technology Management	EMK41003 Technologist in Society	
					EMK33504 Design Project			
COMMON CORE COURSES (9 CREDITS)	IMQ11103 Mathematics for Engineering Technology 1	IMQ11203 Mathematics for Engineering Technology 2	IMQ21303 Mathematics for Engineering Technology 3					
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMU13102 Appreciation of Ethics and Civilizations	SMB41002 University Malay Language ^[3]	SMB20102 English for General Communication ^[2]	SMU22402 Engineering Entrepreneurship		SMU12102 Integrity and Anti-Corruption ^[4]		
	SMU13002 Philosophy and Current Issues	SMZXX01 Co-curriculum 2	**SMB1XX02 Option Subject (Foreign Language)	SMB31202 English for Technical Communication				
	SMZXX01 Co-Curriculum 1							
TOTAL CREDITS (141 CREDITS)	20	18	17	19	19	18	18	12
AUDIT COURSES		SMB10102 Preparatory English ^[1]						

Elective I : EMK32403 Power Quality [Kualiti Kuasa] Elective A1, EMK32803 Electrical Substation Technology [Teknologi Elektrik Pencawang] Elective A2, EMK32903 Artificial Intelligence [Kecerdikan Buatan] Elective A3.

Elective II : EMK42503 Power Electronics and Applications [Elektronik Kuasa dan Aplikasi] Elective B1, EMK42603 Energy Storage Technology [Teknologi Penyimpanan Tenaga] Elective B2, EMK42203 Industrial Automation [Automasi Industri] Elective B3.

Elective III : EMK42303 Energy Efficiency and Management [Kecekapan Tenaga dan Pengurusan] Elective C1, EMK42403 High Voltage Technology [Teknologi Voltan Tinggi] Elective C2, EMK42703 Electric Vehicle Technology [Teknologi Kenderaan Elektrik] Elective C3.

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

UR6523006
Bachelor of Electrical Engineering Technology
(Robotic And Automation Technology) with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Engineering technology graduates engaged in the field of electrical engineering technology as demonstrated through career advancement.

PEO 2

Engineering technology graduates who are members and contribute to professional society.

PEO 3

Engineering technology graduates embracing in life-long learning or pursuing continuing education opportunities.

PEO 4

Engineering technology graduates who are technopreneurs.

PROGRAMME OUTCOMES (PO)

PO 1

Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals and an engineering specialization to defined and applied engineering procedures, processes, systems or methodologies.

PO 2

Problem analysis: Identify, formulate, research literature and analyse broadly-defined engineering problems reaching substantiated conclusions using analytical tools appropriate to their discipline or area of specialisation with considerations for sustainable development.

PO 3

Design/development of solutions: Design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO 4

Investigation: Conduct investigations of broadly-defined engineering problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions.

PO 5

Tool Usage: Select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to broadly-defined engineering problems.

PO 6

The Engineering Technologist and the World: Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving broadly-defined engineering problems.

PO 7

Ethics: Understand and commit to professional ethics and norms of engineering technology practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO 8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings.

PO 9

Communications: Communicate effectively and inclusively on broadly-defined engineering activities with the engineering community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO 10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making to one's own work, as a member and leader in a team and to manage projects in multidisciplinary environments.

PO 11

Lifelong Learning: Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of new specialist technologies.

PO 12

Personal and Entrepreneurial Skills: Demonstrate ability to engage effectively in self-improvement initiatives for career, professional or educational goals and engage in entrepreneurial activities.

CURRICULUM STRUCTURE
UR6523006 BACHELOR OF ELECTRICAL ENGINEERING TECHNOLOGY (ROBOTIC AND AUTOMATION TECHNOLOGY) WITH HONOURS INTAKE 2025/2026

YEAR	FIRST		SECOND		THIRD		FOURTH	
SEMESTER	1	2	3	4	5	6	7	8
DISCIPLINE CORE & ELECTIVE COURSES (116 CREDITS)	EMK11003 Computer Programming	EMK11203 Electric Circuit Theory 1	EMK21203 Electric Circuit Theory 2	EMK21003 Electromagnetic Field Theory	EMK31103 Control System Technology	EMK30004 Final Year Project 1	EMK40006 Final Year Project 2	EMK40112 Industrial Training
	EMK18003 Computer Aided Drawing	EMK11403 Digital Electronics	EMK21103 Measurement & Instrumentation	EMK21603 Power Electronics	EMK36103 Mechanics & Machine Design	EMK36003 Industrial Networking	EMK49003 Modern Control	
	EMK18103 Engineering Skills 1	EMK11303 Electronics 1	EMK21303 Electronics 2	EMK29003 Data Communication	EMK38004 Design Project	EMK36303 Industrial Robotics	EMK4XXX03 Elective II	
	EMK11103 Engineering Science	EMK10203 Engineering Skills 2	EMK28203 Programmable Logic Controller	EMK21803 Signal & Systems	EMK39103 Electrical Machines & Drive	EMK31303 Engineering Technology Management	EMK41003 Technologist in Society	
				EMK21503 Microcontroller System	EMK36203 Industrial Automation	EMK3XXX03 Elective I		
				EMK28103 Pneumatic & Hydraulic	EMK36703 Artificial Intelligence			
COMMON CORE COURSES (9 CREDITS)	IMQ11103 Mathematics for Engineering Technology 1	IMQ11203 Mathematics for Engineering Technology 2	IMQ21303 Mathematics for Engineering Technology 3					
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMU12102 Integrity and Anti-Corruption ^[4]	SMB20102 English for General Communication ^[2]	SMB41002 University Malay Language ^[3]				**SMB1XX02 Option Subject (Foreign Language)	
	SMU13102 Appreciation of Ethics and Civilizations	SMU13002 Philosophy and Current Issues	SMB31202 English for Technical Communication	SMU22402 Engineering Entrepreneurship				
	SMZXXX01 Co-Curriculum 1	SMZXXX01 Co-curriculum 2						
TOTAL CREDITS (141 CREDITS)	20	18	19	20	19	16	17	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]							

Elective I :EMK36503 Robotics Control, EMK39203 Computer Integrated Manufacturing, EMK39303 Data Analytic & IoT

Elective II : EMK46203 Mechatronics Systems, EMK46303 Vision Systems, EMK46103 Automated Guided Vehicle

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).

SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
EMK18003	Computer Aided Drawing [Lukisan Terbantu Komputer]	-
EMK18103	Engineering Skills 1 [Kemahiran Kejuruteraan 1]	-
EMK10203	Engineering Skills 2 [Kemahiran Kejuruteraan 2]	-
EMK10103	Engineering Skills 1 [Kemahiran Kejuruteraan 1]	-
EMK11003	Computer Programming [Pengaturcaraan Komputer]	-
EMK11103	Engineering Science [Sains Kejuruteraan]	-
EMK11203	Electric Circuit Theory 1 [Teori Litar Elektrik 1]	-
EMK11303	Electronics 1 [Elektronik 1]	-
EMK11403	Digital Electronics [Elektronik Digit]	-
EMK12003	Computer Aided Drawing [Lukisan Terbantu Komputer]	-
EMK12103	Engineering Skills 2 [Kemahiran Kejuruteraan 2]	-
EMK20002	Industrial Attachment [Sangkutan Industri]	-
EMK21003	Electromagnetic Field Theory [Teori Medan Elektromagnet]	-
EMK21103	Measurement and Instrumentation [Pengukuran dan Peralatan]	-
EMK21203	Electric Circuit Theory 2 [Teori Litar Elektrik 2]	-
EMK21303	Electronics 2 [Elektronik 2]	-
EMK21403	Electrical Machines Technology 1 [Teknologi Mesin Elektrik 1]	-
EMK21503	Microcontroller System [Sistem Mikropengawal]	SDG 7

COURSE CODE	COURSE NAME	SDG
EMK21603	Power Electronics [Elektronik Kuasa]	-
EMK21703	Communication System [Sistem Komunikasi]	-
EMK21803	Signal and Systems [Isyarat dan Sistem]	-
EMK22003	Control System Technology [Teknologi Sistem Kawalan]	-
EMK28103	Pneumatic & Hydraulic [Pneumatik & Hidraulik]	SDG 12
EMK28203	Programmable Logic Controller [Pengawal Logik Boleh Aturcara]	SDG 12
EMK29003	Data Communication [Komunikasi Data]	-
EMK30004	Final Year Project 1 [Projek Tahun Akhir 1]	-
EMK38004	Design Project [Projek Rekabentuk]	SDG 9
EMK31103	Control System Technology [Teknologi Sistem Kawalan]	-
EMK31203	Programmable Logic Controller [Pengawal Logik Boleh Aturcara]	-
EMK31303	Engineering Technology Management [Pengurusan Teknologi Kejuruteraan]	SDG 12
EMK32003	Electrical Machines Technology 2 [Teknologi Mesin Elektrik 2]	-
EMK32103	Electrical Installation [Pemasangan Elektrik]	-
EMK32203	Electrical Power System [Sistem Elektrik Kuasa]	-
EMK32303	Renewable Energy System [Sistem Tenaga Boleh Diperbaharu]	SDG7
EMK32403	Power Quality (Elective) [Kualiti Kuasa (Elektif)]	-
EMK32603	Electromagnetic Field Theory [Teori Medan Elektromagnet]	-

COURSE CODE	COURSE NAME	SDG
EMK32703	Electrical Drive Technology [Teknologi Pemacu Elektrik]	-
EMK32803	Electrical Substation Technology (Elective) [Teknologi Elektrik Pencawang (Elektif)]	-
EMK32903	Artificial Intelligence (Elective) [Kecerdikan Buatan (Elektif)]	SDG9
EMK33404	Final Year Project I [Projek Tahun Akhir I]	SDG9
EMK33504	Design Project [Projek Reka Bentuk]	SDG9
EMK36003	Industrial Networking [Rangkaian Perindustrian]	-
EMK36103	Mechanics & Machine Design [Rekabentuk Mekanik & Mesin]	-
EMK36203	Industrial Automation [Automasi Industri]	SDG 9
EMK36303	Industrial Robotics [Robotik Industri]	-
EMK36503	Robotics Control (Elective) [Kawalan Robotik (Elektif)]	-
EMK36703	Artificial Intelligence [Kecerdikan Buatan]	SDG 9
EMK39103	Electrical Machines And Drives [<i>Mesin Elektrik Dan Penggerak</i>]	-
EMK40006	Final Year Project 2 [Projek Tahun Akhir 2]	-
EMK40112	Industrial Training [Latihan Industri]	-
EMK41003	Technologist in Society [Juruteknologi dalam Masyarakat]	-
EMK42003	Power System Protection & Switchgear [Perlindungan & Peralatan suis Sistem Kuasa]	-
EMK42203	Industrial Automation (Elective) [Automasi Industri (Elektif)]	-
EMK42303	Energy Efficiency and Management (Elective) [Kecekapan Tenaga dan Pengurusan (Elektif)]	SDG7

COURSE CODE	COURSE NAME	SDG
EMK42403	High Voltage Technology (Elective) [Teknologi Voltan Tinggi (Elektif)]	-
EMK42503	Power Electronics and Applications (Elective) [Elektronik Kuasa dan Aplikasi (Elektif)]	-
EMK42603	Energy Storage Technology (Elective) [Teknologi Penyimpanan Tenaga (Elektif)]	SDG7
EMK42703	Electric Vehicle Technology (Elective) [Teknologi Kenderaan Elektrik (Elektif)]	SDG11
EMK43006	Final Year Project 2 [Projek Tahun Akhir 2]	SDG9
EMK46103	Automated Guided Vehicle (Elective) [Kenderaan Berpandu Automatik (Elektif)]	-
EMK46203	Mechatronic Systems (Elective) [Sistem Mekatronik (Elektif)]	SDG 7
EMK46303	Vision Systems (Elective) [Sistem Penglihatan (Elektif)]	SDG 4
EMK49003	Modern Control [Kawalan Moden]	-

EMK18003 LUKISAN TERBANTU KOMPUTER [COMPUTER AIDED DRAWING]

No of Credits: 3

Course Synopsis:

This course allows the students to develop proficiency in CAD software, 2D drafting, 3D modelling, and electrical wiring diagrams to create precise and according the industry-standard designs. The first part of the course involves sketching techniques, multi-view projections, dimension and assembly parts. The second part of the course concerns on Electrical and Electronic drawing.

Course Outcomes:

1. Ability to apply appropriate techniques of Computer Aided Drawing in 2D & 3D drawing.
2. Ability to apply appropriate techniques of Computer Aided Drawing in electrical & electronic drawing.

EMK18103 KEMAHIRAN KEJURUTERAAN 1 [ENGINEERING SKILLS 1]

No of Credits: 3

Course Synopsis:

This course focused entirely on practical, hands-on learning, essential for students in the Engineering Technology program. This course is designed to equip students with the foundational skills related to basic electronic, engineering software and basic mechanical

Course Outcomes:

1. Ability to assess health, safety procedures and regulations based on Regulations and Requirements systems using computer programming techniques
2. Ability to apply knowledge of basic electrical skills within engineering equipment and software tools.
3. Ability to create the complete design of 3d model using appropriate software tools
4. Ability to apply appropriate techniques in operating of mechanical equipment and tools.

EMK10203 KEMAHIRAN KEJURUTERAAN 2 [ENGINEERING SKILLS 2]

No of Credits: 3

Course Synopsis:

The course is structured into three distinct sections: Domestic electrical wiring, printed circuit board (PCB), and mechanical design. The domestic electrical wiring module will provide students with a comprehensive understanding of single-phase and three-phase wiring, as well as an introduction to various wiring equipment. Within the PCB subject matter, students will acquire skills and expertise in the circuit design process as well as techniques for manufacturing printed circuit boards (PCBs). The introductory component of the course on Mechanical Design and 3D Prototyping will provide students with a fundamental understanding of mechanical design principles and the process of developing prototypes using 3D printers. Students are also introduced to fundamental mechanical equipment and associated safety protocols. By the conclusion of the course, students will possess the ability to effectively tackle simple engineering problems that require the use of engineering skills.

Course Outcomes:

1. Ability to apply basic hazards, risk management, occupational safety & health (OSHA) and procedures of legal related to professional engineering technology practice.
2. Ability to construct single phase and three phase domestic electrical installations using appropriate wiring equipment and in accordance with the prescribed electrical installation guidelines.
3. Ability to apply appropriate techniques to produce printed circuit boards (PCB) and conduct an electronic component assembly process including soldering process.
4. Ability to use CAD software to construct 3D drawings and use appropriate machining techniques to produce 3D printed prototypes.

EMK10103 KEMAHIRAN KEJURUTERAAN 1 [ENGINEERING SKILLS 1]

No of Credits: 3

Course Synopsis:

The Engineering Skills I requires the students to spend time doing practical in order to develop their skills in laboratory or workshop. This course contains 6 modules which are Basic Electronics, PCB Design, Arduino/Python Programming, Solidworks Drawing, Matlab Programming, Machining Process that specially planned based on electrical engineering technology program.

Course Outcomes:

1. Ability to investigate and analyze the basic electronic component, use electronic instruments and reproduce schematic and layout design using common software.
2. Ability to apply programming and interfacing techniques to engineering (Arduino/Phyton).
3. Ability to apply a product/block diagram using common software (Solidworks)
4. Ability to apply programming and interfacing techniques to engineering (Matlab).
5. Ability to apply the basic skills and standard practiced of mechanical machine and equipment

EMK11003 PENGATURCARAAN KOMPUTER [COMPUTER PROGRAMMING]

No of Credits: 3

Course Synopsis:

The course introduces basic programming using high level language (C language). The main objective of this course is to prepare the students with the ability of problem solving with programming, familiarize with the programming tools such as organization chart, flowchart and pseudo code and then to implement them by developing C program.

Course Outcomes:

1. Ability to design solutions for broadly-defined engineering technology related problems and design systems using computer programming techniques
2. Ability to operate programming software to code, compile, execute and debug computer programs.
3. Ability to examine engineering technology related problem as a member or leader in a group project.

EMK11103 SAINS KEJURUTERAAN [ENGINEERING SCIENCE]

No of Credits: 3

Course Synopsis:

This course introduces the knowledge of material selection and properties changes in the engineering applications/real problems. Engineering science is a broad discipline, allowing students to merge multidisciplinary resources to propose and develop innovative, enduring solutions and transform the latest scientific discoveries into enabling new technologies in future.

Course Outcomes:

1. Ability to apply knowledge of the concept and principle of materials science to distinguish the types of material families, structure, properties and performance.
2. Ability to evaluate the performance of materials based on fundamental of natural sciences.

EMK11203 TEORI LITAR ELEKTRIK 1 [ELECTRIC CIRCUIT THEORY 1]

No of Credits: 3

Course Synopsis:

This course covers the topics of introduction to the DC circuit's, fundamental laws and theorems. Students also get the knowledge of AC circuits that introduces phasor and sinusoidal steady-state analysis. This course intends to give the student knowledge on understanding the three-phase balance systems.

Course Outcomes:

1. Ability to apply knowledge of basic laws and methods of circuit analysis to solve the problems in DC and AC circuits.
2. Ability to analyse and solve the first and second-order circuits containing passive elements, DC sources, and switches using differential equations.
3. Ability to apply appropriate techniques to solve the problems in DC and AC circuits.
4. Ability to design a solution of circuit parameter containing sinusoidal steady-state sources using complex impedances and phasor representations.

EMK11303 ELEKTRONIK 1 [ELECTRONICS 1]

No of Credits: 3

Course Synopsis:

This subject will expose the students with basic electronics devices. It provides a depth study on the concept of PN junction, operation and characteristics of the diode. The students will be emphasized to half wave rectifier, full wave rectifier, power supply filters and regulators, clipper and clamper diode circuit and voltage multipliers. The students also learn about the special-purpose of Zener diode in terms of its characteristics and applications. Bipolar junction transistors (BJTs) and various types of Field-effect Transistor (MOSFET) will be introduced in this course as well. Basic theories, principles and practical are stressed in this course.

Course Outcomes:

1. Ability to investigate and analyze the fundamental operating principle and output characteristics concepts of electronic devices.
2. Ability to apply knowledge of basic operations and performance electronic circuits through their applications in different areas to the solution of the engineering fundamental.
3. Ability to apply appropriate techniques to develop the basic concept of different construction, operation and characteristics biasing circuits and troubleshooting.

EMK11403 ELEKTRONIK DIGIT [DIGITAL ELECTRONICS]

No of Credits: 3

Course Synopsis:

The aim of this course is to introduce students to basic knowledge in digital electronics. This course focuses on the introduction and discussion of the fundamental of digital circuit design and analysis. The lectures cover the following topics: Numbering System, Algebraic Switching, Boolean Function, Combinational Logic Design and Sequential Logic Design.

Course Outcomes:

1. Ability to apply knowledge the basic principles of digital electronics.
2. Ability to evaluate digital system applications using combinational and sequential logic techniques.
3. Ability to apply appropriate techniques for digital electronics engineering technology-related problems.

EMK12003 LUKISAN TERBANTU KOMPUTER [COMPUTER AIDED DRAWING]

No of Credits: 3

Course Synopsis:

This course provides an in-depth exploration of Computer-Aided Drawing (CAD) techniques essential for engineering technology applications. It emphasizes the development of proficiency in creating sophisticated 2D, 3D and electrical drawings using industry-standard CAD software. Students will master fundamental CAD techniques, applying them to solve broadly-defined engineering problems and design solutions with a focus on precision, efficiency, and adherence to industry standards.

Course Outcomes:

1. Ability to apply appropriate engineering drawing techniques in 2D and 3D model.
2. Ability to demonstrate mastery of CAD techniques in fundamental engineering drawing.
3. Ability to design the product in Computer Aided Drawing to solve broadly-defined engineering technology problems.

EMK12103 KEMAHIRAN KEJURUTERAAN 2 [ENGINEERING SKILLS 2]

No of Credits: 3

Course Synopsis:

This course introduces key concepts in electrical safety, wiring drawings, and domestic wiring. Students will gain hands-on experience in electrical wiring systems, focusing on safety and best practices. By combining theory with practical work, the course aims to develop the essential skills needed for basic electrical wiring tasks.

Course Outcomes:

1. Ability to apply standard practices in electrical wiring and electrical safety.
2. Ability to construct an electrical wiring diagram based on wiring layout.
3. Ability to assemble the domestic wiring systems based on standard practices.

EMK20002 SANGKUTAN INDUSTRI [INDUSTRIAL ATTACHMENT]

No of Credits: 3

Course Synopsis:

This course exposes the Bachelor of Engineering Technology degree students with industrial experience, in addition to the compulsory industrial training. This course provides students with significant skills and practical knowledge, motivating them to become professional and successful technologist. The student will be exposed to the company's technical functions, organizational structure and operations, such as departmental function, work procedure, safety procedure, communication, technical skills and project management. The students will gain theoretical and practical knowledge during the industrial attachment period. The attachment period can be as minimum as four weeks.

Course Outcomes:

1. Ability to adhere to relevant health, safety, legal, cultural, and environmental sustainability practices in engineering activities.
2. Ability to manipulate modern engineering tools and systems in performing technical tasks during industrial attachment.
3. Ability to communicate effectively on the complex engineering technology activities performed in training.

EMK21003 TEORI MEDAN ELEKTROMAGNET [ELECTROMAGNETIC FIELD THEORY]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental theory of electromagnetic fields, focusing on vector analysis, electrostatics, magnetostatics, and transmission lines. Students will learn mathematical techniques to analyze electric and magnetic fields in various coordinate systems. The course covers fundamental laws governing static electric, magnetic fields, and their applications in different materials. Additionally, it explores transmission line theory, including wave propagation, signal reflection, and impedance matching, using tools such as the Smith chart. This knowledge equips students to design and evaluate electromagnetic systems relevant to engineering practice and advanced study..

Course Outcomes:

1. Ability to apply theories of electric and magnetic fields to solve vector analysis problems across different coordinate systems.
2. Ability to develop independent thinking and lifelong learning in formulating

solutions for electrostatic and magnetostatic problems using theoretical knowledge of electromagnetic fields.

3. Ability to effectively communicate the fundamental laws of electromagnetic fields and related physical quantities in various media through technical reports and presentations
4. Ability to evaluate wave propagation and signal behavior in transmission lines using analytical problem-solving techniques.

EMK21103 PENGUKURAN DAN PERALATAN [MEASUREMENT AND INSTRUMENTATION]

No of Credits: 3

Course Synopsis:

This course covers the basic concepts of modern measurement and instrumentation system. It is divided into several main topics among which are the fundamentals of electronics measurement and instrumentation system, error and statistical analysis, principles and application of signal characteristics and conditioning, data acquisition system and interfacing techniques principles and application of sensors and transducers. The laboratory practices will be used to aid the student understanding of the concept introduced.

Course Outcomes:

1. Ability to apply knowledge of electronic instrumentation and measurement techniques.
2. Ability to analyze the standardization and quality system knowledge in measuring electronic circuits using electrical measurement techniques.
3. Ability to apply the appropriate techniques for various sensors and signal conditioning/processing in instrumentation and measurements.

EMK21203 TEORI LITAR ELEKTRIK 2 [ELECTRIC CIRCUIT THEORY 2]

No of Credits: 3

Course Synopsis:

This course introduces the basic concepts and engineering methods of AC circuit analysis. The contents include the concepts of Sinusoid and Phasor, Sinusoidal Steady-State Analysis, AC Power Analysis, Three Phase Circuits, Magnetically Coupled Circuit, Two Port Network and Frequency Response.

Course Outcomes:

1. Ability to analyze AC circuit problems using basic electrical laws, methods, and theorems.
2. Ability to apply appropriate tools to solve the problem in AC circuit theory analysis.
3. Ability to evaluate the concepts of mutual inductance, two-port networks, and frequency response in AC circuits.

EMK21303 ELEKTRONIK 2 [ELECTRONICS 2]

No of Credits: 3

Course Synopsis:

This course offers fundamental knowledge in analogue circuits, especially in operational principles and applications. It covers small-signal models and frequency response of amplifier circuits including Operational Amplifier, Active Filters and Voltage Regulator.

Course Outcomes:

1. Ability to analyze the application of mathematics and electrical engineering fundamentals in the operation of electronic circuits.
2. Ability to design electronic circuit solutions that meet specified requirements.
3. Ability to evaluate the operational effectiveness of electronic circuits in solving real-world engineering problems.
4. Ability to perform accurate testing of electronic circuit using appropriate tools and techniques for specific engineering application.

EMK21403 TEKNOLOGI MESIN ELEKTRIK 1 [ELECTRICAL MACHINES TECHNOLOGY 1]

No of Credits: 3

Course Synopsis:

This course offers the students with knowledge about magnetic circuits, electromagnetic, electromechanical, transformer and DC machines. The practical and laboratory work are designed to give the students a practical perspective of electromagnetic, transformer and DC machines. They are given the opportunity to fully utilize the latest available facilities to realize the knowledge of practical electromagnetic, transformer, and DC machine.

Course Outcomes:

1. Ability to apply knowledge of the basic concept of electromagnetism, transformer, DC motor and DC generator into the electrical machine.
2. Ability to analyze and solve the performance of transformer, DC motor and DC generator.
3. Ability to apply appropriate techniques to evaluate the performance of transformer, DC motor and DC generator.
4. Ability to investigate and evaluate the performance of DC Motor and DC generators.

EMK21503 SISTEM MIKROPENGAWAL [MICROCONTROLLER SYSTEM]

No of Credits: 3

Course Synopsis:

This course is designed to provide students with fundamentals of microcontroller and the hardware both, in theory and practice. Students are expected to acquire knowledge of programming, electronic components and applications. Knowledge on theory acquired in lectures is also enhanced with practical work conducted in laboratory.

Course Outcomes:

1. Ability to design a program language and interfacing between microcontroller and other I/O devices.
2. Ability to apply an appropriate technique in microcontroller system based on different applications
3. Ability to communicate effectively in presenting the group project.
4. Ability to apply an appropriate engineering management method to design an engineering project in a group.

EMK21603 ELEKTRONIK KUASA [POWER ELECTRONICS]

No of Credits: 3

Course Synopsis:

This course introduces power electronics as a multidisciplinary and interdisciplinary application-oriented technology emphasizing the main criterion of electrical energy conversion: AC-DC, AC-AC, DC-DC, and DC-AC converters performance via waveform analysis. It also covers electronic devices such as diodes and transistors, but the emphasis is on circuit topology and function rather than on devices. The primary background required is the understanding of the voltage-current relationships for linear devices as well as the concept of the Fourier Series.

Course Outcomes:

1. Ability to apply knowledge of power electronics devices and topologies to the solution of the engineering technology fundamental.
2. Ability to investigate and evaluate converter topologies and their performances through theoretical and simulation.
3. Ability to analyze and differentiate the various types of converter topologies.
4. Ability to apply appropriate techniques for power electronics-related problems.

EMK21703 SISTEM KOMUNIKASI [COMMUNICATION SYSTEM]

No of Credits: 3

Course Synopsis:

This subject will cover all the basic principles and concepts of a communication system including the basic elements of communication such as modulation techniques (amplitude modulation, angle modulations and digital modulations), transmission channels and transmission medium. In addition, signal propagations and noise in the communication system will be discussed.

Course Outcomes:

1. Ability to apply knowledge of the basic requirement of communication systems to solve the engineering fundamental.
2. Ability to select and apply appropriate types of modulation in communication systems.
3. Ability to design the appropriate research methodology to solve communication system technology.

EMK21803 ISYARAT DAN SISTEM [SIGNAL AND SYSTEMS]

No of Credits: 3

Course Synopsis:

The course aims are to introduce students to the signals and systems in engineering technology. The concept of signals, linear time-invariant (LTI) systems characterization, and analysis through the Fourier Transform method for continuous-time signals (CTS) and discrete-time signals (DTS) are reviewed in this course. At the end of the course, the students are expected to be able to solve engineering problems related to signals and systems.

Course Outcomes:

1. Ability to analyze and differentiate the characteristic, process, and analysis method in signals and systems.
2. Ability to select and apply appropriate simulation tools for signals and systems.
3. Ability to engage in independent and life-long learning on the theory and practical knowledge in signals and systems.

EMK22003 TEKNOLOGI SISTEM KAWALAN [CONTROL SYSTEM TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course introduces to control system for engineering technology students. Students will be exposed to the mathematical modeling for electrical, electro-mechanical using block diagram, transfer functions, and signal-flow graphs. They will conduct system performance analysis in root locus, time and frequency domain. The course also covers system compensation design using PID and Ziegler-Nichols. The laboratory sessions will be conducted to enable the students to strengthen the theory.

Course Outcomes:

1. Ability to apply mathematical models to the solution of the control system.
2. Ability to design solutions for broadly defined engineering technology problems using feedback control.
3. Ability to demonstrate experiments using modern tools for control system analysis and interpret the data.
4. Ability to function effectively in a group/team to design feedback control systems based on different types of controllers.

EMK28103 PNEUMATIK & HIDRAULIK [PNEUMATIC & HYDRAULIC]

No of Credits: 3

Course Synopsis:

This course is designed to provide students with fundamentals actuators of pneumatic and hydraulic in system control. Students are expected to acquire knowledge of physical behavior of pneumatic and hydraulic symbols, components, electro-pneumatic and electro-hydraulic systems in applications. Knowledge on theory acquired in lecture is also enhanced with a practical work conducted in laboratory.

Course Outcomes:

1. Ability to analyze the fundamental and operation of pneumatics and hydraulics system.
2. Ability to design solutions for broadly-defined engineering technology problems in pneumatic and hydraulic systems
3. Ability to apply appropriate techniques and simulation tools for the operation of electro-pneumatic and electro-hydraulic systems

EMK28203 PENGAWAL LOGIK BOLEH ATURCARA [PROGRAMMABLE LOGIC CONTROLLER]

No of Credits: 3

Course Synopsis:

A Programmable Logic Controller (PLC) is a digital computer used to automate industrial processes, such as controlling machinery on factory assembly lines, and automation system. It consists of several key components, including a Central Processing Unit (CPU) that executes control instructions, Input/Output (I/O) modules that interface with sensors and actuators, a power supply, and communication interfaces for networking. PLCs are programmed using languages like Ladder Logic, Function Block Diagram (FBD) and Sequential Function Chart (SFC), enabling them to process inputs, execute control programs, and update outputs in real-time.

Course Outcomes:

1. Ability to apply appropriate tools of PLC I/O components, operation and communications to the solution of the engineering specialization.
2. Ability to conduct investigation on PLC programming language and programming sequence using a special programming techniques.
3. Ability to design solutions for broadly-defined engineering technology related problems and systems design using PLC programming languages.

EMK29003 KOMUNIKASI DATA [DATA COMMUNICATION]

No of Credits: 3

Course Synopsis:

This course provides a foundational understanding of communication systems, covering key topics such as the basics of signal transmission and reception, including Amplitude Modulation (AM) and Frequency Modulation (FM) techniques. Students will explore the design and operation of radio transmitters and receivers, essential for effective communication over radio frequencies. The course also introduces data communication principles, emphasizing the importance of reliable data transmission and error correction. The course concludes with an introduction to cybersecurity, where students will explore basic encryption techniques and the role of firewalls in protecting communication systems from potential threats.

Course Outcomes:

1. Ability to apply knowledge of the principles of data communication.
2. Ability to analyze the characteristic and method in data communication.
3. Ability to apply appropriate simulation tools and types of modulation in data communication.

EMK31103 TEKNOLOGI SISTEM KAWALAN [CONTROL SYSTEM TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course introduces to control system for engineering technology students. Students will be exposed to the mathematical modeling for electrical, electromechanical using block diagram, transfer functions, and signal-flowgraphs. They will conduct system performance analysis in root locus, time and frequency domain. The course also covers system compensation design using P or PI controller. The laboratory sessions will be conducted to enable the students to strengthen the theory.

Course Outcomes:

1. Ability to apply knowledge of mathematical models to the solution of the control system.
2. Ability to design solutions for broadly defined engineering technology problems using feedback control.
3. Ability to select appropriate tools for control engineering technology related problems.

EMK30004 PROJEK TAHUN AKHIR 1 [FINAL YEAR PROJECT 1]

No of Credits: 4

Course Synopsis:

This course provides students with the opportunity to embark on an individual final year project involving broadly-defined engineering problems. Students will conduct literature reviews, formulate problem statements, design methodologies, and implement engineering solutions through experiments or simulations. Emphasis is placed on ethical practices, effective communication, and project management. The course aims to nurture independent learning, critical thinking, and the ability to evaluate relevant technologies. Students are expected to produce technical documentation and present their findings through written and oral communication.

Course Outcomes:

1. Ability to analyse broadly-defined engineering problems through research, literature review, and appropriate analytical techniques for deriving substantiated conclusions.
2. Ability to design research methodology and engineering solutions for broadly-defined engineering problems, contributing to the development of systems, components, or processes.
3. Ability to evaluate broadly-defined engineering problems by selecting relevant data, designing and performing experiments, and drawing valid conclusions through investigation.
4. Ability to demonstrate commitment to ethical and professional responsibilities in implementing and reporting final year project work.
5. Ability to communicate effectively on engineering technology problems through report and presentation.
6. Ability to evaluate specialist technologies relevant to the final year project by applying independent learning and critical thinking.

EMK38004 PROJEK REKABENTUK [DESIGN PROJECT]

No of Credits: 4

Course Synopsis:

This course introduces the project that inclined towards engineering designs that is necessary for each Electrical Engineering Technology (Robotic and Automation Technology) student during 3rd Year of study. The student will be given an engineering problem (or to identify the problem on their own) and will gain experience by problem solving, perform investigation, research writing and

effective demonstration in the form of report and presentation. It is expected that the students can present this project during exhibition or through poster presentation.

Course Outcomes:

1. Ability to design innovative solutions to project-related problems by considering relevant technical, safety and environmental factors.
2. Ability to demonstrate the impact of sustainable development in a design project by considering sustainability principles and societal needs.
3. Ability to demonstrate effective teamwork skills and leadership in diverse teams to achieve design project goals.
4. Ability to communicate effectively on design project activities through technical presentations.
5. Ability to evaluate the effectiveness of engineering management practices in managing a multidisciplinary team-based design project.
6. Ability to demonstrate entrepreneurial skills in developing innovative solutions and evaluating opportunities for professional growth in design project.

EMK31203 PENGAWAL LOGIK BOLEH ATURCARA [PROGRAMMABLE LOGIC CONTROLLER]

No of Credits: 3

Course Synopsis:

The course covers basic concept of PLC, PLC input and output components, PLC programming languages and PLC special programming techniques. Knowledge on theory acquired in lecture is also enhanced with a practical work conducted in laboratory. In the end of this course, the students are able to develop a PLC programming sequence operation system typically found in industrial or manufacturing environment.

Course Outcomes:

1. Ability to apply and analyze knowledge of PLC I/O components, operation and communications to the solution of the engineering specialization.
2. Ability to design solutions for broadly-defined engineering technology related problems and design systems using PLC programming languages.
3. Ability to apply PLC programming language and create programming sequence using a special programming techniques.

EMK31303 PENGURUSAN TEKNOLOGI KEJURUTERAAN [ENGINEERING TECHNOLOGY MANAGEMENT]

No of Credits: 3

Course Synopsis:

This course exposes the management skills and economic techniques of project development to engineering technology students. The role of economics is to assess the appropriateness of a given project, estimate its value, and justify it from an engineering technology standpoint. At the end of the course, students will be able to identify and discuss issues and challenges faced by engineering technologist relating to project management.

Course Outcomes:

1. Ability to formulate appropriate solutions using scheduling techniques
2. Ability to relate awareness of sustainability, legal, and societal impacts when making project-related decisions, reflecting ethical and responsible behavior as a technologist.
3. Ability to analyze the principles of engineering technology management to engineering technology project.
4. Ability to display initiative, self-motivation, and entrepreneurial mindset in managing individual or group project activities.

EMK32003 TEKNOLOGI MESIN ELEKTRIK 2 [ELECTRICAL MACHINES TECHNOLOGY 2]

No of Credits: 3

Course Synopsis:

This course intends to give students fair knowledge of single-phase and three phase induction motor, synchronous machine, motor starter, testing and maintenance of electrical machines. The practical and laboratory work are designed to give the students the practical perspective of the three-phase AC motor, open and fix motors, star-delta starter and testing the AC motor.

Course Outcomes:

1. Ability to apply knowledge of the concepts, related testing, and maintenances in understanding the principle of electrical machines.
2. Ability to analyze the classification of motor starter method for AC Machines.
3. Ability to design solutions for broadly defined engineering technology-related problems in synchronous generator and synchronous motor for electrical machines applications.
4. Ability to select and apply appropriate techniques for the three-phase induction motor and single phase induction motor and its application to electrical machines.

EMK32103 PEMASANGAN ELEKTRIK [ELECTRICAL INSTALLATION]

No of Credits: 3

Course Synopsis:

This course is designed to educated next electrical engineers with the application skills needed in modern electrical engineering practice. This course uses a combination of theory and practical based on real case project to demonstrate and reinforce the principles and skills. Students in this course are expected to work through the project based. The project are require student design complete electrical system in new building.

Course Outcomes:

1. Ability to analyze the design and related problems of electrical installation systems using appropriate tools, considering sustainable development.
2. Ability to apply appropriate modern engineering and IT tools for electrical installation design.
3. Ability to communicate effectively and inclusively on electrical installation design through technical report and presentation.
4. Ability to evaluate the solution of electrical installation with consideration of public health and safety, economic and legal.

EMK32303 SISTEM TENAGA BOLEH DIPERBAHARU [RENEWABLE ENERGY SYSTEM]

No of Credits: 3

Course Synopsis:

This course will introduce students with conversion, storage, integration and economic assessment techniques for renewable energy systems. This course also enables students to assess and design basic system configuration of renewable energy technologies for both off-grid and grid-connected power generation.

Course Outcomes:

1. Ability to identify and analyze the principles renewable energy.
2. Ability to design the conversion of renewable energy technology.
3. Ability to apply appropriate techniques to develop for renewable energy technology related problems.

EMK32203 SISTEM ELEKTRIK KUASA [ELECTRICAL POWER SYSTEM]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental principles of electrical power system engineering, focusing on power generation, transmission, and distribution. Students will learn key topics such as the per-unit system, transmission line parameters and models, load characteristics, and the components of power distribution systems. The course also covers symmetrical faults, including the basics of symmetrical components and sequence networks. Emphasis is placed on the selection and application of appropriate engineering tools, analytical skills, and effective communication through technical reporting and presentations. Teaching methods include lectures, tutorials, laboratory work, continuous assessments, and a final examination.

Course Outcomes:

1. Ability to evaluate power system types and operations by applying appropriate analytical tools.
2. Ability to apply appropriate engineering tools for analyzing generation, transmission and distribution systems.
3. Ability to evaluate load characteristics and distribution system components using appropriate data.
4. Ability to demonstrate effective communication on types and operation of power systems through technical reports or presentations.

EMK32403 KUALITI KUASA [POWER QUALITY]

Type of Courses : Elective

No of Credits: 3

Course Synopsis:

This course covers topics of power quality in power system. The student is exposed to specialist knowledge in power system such as voltage sags, transient and harmonics. This course will also cover mitigation or preventive method in power quality issue.

1. Course Outcomes:

2. Ability to apply and analyse knowledge of power quality disturbances in electrical power systems.
3. Ability to design solutions for electrical power quality disturbances that

related to power quality problems.

4. Ability to select and apply appropriate techniques for typical problems associated with electrical power systems.
5. Ability to communicate effectively on electrical power quality disturbance design solutions in electrical power systems problem through report and presentation.

EMK32603 TEORI MEDAN ELEKTROMAGNET [ELECTROMAGNETIC FIELD THEORY]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental theory of electromagnetic fields, focusing on vector analysis, electrostatics, magnetostatics, and transmission lines. Students will learn mathematical techniques to analyze electric and magnetic fields in various coordinate systems. The course covers fundamental laws governing static electric, magnetic fields, and their applications in different materials. Additionally, it explores transmission line theory, including wave propagation, signal reflection, and impedance matching, using tools such as the Smith chart. This knowledge equips students to design and evaluate electromagnetic systems relevant to engineering practice and advanced study.

Course Outcomes:

1. Ability to apply knowledge of mathematics and engineering fundamentals related to electric and magnetic fields for solving vector analysis problems across different coordinate systems.
2. Ability to design appropriate solutions for electrostatic and magnetostatic problems using theoretical knowledge of electromagnetic fields, while demonstrating independent thinking and lifelong learning.
3. Ability to effectively communicate the fundamental laws of electromagnetic fields and related physical quantities in various media through technical reports and presentations.
4. Ability to evaluate wave propagation and signal behavior in transmission lines using analytical problem-solving techniques.

EMK32703 TEKNOLOGI PEMACU ELEKTRIK [ELECTRICAL DRIVE TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course covers various topics related to the fundamental concepts of power electronic drives. It presents an integrated discussion on AC and DC drives for speed control, dynamics, and braking of electrical drives. Students will be exposed to the knowledge, usage, and functions of electric drive systems based on their characteristics and specific application requirements.

Course Outcomes:

1. Ability to evaluate AC and DC drive characteristics to determine effective solutions for broadly defined engineering problems.
2. Ability to design solutions for efficient speed control of AC and DC drives using appropriate power electronic converters and control strategies that meet industrial and application-specific requirements.
3. Ability to analyze operational parameters to investigate the control mechanisms of DC and AC motor drives.
4. Ability to apply appropriate tools for the operation and analysis of electrical drive systems.

EMK32803 TEKNOLOGI ELEKTRIK PENCAWANG [ELECTRICAL SUBSTATION TECHNOLOGY]

Type of Courses : Elective

No of Credits: 3

Course Synopsis:

Substation Engineering is one of the specializations of the Industrial Power courses. Knowledge in this course covers the substation equipment in generation, transmission and distribution that is useful for students to understand electrical industrial power.

Course Outcomes:

1. Ability to apply and analyze the basic principles of substation equipment operation, maintenance and testing.
2. Ability to identify and evaluate the substation principles and operations.
3. Ability to investigate and analyze the operational parameters for busbar, circuit breaker, power transformer and grounding system.

EMK32903 KECERDIKAN BUATAN [ARTIFICIAL INTELLIGENCE]

Type of Courses : Elective

No of Credits: 3

Course Synopsis:

This course provides the knowledge of artificial intelligence (AI) and application of AI in robotic industries. The course covers conceptual framework in search techniques and implementation of machine learning in AI. In addition to these topics, specific domains such as speech and image recognitions.

Course Outcomes:

1. Ability to identify and analyze the right artificial intelligence techniques for robotic applications.
2. Ability to apply appropriate techniques using computer programming for artificial intelligence operation.
3. Ability to investigate and evaluate different type of artificial intelligence techniques.

EMK36003 RANGKAIAN PERINDUSTRIAN [INDUSTRIAL NETWORKING]

No of Credits: 3

Course Synopsis:

This course is designed to introduce the principles of network and communication system along with its applications in communication and other modern equipments. At the end of the course, the students are expected to provide clear understanding in fundamental concept of communication system and relate the principles to various applications in the industry. Students will learn the data communications and IP networks, then the field of industrial data communications. It includes Quality of Service (QoS), Real-Time Transmission, copper cable, Fiber Optics cable, Industrial Ethernet, Wireless Ethernet, Modbus, DeviceNet and Profibus.

Course Outcomes:

1. Ability to identify and analyze the principle of network and communication system.
2. Ability to investigate and evaluate the principle of various types of network and communication systems
3. Ability to select and apply appropriate equipment for the industrial network and communication technology. Ability to select and apply appropriate equipment for the industrial network and communication technology.

EMK33404 PROJEK TAHUN AKHIR 1 [FINAL YEAR PROJECT 1]

No of Credits: 4

Course Synopsis:

This course provides students with the opportunity to embark on an individual final year project involving broadly-defined engineering problems. Students will conduct literature reviews, formulate problem statements, design methodologies, and implement engineering solutions through experiments or simulations. Emphasis is placed on ethical practices, effective communication, and project management. The course aims to nurture independent learning, critical thinking, and the ability to evaluate relevant technologies. Students are expected to produce technical documentation and present their findings through written and oral communication.

Course Outcomes:

1. Ability to analyse broadly-defined engineering problems through research, literature review, and appropriate analytical techniques for deriving substantiated conclusions.
2. Ability to design research methodology and engineering solutions for broadly-defined engineering problems, contributing to the development of systems, components, or processes.
3. Ability to evaluate broadly-defined engineering problems by selecting relevant data, designing and performing experiments, and drawing valid conclusions through investigation.
4. Ability to demonstrate commitment to ethical and professional responsibilities in implementing and reporting final year project work.
5. Ability to communicate effectively on engineering technology problems through report and presentation.
6. Ability to evaluate specialist technologies relevant to the final year project by applying independent learning and critical thinking.

EMK33504 PROJEK REKA BENTUK [DESIGN PROJECT]

No of Credits: 4

Course Synopsis:

This course focuses on a comprehensive design project tailored for third-year Electrical Engineering Technology students. It emphasizes engineering design principles essential for their academic and professional development. Students will be assigned an engineering problem or encouraged to identify their own, enabling them to engage in practical problem-solving, thorough investigation,

and research activities. Throughout the course, students will develop skills in technical writing and deliver effective presentations, culminating in the preparation of a detailed project report and oral presentation. The project outcomes are expected to be showcased in exhibitions or poster presentations, providing students with valuable experience in communicating engineering solutions to diverse audiences.

Course Outcomes:

1. Ability to design innovative solutions for design project problems by considering relevant technical, safety and environmental factors.
2. Ability to demonstrate the impact of sustainable development in design project by considering sustainability and societal needs.
3. Ability to demonstrate effective teamwork skills and leadership in diverse teams for achieving design project goals.
4. Ability to communicate effectively on design project activities through technical presentations and documentation.
5. Ability to evaluate engineering technology management principles and economic analysis for the planning, execution, and evaluation of a design project.
6. Ability to demonstrate entrepreneurial skills in developing innovative solutions and identifying opportunities for professional growth in the design project.

EMK36303 ROBOTIK INDUSTRI [INDUSTRIAL ROBOTICS]

No of Credits: 3

Course Synopsis:

The objective of the course is to provide students with concepts and principles of robot system that is required in design of robot. Emphasis is given to the application of industrial robot design and task selection within robot system design. The basic element of robot system will understand such as the types of robots, capabilities, characteristics, robot control systems and software, kinematics analysis, principles of inverse kinematics, robot, robot work cell design, various industrial applications, sensors and drive mechanism.

Course Outcomes:

1. Ability to apply the robot system for specific design.
2. Ability to design the robot system for specific task
3. Ability to conduct appropriate tools for industrial robot task related problems.

EMK36103 REKABENTUK MEKANIK & MESIN [MECHANICS & MACHINE DESIGN]

No of Credits: 3

Course Synopsis:

This course exposes the students in mechanics and mechanical fields. The objective of the course is to provide students with concepts and principles of mechanics in term of mathematical and design. Emphasis is given to the application of Computer Aided Engineering and Design in synthesizing elements and material selection within mechanical system design. The basic element of dynamics such as kinematics, machine mechanism, velocity and acceleration analysis will be covered. The component of machine design will include shaft, bearing, gear systems, power screw, belts and chain, shafts and bearings maybe added. Students will be exposed to the laboratory work and research using the latest design software.

Course Outcomes:

1. Ability to design a mechanism by applying mechanics concepts and machine elements to meet specific functional requirements.
2. Ability to manipulate appropriate engineering tools and techniques for modelling and analysis of mechanical systems.
3. Ability to demonstrate self-directed learning in mechanical system design for professional development.

EMK36203 AUTOMASI INDUSTRI [INDUSTRIAL AUTOMATION]

No of Credits: 3

Course Synopsis:

This course aims to convey the knowledge and application of industrial automation technologies. It combines the automation technology principles and its relationship with assembly process & system, sensor, actuator and drives technology. It also covers an industrial application in hardware and software control techniques, design, engineering analysis, planning, tooling and manufacturing.

Course Outcomes:

1. Ability to differentiate automation technology principles and their relationship with assembly processes and material handling systems, including impacts on the economy, sustainability, and health and safety in solving broadly defined engineering problems.
2. Ability to analyze the functions and interactions of automation components such as sensors, actuators, and drive/motion systems.
3. Ability to manipulate appropriate tools using PLC, sensor, actuator and drive/motion in automation system.

4. Ability to demonstrate effective teamwork skills and leadership in diverse teams during presenting the principles of SCADA systems.

EMK36503 KAWALAN ROBOTIK [ROBOTICS CONTROL]

Type of Courses : Elective

No of Credits: 3

Course Synopsis:

In this course, the student will learn about analysis tools and computer-aided design of a control systems. The students will be able to analyze, design, and implement advanced robotic applications.

Course Outcomes:

1. Ability to apply knowledge of the fundamental concepts in robotics and applications
2. Ability to analyze and design the operation of sensors, robots control and robotic programming.
3. Ability to investigate and analyze operational parameters for robots control in software or hardware development.
4. Ability to apply appropriate technique of object manipulations by robots for an intelligent system in industrial manufacturing.

EMK46303 SISTEM PENGLIHATAN [VISION SYSTEMS]

Type of Courses : Elective

No of Credits: 3

Course Synopsis:

This course is designed to introduce the basic concepts of machine vision and provide an understanding of the concepts of vision as well as image acquisition and processing. Basic techniques for classification and neural network will also be introduced. The course also helps the students to develop the ability of designing machine vision systems for industrial applications.

Course Outcomes:

1. Ability to analyze the fundamental operation and application of machine vision system by utilizing image processing techniques
2. Ability to analyze the image processing techniques on machine vision system.
3. Ability to apply appropriate techniques to develop machine vision system

EMK36703 KECERDIKAN BUATAN [ARTIFICIAL INTELLIGENCE]

No of Credits: 3

Course Synopsis:

This course provides the knowledge of artificial intelligence (AI) and application of AI in robotic industries. The course covers conceptual framework in search techniques and implementation of machine learning in AI. In addition to these topics, specific domains such as speech and image recognitions

Course Outcomes:

1. Ability to identify and analyze the right artificial intelligence techniques for robotic applications.
2. Ability to apply appropriate techniques using computer programming for artificial intelligence operation
3. Ability to investigate and evaluate different type of artificial intelligence techniques.

EMK39103 MESIN ELEKTRIK DAN PENGGERAK [ELECTRICAL MACHINES AND DRIVES]

No of Credits: 3

Course Synopsis:

This course provides students with knowledge about the characteristics of electrical machines and drives. Students will analyze and evaluate the designs of various types, including motors, generators, and transformers. By the end of the course, students will be able to analyze, appraise, and design suitable electrical machines for engineering applications.

Course Outcomes:

1. Ability to design solution of related problem for electrical machines and drives to solve broadly-defined engineering technology.
2. Ability to apply GNU/Linux for compiling, debugging and executing computer program.
3. Ability to conduct appropriate tools for electrical machines task related problems.

EMK40006 PROJEK TAHUN AKHIR 2 [FINAL YEAR PROJECT 2]

No of Credits: 6

Course

This course emphasizes independent research, technical writing, and presentation skills through the execution of a final year project. Students are required to implement their research plan, analyze data, and draw conclusions under supervision. Emphasis is placed on producing a comprehensive technical report, technical paper, and oral presentation that reflect ethical, professional, and societal considerations in engineering practice.

Synopsis:

Course Outcomes:

1. Ability to analyze broadly-defined engineering problems through research, literature review, and appropriate analytical techniques, deriving substantiated conclusions.
2. Ability to design research methodology and engineering solutions for broadly-defined engineering problems, contributing to the development of systems, components, or processes.
3. Ability to conduct investigations on broadly-defined engineering problems by selecting relevant data, designing and performing experiments, and drawing valid conclusions.
4. Ability to demonstrate commitment to ethical and professional responsibilities in implementing and reporting final year project work.
5. Ability to communicate effectively and inclusively on engineering technology problems when reporting and presenting final year project findings.
6. Ability to evaluate specialist technologies relevant to the final year project, applying independent learning and critical thinking.

EMK40112 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]

No of Credits: 3

Course Synopsis:

This practical-based course exposes students to a company technical functions and organizational structure and operation such as departmental function, work procedure, safety procedure, communication, technical skills and project management. During this course, the students will apply knowledge learned in the university and increased the related skills required in their future profession

Course Outcomes:

1. Ability to demonstrate technical knowledge and practical skills during the industrial training.
2. Ability to apply fundamental of health, safety, legal, cultural, societal, environmental, and sustainability in engineering problems.
3. Ability to demonstrate good work performance, work ethics during the training period.
4. Ability to perform as an individual, a member, or a leader in diverse technical teams.
5. Ability to demonstrate effective communication on assigned task given by host company.
6. Ability to evaluate the significance of independent and lifelong learning in adapting to advancements in specialist technologies.

EMK41003 JURUTEKNOLOGI DALAM MASYARAKAT [TECHNOLOGIST IN SOCIETY]

No of Credits: 3

Course Synopsis:

This course introduces the main concepts in engineering and technology ethics, risk management and occupational safety and health as well as to expose the students to basic of law in the engineering and technology context. The course presents the introductory nature to enable technologists to appreciate factors that have to be taken into account in decision-making. At the end of the course, students are expected to be able to examine and assess issues and challenges faced by technologists relating to engineering and technology ethics, risk management and to understand the legal requirements related to engineering and technology field.

Course Outcomes:

1. Ability to demonstrate ethical principles and legal considerations in

- engineering and technology practices.
2. Ability to evaluate the impact of engineering activities on health and safety, legal compliance, and sustainability in addressing real-world engineering problems.
3. Ability to evaluate engineering management and economic decision-making principles in managing engineering projects.
4. Ability to engage in independent and life-long learning on the theory and practical knowledge of the necessities and development of sustainable energy.
5. Ability to evaluate hazards, risk management strategies, occupational safety procedures, and relevant legal frameworks in engineering practice.

EMK42003 PERLINDUNGAN & PERALATAN SUIS SISTEM KUASA [POWER SYSTEM PROTECTION & SWITCHGEAR]

No of Credits: 3

Course Synopsis:

This course provides students with comprehensive knowledge of protection systems in electrical power networks and the function of switchgear under various fault conditions. It covers fundamental topics such as transients and surges, arc interruption theories, potential transformers and types of circuit breakers. Students will also explore different protection schemes including overcurrent, distance, differential, and transformer protection. The course culminates with the integration of artificial intelligence techniques in power system protection, equipping students with modern skills aligned with industry advancements.

Course Outcomes:

1. Ability to design protection schemes for various components in power systems considering operational requirements and system abnormalities.
2. Ability to operate appropriate engineering tools and equipment for testing and evaluating protection relays, fault conditions, arc phenomena, and surge-related issues in power system protection and switchgear.
3. Ability to evaluate the transient and surge conditions, arc interruption techniques, surge protection methods, and circuit breaker types using appropriate analytical tools or techniques.
4. Ability to evaluate power system protection and switchgear technologies through independent and life-long learning and critical thinking.

EMK42203 AUTOMASI INDUSTRI [INDUSTRIAL AUTOMATION]

Type of Courses : Elective

No of Credits: 3

Course Synopsis:

This course exposes the student the advance automation concept in the industries. The subject exposes the implementation of automation technology such as sensor, actuator and drives in manufacturing process. It also covers the hardware and software control techniques in industrial application.

Course Outcomes:

1. Ability to design automation technology solutions in manufacturing processes based on engineering knowledge.
2. Ability to apply appropriate tools for pneumatic and PLC applications.
3. Ability to demonstrate awareness of automation concepts with consideration of public health and safety and societal aspects.

EMK42303 KECEKAPAN TENAGA DAN PENGURUSAN [ENERGY EFFICIENCY AND MANAGEMENT]

Type of Courses : Elective

No of Credits: 3

Course Synopsis:

This course exposes the students to national and worlds economic perspectives on energy in terms of economics, problems and the current status of energy. Through plans and operations for energy management and energy-efficient equipment, students will learn how efficient energy can be achieved. At the end of this course, students will be exposed to the techniques for energy audit such as analyzing energy consumptions and estimate a solution for energy-saving programs.

Course Outcomes:

1. Ability to evaluate the electricity tariff and energy management calculation in Malaysia for analyzing broadly-defined engineering problems with consideration for sustainable development.
2. Ability to apply appropriate simulation tools and techniques for analyzing and solving complex energy management problems.
3. Ability to evaluate demand-side management strategies and energy-saving

solutions based on electrical energy audits, considering their impacts on public health, safety, and the environment.

4. Ability to evaluate energy efficiency opportunities in electrical systems based on theoretical and practical knowledge, considering their conservation potentials.

EMK42403 TEKNOLOGI VOLTAN TINGGI [HIGH VOLTAGE TECHNOLOGY]

Type of Courses : Elective

No of Credits: 3

Course Synopsis:

This course exposes the students about insulating materials and their applications, breakdown phenomena in insulating material such as solids, liquids and gases. The course also covers generation and measurement of high DC, AC and impulse voltages and currents, high voltage testing techniques and testing of apparatus and equipment.

Course Outcomes:

1. Ability to analyze the various breakdown mechanism and applications of gas, liquid and solid dielectrics.
2. Ability to design the breakdown mechanism, generations and measurements of high voltage.
3. Ability to apply appropriate tools for validating the voltage and current in high voltage technology.
4. Ability to communicate effectively on design solutions related to high voltage technology problems through written reports or presentations.

EMK42503 ELEKTRONIK KUASA DAN APLIKASI [POWER ELECTRONICS AND APPLICATIONS]

Type of Courses : Elective

No of Credits: 3

Course Synopsis:

This course focuses on the application of power electronics in modern electric energy systems and emerging technologies. Students learn to evaluate, analyze, and simulate switched-mode power supplies and power electronic interfaces. The course covers real-world applications in areas such as electric vehicles, renewable energy, smart grids, and power quality. By the end of the course, students will be equipped to solve engineering problems in both research and industry.

Course Outcomes:

1. Ability to analyze engineering problems in various power electronics applications with consideration for sustainability development.
2. Ability to operate modern engineering tools with precision and recognize their limitations to develop effective solutions in various power electronics applications.
3. Ability to evaluate knowledge gained through independent and life-long learning in power electronics applications.

EMK42603 TEKNOLOGI PENYIMPANAN TENAGA [ENERGY STORAGE TECHNOLOGY]

Type of Courses : Elective

No of Credits: 3

Course Synopsis:

This course provides an in-depth understanding of various energy storage technologies, their applications, design principles, and integration into electrical systems. Students will explore different types of energy storage systems, including electrochemical, mechanical, thermal, and electromagnetic storage. Emphasis will be placed on battery technology, supercapacitors, and their role in renewable energy systems and smart grids.

Course Outcomes:

1. Ability to integrate energy storage systems with the applications of renewable energy and smart grids.
2. Ability to evaluate the economic viability and environmental impact of energy storage technologies, considering lifecycle assessment and

sustainability principles.

3. Ability to apply appropriate techniques to optimize energy storage systems using modern engineering tools and software.

EMK42703 TEKNOLOGI KENDERAAN ELEKTRIK [ELECTRIC VEHICLE TECHNOLOGY]

Type of Courses : Elective

No of Credits: 3

Course Synopsis:

This core course equips students with comprehensive knowledge and practical skills in electric vehicle (EV) technology. It encompasses the principles, design, and operation of electric vehicles, including detailed coverage of battery technologies and charging infrastructure. Additionally, the course addresses control strategies for driving electric motors.

Course Outcomes:

1. Ability to apply knowledge of different types of electric vehicle systems
2. Ability to evaluate the battery and charging technologies
3. Ability to analyze the control circuits for electric vehicle systems

EMK46103 KENDERAAN BERPANDU AUTOMATIK [AUTOMATED GUIDED VEHICLE]

Type of Courses : Elective

No of Credits: 3

Course Synopsis:

This course introduces the students to the concepts and design of wheeled and walking robot mechanisms with a study on their kinematics and dynamics aspects. The course also introduces the principles and applications of Autonomous Guided Vehicles (AGV)

Course Outcomes:

1. Ability to analyse task-specific mobility challenges and create engineering solutions for mobile robotic systems that address specific operational requirements.
2. Ability to analyze the operational performance of mobile robots for identifying performance limitations and proposing improvements.
3. Ability to manipulate tools and systems related to sensors, motors, and control units in wheeled robotic platforms.

EMK43006 PROJEK TAHUN AKHIR 2 [FINAL YEAR PROJECT 2]

No of Credits: 6

Course Synopsis:

This course emphasizes independent research, technical writing, and presentation skills through the execution of a final year project. Students are required to implement their research plan, analyze data, and draw conclusions under supervision. Emphasis is placed on producing a comprehensive technical report, technical paper, and oral presentation that reflect ethical, professional, and societal considerations in engineering practice.

Course Outcomes:

1. Ability to analyze broadly-defined engineering problems through research, literature review, and appropriate analytical techniques, deriving substantiated conclusions.
2. Ability to design research methodology and engineering solutions for broadly-defined engineering problems, contributing to the development of systems, components, or processes.
3. Ability to conduct investigations on broadly-defined engineering problems by selecting relevant data, designing and performing experiments, and drawing valid conclusions.
4. Ability to demonstrate commitment to ethical and professional responsibilities in implementing and reporting final year project work.
5. Ability to communicate effectively and inclusively on engineering technology problems when reporting and presenting final year project findings.
6. Ability to evaluate specialist technologies relevant to the final year project, applying independent learning and critical thinking.

EMK46203 SISTEM MEKATRONIK [MECHATRONIC SYSTEMS]

Type of Courses : Elective

No of Credits: 3

Course Synopsis:

This course aims to provide knowledge of mechatronics system. The effectiveness of measurement and actuation system in mechatronic systems will be explained. The theoretical aspects are validated with laboratory works.

Course Outcomes:

1. Ability to analyze the fundamental operation and application of sensors, signal conditioning and data acquisition systems to solve engineering problems in mechatronic systems
2. Ability to design mechatronic solutions for solving engineering problems using appropriate system components.
3. Ability to manipulate appropriate techniques to operate automation and control systems effectively.

EMK49003 KAWALAN MODEN [MODERN CONTROL]

No of Credits: 3

Course Synopsis:

This course offers a comprehensive study of modern control theory focusing on state-space modeling and control of dynamic systems. It emphasizes both theoretical understanding and hands-on application through laboratory work. Students will learn to model electrical, mechanical, and electromechanical systems using state-space methods, and analyze system properties such as controllability and observability. The course also covers controller design techniques, including pole placement and state-feedback control strategies. Simulation tools will be used extensively to support analysis and design processes, preparing students to implement modern control techniques in real-world engineering systems.

Course Outcomes:

1. Ability to investigate the state-space representation of dynamic systems.
2. Ability to analyze system behavior based on state-space representation models.
3. Ability to design control strategies based on state-space models for dynamic systems.
4. Ability to demonstrate the application of state-space modelling techniques using appropriate tools.

UR6522003

Bachelor of Technology in Electrical Maintenance System with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

To produce electrical system maintenance technologist that perform maintenance related work including electrical maintenance, facility manager, and energy manager.

PEO 2

To produce technopreneurs in electrical related technology.

PEO 3

To produce relevant, respected, and referred professionals in electrical maintenance technology.

PROGRAMME OUTCOMES (PO)

PO 1

Knowledge: Apply knowledge of technology fundamentals to broadly defined procedures, processes, systems, and methodologies in Electrical System Maintenance.

PO 2

Practical Skills and High Technology: Able to suggest and apply latest tools and techniques to solve broadly defined problems.

PO 3

Analytical, Critical Thinking and Scientific Approach: Demonstrate strong analytical and critical thinking skills to solve broadly defined problems in Electrical System Maintenance.

PO 4

Communication Skills: Able to communicate and articulate effectively in both verbal and written among technologist communities and society at large

PO 5

Social Responsibility in Society and Technologist Community: Demonstrate understanding of the societal related issues and the consequent responsibilities relevant to broadly defined technology practices

PO 6

Lifelong Learning and Information Management: Recognize the needs for professional development and to engage independent lifelong learning in specialist technologists.

PO 7

Technopreneurship and Management Skills: Demonstrate an awareness of management and technopreneurship practices in real perspective

PO 8

Ethics and Professionalism: Demonstrate professionalism and social and ethical consideration.

PO 9

Teamwork and Leadership: Demonstrate leadership quality, mentoring and work effectively in diverse teams.

CURRICULUM STRUCTURE								
UR6522003 BACHELOR OF TECHNOLOGY IN ELECTRICAL MAINTENANCE SYSTEM WITH HONOURS INTAKE 2025/2026								
YEAR	FIRST		SECOND		THIRD			FOURTH
SEMESTER	1	2	3	4	5	6	BREAK	7
DISCIPLINE CORE & ELECTIVE COURSES (106 CREDITS)	EMT10104 Electrical System Drafting and Simulation	EMT10405 Solar PV installation and Maintenance	EMT20105 Building Electrical System Maintenance	EMT20405 Electrical Machine & Drive System Integration	EMT30105 Industrial Machinery Control System Design	EMT31110 Final Industrial Project		EMT40112 Industrial Training
	EMT10204 Technical Reporting	EMT10505 Switchboard Maintenance and Calibration	EMT20205 Renewable Energy System Maintenance	EMT20505 Energy Efficiency Optimization	EMT30205 Monitoring system Integration	EMT30504 Maintenance Management System		
	EMT10305 Electrical System Measurement & Testing	EMT10603 Professional Practices	EMT20305 Generator System Maintenance	EMT20603 Collegiality Interaction and Management	EMT30304 Industrial Data Analysis	EMT30604 Project Planning and Execution		
				EMT20704 Technopreneur Project 1	EMT30404 Technopreneur Project 2			
UNIVERSITY REQUIREMENT COURSES (18 CREDITS)	SMZ1XX01 Co-Curriculum 1	SMU12102 Integrity and Anti- Corruption ^[4]	SMB1XX02 Third Language ^[5]					
	SMB41002 University Malay Language ^[3]	SMZ2XX01 Co-Curriculum 2	SMB31202 English for Technical Communication	SMU22402 Engineering Entrepreneurship	SMU13102 Appreciation of Ethics and Civilization			
	SMU13002 Philosophy and Current Issues	SMB20102 English for General Communication ^[2]						
TOTAL CREDITS (124 CREDITS)	18	18	19	19	20	8	10	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]							

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).

SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

[5] SMB1XX02: German, Mandarin or Japanese

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
EMT10104	Electrical System Drafting and Simulation [Rangkaian dan Simulasi Sistem Elektrik]	-
EMT10204	Technical Reporting [Laporan Teknikal]	-
EMT10305	Electrical System Measurement & Testing [Pengukuran dan Pengujian Sistem Elektrik]	-
EMT10405	Solar PV Installation and Maintenance [Pemasangan Dan Penyelenggaraan PV Solar]	-
EMT10505	Switchboard Maintenance and Calibration [Penyelenggaraan dan Penentukuran Papan Suis]	-
EMT10603	Professional Practices [Amalan Profesional]	-
EMT20105	Building Electrical System Maintenance [Penyelenggaraan Sistem Elektrik Bangunan]	-
EMT20205	Renewable Energy System Maintenance [Penyelenggaraan Sistem Tenaga Boleh Diperbaharui]	-
EMT20305	Generator System Maintenance [Penyelenggaraan Sistem Penjana]	-
EMT20405	Electrical Machine & Drive System Integration [Integrasi Mesin Elektrik dan Sistem Pemacu]	-
EMT20505	Energy Efficiency Optimization [Pengoptimuman Kecekapan Tenaga]	-
EMT20603	Collegiality Interaction and Management [Interaksi dan Pengurusan 'Collegiality']	-
EMT20704	Technopreneur Project 1 [Projek Keusahawanan Teknologi 1]	-
EMT30105	Industrial Machinery Control System Design [Rekabentuk Sistem Kawalan Jentera Industri]	-
EMT30205	Monitoring System Integration [Integrasi Sistem Pemantauan]	-
EMT30304	Industrial Data Analysis [Analisis Data Perindustrian]	-
EMT30404	Technopreneur Project 2 [Projek Keusahawanan Teknologi 2]	-
EMT30504	Maintenance Management System (MMS) [Sistem Pengurusan Penyelenggaraan]	-

COURSE CODE	COURSE NAME	SDG
EMT30604	Project Planning and Execution [Perancangan dan Pelaksanaan Projek]	-
EMT31110	Final Industrial Project [Projek Akhir Industri]	-
EMT40112	Industrial Training [Latihan Industri]	-

EMT10104 RANGKAIAN DAN SIMULASI SISTEM ELEKTRIK [ELECTRICAL SYSTEM DRAFTING AND SIMULATION]

No. of Credits: 4

Course Synopsis:

The main objective of this course is to expose students with skills of applying Computer Aided Drafting and its application. This course provides the student an exposure of electrical installation design for low voltage application. It introduces the student with electrical symbol, design lighting and switch socket outlet (S/S/O) required and design schematic diagram for Distribution Board, Sub Switch Board and Main Switch Board. An introduction to OrCAD software also given.

Course Outcomes:

1. Ability to demonstrate the general characteristics of electrical installation in the concepts of computer-aided drafting.
2. Ability to build electrical installation apparatus drawings for low-voltage applications.
3. Ability to demonstrate actual working drawings of an electrical project.

EMT10204 LAPORAN TEKNIKAL [TECHNICAL REPORTING]

No. of Credits: 4

Course Synopsis:

The objective of this course is to expose students to knowledge and skill in technical reporting using Excel, Word, and PowerPoint applications. In this course, students will be exposed to techniques and tips on producing a good formal report. Overall, it emphasizes the precise use of language and graphics to communicate technical and procedural information safely, legally, and ethically.

Course Outcomes:

1. Ability to apply knowledge of the problem-solving process to the effective reporting technique
2. Ability to show significant thinking abilities in analyzing technical and professional documentation.
3. Ability to propose appropriate techniques to convey technical information in a clear and easily accessible format
4. Ability to manage information related to various technical information in order to produce good proposal reports

EMT10305 PENGUKURAN DAN PENGUJIAN SISTEM ELEKTRIK [ELECTRICAL SYSTEM MEASUREMENT AND TESTING]

No. of Credits: 5

Course Synopsis:

To provide students with the concept, knowledge, and skill in electrical system measurement and testing, especially in developing themselves as good technologists upon graduation.

Course Outcomes:

1. Ability to apply the relevant parameter to the measurement.
2. Ability to perform the tests and measurements using the proper tools and techniques.
3. Ability to comply with proper safety procedures in handling tools during measurement works.

EMT10405 PEMASANGAN DAN PENYELENGGARAAN PV SOLAR [SOLAR PV INSTALLATION AND MAINTENANCE]

No. of Credits: 5

Course Synopsis:

This course is the first gateway for students to understand photovoltaic system technology. This course will introduce students to terminology used in solar photovoltaic (PV) system technology. It will enable students to assess, install, and maintain solar PV system configurations for stand-alone and grid-connected power generation based on the standard requirements by the agencies involved.

Course Learning Outcomes:

1. Ability to apply appropriate knowledge to solve or interpret the fundamentals, main characteristics, and components of the PV system
2. Ability to apply suitable tools or techniques for specific purposes related to the PV system.
3. Ability to demonstrate awareness of standards or policies related to PV systems in Malaysia.

EMT10505 PENYELENGGARAAN DAN PENENTUKURAN PAPAN SUIS [SWITCHBOARD MAINTENANCE AND CALIBRATION]

No. of Credits: 5

Course Synopsis:

This course covers the acquiring of knowledge on the maintenance and calibration aspects of switchboard. All the associated components of switchboard including circuit breaker, relays and others will be looked into, to establish good knowledge on their functions, operations and others. In general, it emphasizes on the principles and safe practice in accordance to operations of switchboard.

Course Outcomes:

1. Ability to analyze the basic principles of operation, construction, and connections of switchboard components and related equipment
2. Ability to demonstrate the calibration procedures on switchboard equipment using specific parameters
3. Ability to demonstrate proper safety procedures in the maintenance work of switchboard equipment.

EMT10603 AMALAN PROFESIONAL [PROFESSIONAL PRACTICE]

No. of Credits: 3

Course Synopsis:

Professional Practices course aims to explain the main concepts in engineering and technology ethics, risk management and occupational safety and health as well as to expose the students to basic of law in the engineering and technology context.

Course Outcomes:

1. Ability to apply knowledge of the aspects and procedures of legal on engineering and technology issues.
2. Ability to show significant thinking abilities in analyzing hazards, the function of risk management, and occupational safety and health (OSHA).
3. Ability to apply ethical principles to issues and challenges related to technology ethics.

EMT20105 PENYELENGGARAAN SISTEM ELEKTRIK BANGUNAN [BUILDING ELECTRICAL SYSTEM MAINTENANCE]

No. of Credits: 5

Course Synopsis:

This course covers tools and maintenance tasks that can develop knowledge of basic building maintenance tools and materials, applied skills and techniques, industry health and safety standards, and preventive maintenance and troubleshooting practices in the building trades and facilities maintenance fields.

Course Outcomes:

1. Ability to perform safe practice of common maintenance tasks on electrical systems used in buildings
2. Ability to demonstrate basic preventive and reactive maintenance procedures for residential homes, apartments, and appliances.
3. Ability to demonstrate an ethical awareness of safety and health while doing maintenance tasks.

EMT20205 PENYELENGGARAAN SISTEM TENAGA BOLEH DIPERBAHARUI [RENEWABLE ENERGY SYSTEM MAINTENANCE]

No. of Credits: 5

Course Synopsis:

This course covers the fundamentals of renewable energy technologies such as solar, wind, hydro, biomass, and fuel cells. Students will be taught about the principal of operation and maintenance of renewable energy systems where necessary. In addition, exposure to HOMER software will be conducted through this course to equip students with knowledge of techno-economic analysis. Complementary to the syllabus, there will be mini projects designed to enhance students' understanding about the control mechanism in renewable energy systems.

Course Outcomes:

1. Ability to apply appropriate knowledge to solve or interpret the fundamentals, main characteristics, and components of different renewable energy sources and systems.
2. Ability to apply suitable tools or techniques in maintenance activities of renewable energy systems
3. Ability to perform simple techno-economical assessments and compare environmental impact of renewable energy systems.

EMT20305 PENYELENGGARAAN SISTEM PENJANA [GENERATOR SYSTEM MAINTENANCE]

No. of Credits: 5

Course Synopsis:

This course covers the operation, maintenance, and service of the DC and AC generator systems. The DC and AC generator and its function in the electrical system are introduced. The principle of the control system, instrument, and metering, as well as generator protection system, are included. This course comprised of the maintenance strategy for DC and AC generator systems according to standard, which includes preventive maintenance. Also, this course encompasses the servicing method for DC and AC generator that related to fault diagnosis.

Course Outcomes:

1. Ability to.
2. apply knowledge of the concepts and principles of diesel generator operation to the solution of load balance and protection systems.
3. Ability to demonstrate a deep investigative ability to solve problems related to 3-phase AC and DC generator systems and load characteristics.
4. Ability to apply operational procedures, preventive maintenance strategy, and problem-solving for diesel generator systems according to standards.
5. Ability to demonstrate understanding of the generator system and safety issues related to the diesel generators to follow the IEEE Standard Criteria for Diesel Generators

EMT20405 INTEGRASI MESIN ELEKTRIK DAN SISTEM PEMACU [ELECTRICAL MACHINE AND DRIVE SYSTEM INTEGRATION]

No. of Credits: 5

Course Synopsis:

This course is designed to introduce the student to the principles of DC and AC motor drive control. This includes studying the concept of control modes for motor drives, connections, and applications. The integration practices among PLC, microcontrollers, motors, software, drives, computers, and other industrial equipment will be provided. Lectures and labs will place emphasis on the above items and will allow the student to build a working integrated motor drive system throughout the semester.

Course Outcomes:

1. Ability to apply the concepts and techniques used in the electrical machine drive systems.
2. Ability to propose and employ control algorithms of Programmable Logic Controller (PLC), microcontroller, and Variable Frequency Drive (VFD)
3. Ability to comply with safety regulations in handling electrical machines and drive integration equipment.

EMT20505 PENGOPTIMUMAN KECEKAPAN TENAGA [ENERGY EFFICIENCY OPTIMIZATION]

No. of Credits: 5

Course Synopsis:

This course exposes the students to national and world economic perspectives on energy in terms of economics, problems, and the current status of energy. In addition, the safety aspects of electrical equipment will also be exposed to the student to create awareness and safe working practices. Through plans and operations for energy management and energy-efficient equipment, students will learn how efficient energy utilization can be achieved. At the end of this course, students will be exposed to the techniques for energy audit, such as analyzing energy consumption and identifying a solution for energy-saving programs.

Course Outcomes:

1. Ability to understand energy management, standards, and safety aspect of efficient electrical energy utilization.
2. Ability to demonstrate the instrument and measurement tools of efficient electrical energy utilization.
3. Ability to demonstrate compliance to the energy policies and legislation, Electrical Hazards and Safety while performing energy management-related works.

EMT20603 INTERAKSI DAN PENGURUSAN 'COLLEGIALITY' [COLLEGIALITY INTERACTION AND MANAGEMENT]

No. of Credits: 3

Course Synopsis:

The course provides a skill on how to develop and use the knowledge and skills needed for effective professional collaboration, including team meetings, parent conferences, co-teaching, and problem-solving with colleagues.

Course Outcomes:

1. Ability to apply knowledge of pedagogical aids and organizational behavior.
2. Ability to function effectively in a group in managerial practice and application exercises.
3. Ability to discuss the role of systematic planning in solving problems related to organizational management to follow the organizational behavior theory.

EMT20704 PROJEK KEUSAHAWANAN TEKNOLOGI 1 [TECHNOPRENEUR PROJECT 1]

No. of Credits: 4

Course Synopsis:

The Technopreneur Project 1 course exposes students to the various financial aspects of new ventures. These include approaches to securing start-up capital and venture financing. Students learn about basic accounting, essential financial indicators, the types of funds available, the different categories of investors, and the importance of intellectual property in securing finance. The financial details to be included in a business plan are required for investment purposes, valuation of the company, and the art of negotiation with investors.

Course Outcomes:

1. Ability to apply knowledge of various financial indicators & tools to prepare financial information for a new business venture.
2. Ability to show significant thinking abilities in analyzing financial statements.
3. Ability to communicate effectively on the art of negotiation.
4. Ability to demonstrate management and technopreneurship skills in completing mini-projects related to business models and revenue models.

EMT30105 REKABENTUK SISTEM KAWALAN JENTERA INDUSTRI [INDUSTRIAL MACHINERY CONTROL SYSTEM DESIGN]

No. of Credits: 5

Course Synopsis:

One of the aspects of good technology is to have the capability of integrating the hardware and the software; thus, electrical technologies should be competent in programming. This course introduces basic programming using a high-level language (C language) and includes the study of PLC microcontroller architecture, its programming using C language, and interfacing with input and output devices. This knowledge is gathered and applied to design a microcontroller-based system. Apply and analyze control system problems by utilizing controller systems such as P, PI, PID, and Ziegler-Nichols in water level & flow, temperature, and servo motor. The course also leads to an understanding of the PLC central processing unit, input-output system, programming and peripheral devices, and programming languages, and will develop skills in programming PLC (Omron and Siemens) and applying it in industrial PLC.

Course Outcomes:

1. Ability to apply knowledge of the concept in PLCs' central processing unit, input-output system, programming, and peripheral devices.
2. Ability to employ appropriate tools and techniques for control system problems by utilizing controller systems, such as P, PI, PID, and Ziegler-Nichols, in broadly defined industrial problems e.g., water level & flow, temperature, and servo motor.
3. Ability to communicate effectively in evaluating the appropriate input and output devices for the selected control system and programmable logic controller through a technical report and presentation.

EMT30205 INTEGRASI SISTEM PEMANTAUAN [MONITORING SYSTEM INTEGRATION]

No. of Credits: 5

Course Synopsis:

The course provides an introduction to the fundamentals of Supervisory Control and Data Acquisition (SCADA), the architecture, the components, Human Machine Interface (HMI), and the applications of SCADA. Students were also introduced to the concept of the Internet of Things (IoT), network communications, and applications. Lectures and labs will place emphasis on the above items and will allow the student to operate the monitoring system and perform data analysis throughout the semester.

Course Outcomes:

1. Ability to apply the concept used in SCADA system development.
2. Ability to construct a Human Machine Interface (HMI) in a SCADA system and the network communication.
3. Ability to demonstrate teamwork and leadership skills while doing a group task.

EMT30304 ANALISIS DATA PERINDUSTRIAN [INDUSTRIAL DATA ANALYSIS]

No. of Credits: 4

Course Synopsis:

This course introduces students to several exploratory data analyses that are useful in collecting, organizing, analyzing, and interpreting data based on numerical and graphical data presentation. Probability concepts and several probability distributions that are useful in dealing with different types of random variables are also covered. For the preparation of making decisions and performing statistical inferences, point and interval estimations will be introduced. Then, a few techniques to perform statistical inferences using hypothesis testing and statistical modelling techniques on data using simple linear regression will be taught. The statistical knowledge and data analysis skills taught in this course are explored using suitable statistical software.

Course Outcomes:

1. Ability to apply knowledge of exploratory data analysis, probability concepts, and inferential statistics.
2. Ability to apply statistical data analysis using suitable software.
3. Ability to employ data analysis in industrial practice.

EMT30404 PROJEK KEUSAHAWANAN TEKNOLOGI 2 [TECHNOPRENEUR PROJECT 2]

No. of Credits: 4

Course Synopsis:

The start-up and growth of an enterprise invariably involves both human and financial capital. To manage the increasing pool of human resources and to convince venture capitalists to invest become two main issues especially for growing venture. This course consists of two parts: in the first part, organization and human resource management are introduced; in the second part, the focus is on writing a convincing business plan to attract venture capital investment. When enterprise starts to take shape and grow, more people will be hired, proper organization, team building, and human resource management will become important issues. In this course, students will be exposed to the various organizational aspects relevant to new ventures and established companies. These include the pros and cons of the different organization structures, conflicts that may arise among employees, and approaches to building strong teams. Human resources management techniques will also be introduced and discussed. In the second part of the course, the business model canvas will be described listing the connections among the different components of a business. The value of a business plan and the techniques of writing a business plan will be introduced.

Course Outcomes:

1. Ability to apply knowledge of the business model canvas, incorporating human and financial elements.
2. Ability to show significant thinking abilities in evaluating a convincing business plan.
3. Ability to function effectively in a group to motivate all stakeholders and build a cohesive venture team.
4. Ability to display technopreneurship routine to complete a design project and business venture.

EMT30504 SISTEM PENGURUSAN PENYELENGGARAAN [MAINTENANCE MANAGEMENT SYSTEM (MMS)]

No. of Credits: 4

Course Synopsis:

This course will introduce the student to the principles of the maintenance management system. The topics to be covered include Introduction to Maintenance Management, Reliability performance of production plants, Total Productive Maintenance (TPM), Maintenance methods and techniques, and Maintenance Software Application. As a part of the course implementation, there will be an industrial visit to the related industries in order to expose the students to the actual practices of a maintenance management system.

Course Outcomes:

1. Ability to apply knowledge of maintenance strategies used in industrial practices.
2. Ability to propose a suitable technique in a cost-effective manner.
3. Ability to show significant thinking ability to solve problems in an industrial environment.
4. Ability to function effectively in a team in completing a project or case study.

EMT30604 PERANCANGAN DAN PELAKSANAAN PROJEK [PROJECT PLANNING AND EXECUTION]

No. of Credits: 4

Course Synopsis:

The course introduces fundamental ideas in project planning and execution, including how to identify elements that contribute to project success and how to plan, analyze, and manage projects. Students will be exposed to various challenges to complete their projects. The students are able to demonstrate project planning and implementation by using a variety of information to produce a complete technical report.

Course Outcomes:

1. Ability to apply knowledge related to project planning and execution in an industrial-based project.
2. Ability to analyze the project scopes and schedule with a good estimation of the project budget.
3. Ability to propose and apply appropriate techniques to complete the project cycle.
4. Ability to employ independent learning in completing the industrial-based project.

EMT31110 PROJEK AKHIR INDUSTRI [INDUSTRIAL FINAL PROJECT]

No. of Credits: 10

Course Synopsis:

This course is designed to introduce a small-scale investigative project for solving engineering problems. Students must identify the issues, develop techniques for information gathering, conduct a project background search and select the proper methodology. In addition, students must deliver individual analysis and judgement by utilising appropriate modern technology/tools to perform the task and be assessed independently. At the end of the semester, students will have to prepare a written progress report and oral presentations using computers and multimedia technology.

Course Outcomes:

1. Ability to summarize activities related to the project development and executes them in a timely manner.
2. Ability to perform related tasks in the implementation of Final Year Project
3. Ability to communicate effectively related to the proposed solutions and progress outcomes.
4. Ability to apply knowledge of technology fundamentals to solve broadly defined procedures, Ability to conduct the project activities ethically based on the standard procedures, protocols and requirements outlined.

EMT40112 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]

No. of Credits: 12

Course Synopsis:

Industrial training is one of the components under the Work-Based Learning (WBL) for the Bachelor of Technology in Electrical System Maintenance program. The course will expose students to technical and practical applications and other aspects such as the company's operation, work culture, safety procedures, project management, communication, technical skills, and presentation to achieve an appreciation and/or capability of carrying out technologist activities.

Course Outcomes:

1. Ability to apply knowledge of the aspects and procedures from industrial training
2. Ability to display/demonstrate related skills in an industrial environment.
3. Ability to correlate theory and practice with the knowledge gained from industrial training.
4. Ability to apply ethical principles to issues and challenges related to industrial training

FACULTY OF ELECTRONIC ENGINEERING & TECHNOLOGY (FKTEN)

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Programmes Offered:

- Bachelor of Microelectronic Engineering with Honours
- Bachelor of Biomedical Electronic Engineering with Honours
- Bachelor of Electronic Engineering with Honours
- Bachelor of Electronic Engineering Technology (Electronic Systems) with Honours
- Bachelor of Electronic Engineering Technology (Electronic Telecommunication Design) with Honours
- Bachelor of Electronic Engineering Technology (Electronic Network Design) with Honours
- Bachelor of Technology in Industrial Electronic Automation with Honours
- Diploma in Electronic Engineering

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UR6523001

Bachelor of Microelectronic Engineering with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

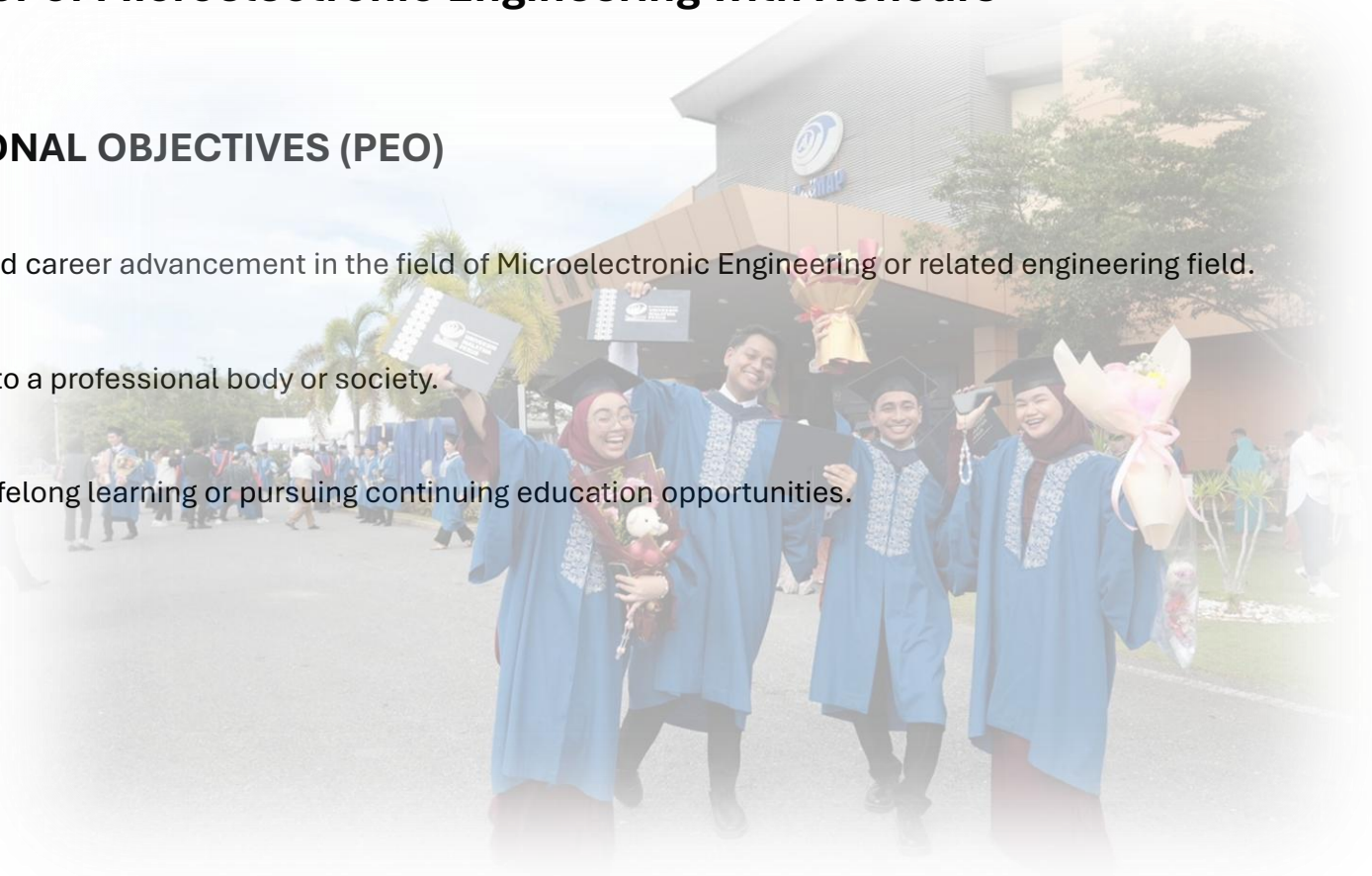
Graduates who have demonstrated career advancement in the field of Microelectronic Engineering or related engineering field.

PEO 2

Graduates who have contributed to a professional body or society.

PEO 3

Graduates who have engaged in lifelong learning or pursuing continuing education opportunities.



PROGRAMME OUTCOMES (PO)

PO 1

Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization as specified in WK1 to WK4 respectively to develop solutions to complex engineering problems.

PO 2

Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development (WK1 to WK4).

PO 3

Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required (WK5).

PO 4

Conduct investigation of complex engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions (WK8).

PO 5

Create, select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems (WK2 and WK6).

PO 6

Analyse and evaluate sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving complex engineering problems (WK1, WK5, and WK7).

PO 7

Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion (WK9).

PO 8

Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings (WK9).

PO 9

Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO 10

Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments.

PO 11

Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change (WK8).

CURRICULUM STRUCTURE
UR6523001 BACHELOR OF MICROELECTRONIC ENGINEERING WITH HONOURS INTAKE 2025/2026

YEAR	FIRST		SECOND		THIRD			FOURTH	
SEMESTER	1	2	3	4	5	6	BREAK	7	8
DISCIPLINE CORE & ELECTIVE COURSES (102 CREDITS)	NMJ11303 Circuit Theory	NMJ11203 Electrical Power System	*NMJ20303 Analogue Electronics 2	NMJ21603 Integrated Circuit Design	NMJ32303 Digital Integrated Circuit Design	NMJ32603 Computer Architecture	NMJ30905 Industrial Training	NMJ41802 Final Year Project 1	NMJ41904 Final Year Project 2
	NMJ10603 Electronic Engineering Skills	NMJ10303 Digital Electronic 1	*NMJ20503 Digital Electronics 2	NMJ21203 Microprocessor	NMJ30203 Microelectronic Fabrication 1	*NMJ30303 Microelectronic Fabrication 2		NMJ41103 Semiconductor Packaging	NMJ40303 Reliability and Failure Analysis
	NMJ10403 Physics for Electronics	NMJ10903 Computer Programming	NMJ20603 Semiconductor Physics	*NMJ21803 Electromagnetic Theory	NMJ32903 Communication System	NMJ31403 Digital Signal Processing		NMJXXX3 Elective I	NMJXXX3 Elective IV
	NMJ11103 Electronic Devices	*NMJ10203 Analog Electronic 1	*NMJ20703 Signal and System	NMJ32703 Control Systems	NMJ30403 Instrumentation	NMJ32004 Integrated Design Project		NMJXXX3 Elective II	
								NMJXXX3 Elective III	
COMMON CORE COURSES (17 CREDITS)	IMQ10103 Engineering Mathematics 1	IMQ10203 Engineering Mathematics 2	IMQ20303 Engineering Mathematics 3	IMQ27103 Engineering Statistics	NMJ31603 Management for Engineers	NMJ30602 Professional Engineers			
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMB41002 University Malay Language ^[4]	SMZXXX01 Co-Curriculum 2	SMB20102 English for General Communication ^[2]	SMB31202 English for Technical Communication	SMU12102 Integrity and Anti- Corruption ^[3]	SMU22402 Engineering Entrepreneurship		SMU13102 Appreciation of Ethics and Civilization	SMU13002 Philosophy and Current Issues
	SMZXXX01 Co-Curriculum 1								
TOTAL CREDITS (135 CREDITS)	18	16	17	17	17	17	5	16	12
AUDIT COURSES		SMB10102 Preparatory English ^[1]							

Elective I, II, III, IV : NMJ30803 Reliability and Testability in Integrated Circuit Design, NMJ31703 Advanced Devices, *NMJ40703 Micro-Electro-Mechanical Systems, NMJ40903 Optical Communication (offer in Semester 7)
 (Choose FOUR (4)) NMJ40403 Nanoelectronic Engineering, NMJ42403 Optoelectronic System, NMJ40203 Data Analytics (offer in Semester 8)

- [1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.
 [2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.
 [3] International students should register SMU13202 Malaysian Studies.
 [4] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

*Courses with prerequisite

Courses	Prerequisite
NMJ10203	NMJ11103
NMJ20303	NMJ10203
NMJ20503	NMJ10303
NMJ20703	IMQ10203
NMJ21803	IMQ10103
NMJ30303	NMJ30203
NMJ40703	NMJ30203

UR6523004

Bachelor of Biomedical Electronic Engineering with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates who have demonstrated career advancement in the field of Biomedical Electronic Engineering or related engineering field

PEO 2

Graduates who have contributed to a professional body or society

PEO 3

Graduates who have engaged in lifelong learning or pursuing continuing education opportunities



PROGRAMME OUTCOMES (PO)

PO 1

Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization as specified in WK1 to WK4 respectively to develop solutions to complex engineering problems.

PO 2

Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development (WK1 to WK4).

PO 3

Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required (WK5).

PO 4

Conduct investigation of complex engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions (WK8).

PO 5

Create, select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems (WK2 and WK6).

PO 6

Analyse and evaluate sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving complex engineering problems (WK1, WK5, and WK7).

PO 7

Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion (WK9).

PO 8

Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings (WK9).

PO 9

Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO 10

Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments.

PO 11

Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change (WK8).

CURRICULUM STRUCTURE UR6523004 BACHELOR OF BIOMEDICAL ELECTRONIC WITH HONOURS INTAKE 2025/2026									
YEAR	FIRST		SECOND		THIRD			FOURTH	
SEMESTER	1	2	3	4	5	6	BREAK	7	8
DISCIPLINE CORE & ELECTIVE COURSES (102 CREDITS)	NMJ11303 Circuit Theory	NMJ10903 Computer Programming	NMJ21103 Engineering Mechanics	NMJ20103 Biomaterials	NMJ31003 Mechanics of Materials	NMJ32903 Communication System	NMJ30905 Industrial Training	NMJ41802 Final Year Project 1	NMJ41904 Final Year Project 2
	NMJ10603 Electronic Engineering Skills	NMJ11503 Analog Electronic	NMJ20303 Analog Electronics 2	NMJ21803 Electromagnetic Theory	NMJ32804 Linear Control Systems	NMJ31103 Electrical Drives & Machines		NMJ40003 Bioinstrumentation 2	NMJ41003 Artificial Organs
	NMJ10004 Anatomy & Physiology	NMJ10303 Digital Electronic 1	NMJ20703 Signal & Systems	NMJ20203 Biomechanics	NMJ30703 Safety, Standards and Ethics In Biomedical Engineering	NMJ32004 Integrated Design Project		NMJ41503 Medical Imaging	NMJ4XX03 Elective 2
		NMJ10103 Biochemistry	NMJ21003 Computer Aided Design	NMJ21304 Microcontrollers & Interfaces	NMJ31303 Digital Signal Processing in Biomedical Applications	NMJ30003 Bioinstrumentation 1		NMJ4XX03 Elective 1	
						NMJ33003 Thermofluids			
COMMON CORE COURSES (17 CREDITS)	IMQ10103 Engineering Mathematics 1	IMQ10203 Engineering Mathematics 2	IMQ20303 Engineering Mathematics 3	IMQ27103 Engineering Statistics				NMJ31603 Management for Engineers	NMJ30602 Professional Engineers
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMZ1XX01 Co-Curriculum I	SMZ2XX01 Co-Curriculum 2	SMU13102 Appreciation of Ethics & Civilization	SMB31202 English for Technical Communication	SMU22402 Engineering Entrepreneurship				
	SMU13002 Philosophy and Current Issues	SMB20102 English for General Communication ^[2]			SMB41002 University Malay Language ^[3]				
	SMU12102 Integrity and Anti-Corruption ^[4]								
TOTAL CREDITS (135 CREDITS)	18	18	17	18	17	16	5	14	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]								

Elective 1 : NMJ41303 Pemrosesan Imej Perubatan [Medical Image Processing], NMJ40103 Biopenderia dan BioMEMS [Biosensor and BioMEMS]

Elective 2 : NMJ40603 Kepintaran Buatan [Artificial Intelligence], NMJ41603 Perubatan Robotik [Medical Robotics]

*Courses with prerequisite

Courses	Prerequisite
NMJ20303	NMJ11503
NMJ21803	IMQ10103
NMJ20703	IMQ10203
NMJ31303	NMJ20703
NMJ41603	NMJ21103

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

UR6523005

Bachelor of Electronic Engineering with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates who have demonstrated career advancement in the field of Electronic Engineering or related engineering field.

PEO 2

Graduates who have contributed to a professional body or society.

PEO 3

Graduates who have engaged in lifelong learning or pursuing continuing education opportunities.

PROGRAMME OUTCOMES (PO)

PO 1

Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization as specified in WK1 to WK4 respectively to develop solutions to complex engineering problems.

PO 2

Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development (WK1 to WK4).

PO 3

Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required (WK5).

PO 4

Conduct investigation of complex engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions (WK8).

PO 5

Create, select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems (WK2 and WK6).

PO 6

Analyse and evaluate sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving complex engineering problems (WK1, WK5, and WK7).

PO 7

Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion (WK9).

PO 8

Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings (WK9).

PO 9

Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO 10

Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments.

PO 11

Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change (WK8).

CURRICULUM STRUCTURE UR6523005 BACHELOR OF ELECTRONIC ENGINEERING WITH HONOURS INTAKE 2025/2026									
YEAR	FIRST		SECOND		THIRD			FOURTH	
SEMESTER	1	2	3	4	5	6	BREAK	7	8
DISCIPLINE CORE & ELECTIVE COURSES (102 CREDITS)	NMJ11303 Circuit Theory	NMJ11203 Electrical Power System	*NMJ20303 Analog Electronic 2	NMJ21603 Integrated Circuit Design	NMJ32303 Digital Integrated Circuit Design	NMJ32603 Computer Architecture	NMJ30905 Industrial Training	NMJ41802 Final Year Project 1	NMJ41904 Final Year Project 2
	NMJ10603 Electronic Engineering Skills	NMJ10303 Digital Electronic 1	*NMJ20503 Digital Electronic 2	NMJ21203 Microprocessor	NMJ31203 Microcontroller	NMJ32503 VLSI Design		NMJ42003 MEMS Design and Fabrication	NMJ42203 System on Chip
	NMJ10403 Physics for Electronic	NMJ10903 Computer Programming	NMJ20603 Semiconductor Physics	*NMJ21803 Electromagnetic Theory	NMJ32903 Communication Systems	NMJ31403 Digital Signal Processing		NMJ42103 Analogue Integrated Circuit Design	NMJXXXXX Elective Course 2
	NMJ11103 Electronic Devices	NMJ10203 Analog Electronic 1	*NMJ20703 Signal and Systems	NMJ32703 Control Systems	NMJ30403 Instrumentation	NMJ32004 Integrated Design Project		NMJ30803 Reliability and Testability in Integrated Circuit Design	
								NMJXXXXX Elective Course 1	
COMMON CORE COURSES (17 CREDITS)	IMQ10103 Engineering Mathematics 2	IMQ10203 Engineering Mathematics 2	IMQ20303 Engineering Mathematics 3	IMQ27103 Engineering Statistics	NMJ31603 Management for Engineers	NMJ30602 Professional Engineers			
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMB41002 University Malay Language ^[4]	SMZXXX01 Co-Curriculum 2	SMB20102 English for General Communication ^[2]	SMB31202 English for Technical Communication	SMU12102 Integrity and Anti- Corruption ^[3]	SMU22402 Engineering Entrepreneurship		SMU13102 Appreciation of Ethics and Civilization	SMU13002 Philosophy and Current Issues
	SMZXXX01 Co-Curriculum 1								
TOTAL CREDITS (135 CREDITS)	18	16	17	17	17	17	5	16	12
AUDIT COURSES		SMB10102 Preparatory English ^[1]							

Elective Course 1 & 2: NMJ31703 Advanced Devices, NMJ43103 FPGA System Design, NMJ42403 Optoelectronic System, NMJ40303 Reliability and Failure Analysis, NMJ40403 Nanoelectronic Engineering.

*Courses with prerequisite

- [1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.
- [2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.
- [3] International students should register SMU13202 Malaysian Studies.
- [4] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

Courses	Prerequisite
NMJ20503	NMJ10303
NMJ20303	NMJ10203
NMJ21803	IMQ10103
NMJ20703	IMQ10203

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
NMJ10004	Anatomi dan Fisiologi [Anatomy and Physiology]	SDG 04
NMJ10103	Biokimia [Biochemistry]	SDG 04
NMJ10203	Elektronik Analog 1 [Analog Electronic 1]	SDG 09
NMJ10303	Elektronik Digit 1 [Digital Electronic 1]	-
NMJ10403	Fizik untuk Elektronik [Physics for Electronics]	-
NMJ10603	Kemahiran Kejuruteraan Elektronik [Electronic Engineering Skills]	-
NMJ10903	Pengaturcaraan Komputer [Computer Programming]	-
NMJ11103	Peranti Elektronik [Electronic Devices]	SDG 09
NMJ11203	Sistem Kuasa Elektrik [Electrical Power System]	SDG 07
NMJ11303	Teori Litar [Circuit Theory]	SDG 07
NMJ11503	Elektronik Analog [Analog Electronic]	SDG 04
NMJ20103	Biobahan [Biomaterials]	SDG 03
NMJ20203	Biomekanik [Biomechanics]	-
NMJ20303	Elektronik Analog 2 [Analogue Electronics 2]	SDG 09
NMJ20503	Elektronik Digital 2 [Digital Electronic 2]	-
NMJ20603	Fizik Semikonduktor [Semiconductor Physics]	-
NMJ20703	Isyarat Dan Sistem [Signal And Systems]	SDG 09
NMJ21003	Reka Bentuk Terbantu Komputer [Computer Aided Design]	-

COURSE CODE	COURSE NAME	SDG
NMJ21103	Mekanik Kejuruteraan [Engineering Mechanics]	-
NMJ21203	Mikropemproses [Microprocessor]	-
NMJ21304	Mikropengawal Dan Pengantaramuka [Microcontroller And Interfaces]	SDG 09
NMJ21603	Reka Bentuk Litar Bersepadu [Integrated Circuit Design]	SDG 11
NMJ21803	Teori Elektromagnet [Electromagnetic Theory]	-
NMJ30003	Bioinstrumentasi 1 [Bioinstrumentation 1]	SDG 09
NMJ30203	Fabrikasi Mikroelektronik 1 [Microelectronic Fabrication 1]	SDG 09
NMJ30303	Fabrikasi Mikroelektronik 2 [Microelectronic Fabrication 2]	SDG 09
NMJ30403	Instrumentasi [Instrumentation]	-
NMJ30602	Jurutera Profesional [Professional Engineers]	-
NMJ30703	Keselamatan, Piawaian dan Etika Dalam Kejuruteraan Bioperubatan [Safety, Standards and Ethics In Biomedical Engineering]	-
NMJ30803	Kebolehujaian dan Keboleharapan dalam Rekabentuk Litar Terkamir [Reliability and Testability in Integrated Circuit Design]	-
NMJ30905	Latihan Industri [Industrial Training]	-
NMJ31003	Mekanik Bahan [Mechanics of Materials]	-
NMJ31203	Mikropengawal [Microcontroller]	SDG 09
NMJ31303	Pemprosesan Isyarat Digit dalam Aplikasi-Aplikasi Bioperubatan [Digital Signal Processing in Biomedical Applications]	SDG 03
NMJ31403	Pemprosesan Isyarat Digit [Digital Signal Processing]	SDG 09, SDG 03
NMJ31603	Pengurusan Untuk Jurutera [Management For Engineers]	-

COURSE CODE	COURSE NAME	SDG
NMJ31703	Peranti-peranti Termaju [Advanced Devices]	-
NMJ32004	Projek Reka Bentuk Bersepadu [Integrated Design Project]	SDG 03, SDG 07, SDG 09
NMJ32303	Rekabentuk Litar Bersepadu Digital [Digital Integrated Circuit Design]	-
NMJ32503	Reka Bentuk VLSI [VLSI Design]	-
NMJ32603	Senibina Komputer [Computer Architecture]	-
NMJ32703	Sistem Kawalan [Control Systems]	-
NMJ32804	Sistem Kawalan Lelurus [Linear Control Systems]	SDG 09
NMJ32903	Sistem Perhubungan [Communication System]	SDG 07, SDG 11
NMJ33003	Termobendalir [Thermofluids]	SDG 04
NMJ33103	Mesin Elektrik dan Pemacu [Electrical Machines and Drives]	SDG 09
NMJ40003	Bioinstrumentasi II [Bioinstrumentations II]	SDG 03, SDG 09
NMJ40103	Biopenderia dan BioMEMS [Biosensor and BioMEMS]	SDG 03, SDG 04
NMJ40303	Kebolehharapan Dan Analisa Kegagalan [Reliability and Failure Analysis]	SDG 09
NMJ40403	Kejuruteraan Nanoelektronik [Nanoelectronic Engineering]	-
NMJ40603	Kepintaran Buatan [Artificial Intelligence]	SDG 04
NMJ40703	Sistem Mikroelektromekanikal [Microelectromechanical System]	SDG 09
NMJ40903	Perhubungan Optik [Optical Communication]	SDG 09
NMJ41003	Organ Buatan [Artificial Organs]	-

COURSE CODE	COURSE NAME	SDG
NMJ41103	Pembungkusan Semikonduktor [Semiconductor Packaging]	SDG 12
NMJ41303	Pemprosesan Imej Perubatan [Medical Image Processing]	-
NMJ41503	Pengimejan Perubatan [Medical Imaging]	-
NMJ41603	Perubatan Robotik [Medical Robotics]	SDG 04
NMJ41802	Projek Tahun Akhir 1 [Final Year Project 1]	SDG 04
NMJ41904	Projek Tahun Akhir 2 [Final Year Project 2]	SDG 04
NMJ42003	Rekabentuk dan Fabrikasi MEMS [MEMS Design and Fabrication]	SDG 11
NMJ42103	Rekabentuk Litar Bersepadu Analog [Analogue Integrated Circuit Design]	-
NMJ42203	Sistem Atas Cip [System on Chip]	-
NMJ42403	Sistem Optoelektronik [Optoelectronic System]	SDG 07, SDG 09
NMJ43103	Rekabentuk Sistem FPGA [FPGA System Design]	SDG 09, SDG 11

NMJ10004 ANATOMI DAN FISILOGI [ANATOMY AND PHYSIOLOGY]

No of Credits: 4

Course Synopsis:

This course introduces basic human anatomy and physiology. The students will be exposed to the basic knowledge on cell and tissues, skin and appendages, circulatory and cardiovascular system, the respiratory system, nervous system, special senses, the musculoskeletal system, digestive system and metabolism, lymphatic and immune system, the endocrine system, urinary system, and also reproductive system. At the end of the course, the students are expected to have a good grip of basic anatomical and physiological aspects of the human body and be able to apply in biomedical engineering problem solving.

Course Outcomes:

1. Ability to apply theories of the basic structure of cell and tissues and their specific roles in the physiological mechanism of the human system.
2. Ability to analyse the anatomical structure of the human organs and their physiological functions and interrelationship within human body systems.
3. Ability to analyse the interaction between multiple body system to regulate homeostasis, effect of dysfunctions and therapeutic interventions.

NMJ10103 BOKIMIA [BIOCHEMISTRY]

No of Credits: 3

Course Synopsis:

The topics cover in this course includes the origin of life and structure of prokaryotes and eukaryotes cells, properties and structure, classification and function of biomolecules such as carbohydrates, lipids and amino acids. The role of proteins and enzymes in biochemistry, purification of protein, molecular biology and genetics will be featured in the course. Electron transportation, citric acid cycle photosynthesis in biological processes are briefly highlighted. Application of laboratory technologies for biological fluids are also introduced in this course to expose the student to the real application of biochemistry knowledge.

Course Outcomes:

1. Ability to apply the molecular structure and classification of carbohydrate, lipids, proteins and nucleic acids and their biological roles in eukaryotes and prokaryotes cells.
2. Ability to analyse the principle, components and operating mechanism of biochemical techniques and their diagnostic applications.

3. Ability to analyse the structure, regulation and integration of metabolic pathways with their biochemical measurement in biomedical systems.

NMJ10203 ELEKTRONIK ANALOG 1 [ANALOG ELECTRONIC 1]

No of Credits: 3

Course Synopsis:

This course exposes students to the fundamentals of analog electronic circuits, including amplifier circuits based on bipolar junction and field effect transistors for single and multistage configurations, power amplifiers, and amplifier frequency response. It has been designed to provide basic analog electronics skills, covering theoretical analyses, simulations, and practical experiments.

Course Outcomes:

1. Ability to apply knowledge of circuit theory and the principles of electronic devices in analog applications.
2. Ability to analyze amplifier circuits in analog applications.
3. Ability to apply appropriate techniques and engineering tools to solve experimental problems in amplifier circuits.

NMJ10303 ELEKTRONIK DIGIT 1 [DIGITAL ELECTRONIC 1]

No of Credits: 3

Course Synopsis:

This course is intended to cover the introduction and discussion of the fundamental of digital circuit design and analysis. The lecture covers the following topics: Boolean Algebra, Numbering system, Basic Logic Gates, Combinational Circuit Design, Timing Diagram, Bi-State Memory Device and Sequential Circuit Design.

Course Outcomes:

1. Ability to apply different numbering systems and the basic theory of the binary system.
2. Ability to apply method of minimizing Boolean functions for digital logic circuit.
3. Ability to design combinational logic circuit in terms of Boolean Function.
4. Ability to design sequential logic circuits based on Boolean functions.

NMJ10403 FIZIK UNTUK ELEKTRONIK [PHYSICS FOR ELECTRONICS]

No of Credits: 3

Course Synopsis:

This course provides a comprehensive introduction to the fundamental principles of physics that form the foundation of electronic and microelectronic engineering. Students will explore key topics such as mechanics, oscillations and waves, thermodynamics, electromagnetism, wave optics, photons, and solid-state physics. Emphasis is placed on developing a deep conceptual understanding of these areas, along with their practical applications in modern technology and device engineering. The course aims to equip learners with the analytical skills and scientific knowledge necessary to interpret, design, and optimize electronic systems from a physics-based perspective.

Course Outcomes:

1. Ability to analyze problems using concepts and principles of mechanics, electromagnetism, oscillations and waves in electronic and microelectronic engineering.
2. Ability to analyze problems using concepts and principles of thermodynamics, wave optics, photons, and solid-state physics in electronic and microelectronic engineering.

NMJ10603 KEMAHIRAN KEJURUTERAAN ELEKTRONIK [ELECTRONIC ENGINEERING SKILLS]

No of Credits: 3

Course Synopsis:

This course is 100% practical work and carries 3 credit hours. It contains five essential modules to develop basic engineering skills for electronics students. The modules include an introduction to electronic components and instrumentation, electronic circuit design and simulation, PCB design, technical drawing, and as well as product design and integration.

Course Outcomes:

1. Ability to measure electronic components and basic circuits using appropriate electronic instrumentation tools.
2. Ability to construct basic electronic schematics using appropriate simulation tools.
3. Ability to construct a printed circuit board (PCB) using appropriate software tools.

4. Ability to construct two-dimensional (2D) and three-dimensional (3D) technical drawings using appropriate CAD software.
5. Ability to build a three-dimensional (3D) model of an electronic product using appropriate software tools.

NMJ10903 PENGATURCARAAN KOMPUTER [COMPUTER PROGRAMMING]

No of Credits: 3

Course Synopsis:

This course introduces students the concept of computer programming with emphasis on engineering problems using C language. The aims are to provide students with programming and problem-solving skills. Coverage of the course includes the syntax, variables, data types, control flow, function, arrays, pointers, structures, and file processing. Throughout the course, students are expected to analyse and write a C programming for various applications.

Course Outcomes:

1. Ability to analyse programming concepts in C programs.
2. Ability to develop a program for real-world problems.
3. Ability to utilize appropriate programming tools to compile, debug, and execute C programs.

NMJ11103 PERANTI ELEKTRONIK [ELECTRONIC DEVICES]

No of Credits: 3

Course Synopsis:

This course focuses on electronic devices namely diodes and transistors. Firstly, types of semiconductor materials and pn junction are introduced. Then, operation, characteristics and applications of diodes are covered. Finally, operation and characteristics of Bipolar Junction Transistors (BJTs) and Field Effect Transistors (FETs) are evaluated under various types of biasing.

Course Outcomes:

1. Ability to apply basic principles of semiconductor materials to explain the operation of diodes, BJTs, and FETs in electronic circuits.
2. Ability to analyze diode characteristics and applications in electronic circuits.
3. Ability to examine various biasing techniques used in transistor amplifier circuits.

NMJ11203 SISTEM KUASA ELEKTRIK [ELECTRICAL POWER SYSTEM]

No of Credits: 3

Course Synopsis:

This course introduces the fundamentals of electrical power systems. It covers voltage conversion using power semiconductor devices, power electronic circuits, and converters such as rectifiers, choppers, and inverters. Students will study the main components of power systems, including generation, transmission, and distribution, as well as three-phase systems with star and delta connections. The course also includes the principles and applications of transformers, AC machines, and DC machines, focusing on their construction, equivalent circuits, and performance. Students will also explore recent developments in power systems, including renewable energy and smart grid technologies, with a focus on sustainability and modern energy solutions.

Course Outcomes:

1. Ability to apply fundamental of power conversion, power system components, and three-phase systems in solving electrical power problems.
2. Ability to analyze the principles of transformers, AC machines, and DC machines in solving electrical machines problems.
3. Ability to analyze recent advancements in electrical power system technologies addressing affordable clean energy and environmental sustainability.

NMJ11303 TEORI LITAR [CIRCUIT THEORY]

No of Credits: 3

Course Synopsis:

This course introduces fundamental techniques for analyzing linear electric circuits under both direct current (DC) and alternating current (AC) conditions. Key topics include basic laws and theorems, DC circuit analysis, phasors, sinusoidal steady-state analysis, RLC circuits, AC power, power factor correction, and balanced three-phase systems. By the end of the course, students will be able to apply circuit theorems and concepts to analyze linear electrical circuits effectively.

Course Outcomes:

1. Ability to analyze circuit laws and theorems to solve basic DC electrical circuit problems in electrical system design and analysis.
2. Ability to analyze complex AC circuits with resistive, inductive, and

capacitive components using appropriate techniques to evaluate circuit performance in engineering applications.

NMJ11503 ELEKTRONIK ANALOG [ANALOG ELECTRONIC]

No of Credits: 3

Course Synopsis:

This course provides fundamental knowledge of analog circuit. The topics covered include basic semiconductor materials, diode, bipolar junction transistors (BJTs), field effect transistors (FETs) and thyristors. BJT and FET amplifiers are also covered in this course. The course is designed to provide basic electronic skills covering theories and practical.

Course Outcomes:

1. Ability to apply basic operation of selected electronic devices.
2. Ability to evaluate the circuit or biasing of selected electronic devices.

NMJ20103 BIOBAHAN [BIOMATERIALS]

No of Credits: 3

Course Synopsis:

This course covers fundamental biomaterials science with emphasis on biomedical applications. Students will learn about biocompatibility, key material properties, and interactions with biological systems. It also includes evaluating material performance, medical device design, and clinical material selection. Through lectures and case studies, students gain skills to apply biomaterials in real-world biomedical engineering contexts.

Course Outcomes:

1. Ability to apply the concept of biocompatibility and the fundamental properties of materials used in biomedical applications.
2. Ability to analyze biomaterials-tissue interactions and the biological performance of the medical devices.
3. Ability to evaluate the key components of medical devices and the selection of appropriate materials for specific application.

NMJ20203 BIOMEKANIK [BIOMECHANICS]

No of Credits: 3

Course Synopsis:

This is an introductory course to biomechanics which covers the engineering mechanics, anatomy and basic applications on the analysis of the human body as mechanical systems. This course aiming to integrate the knowledge of fundamental anatomy and mechanics to develop a deeper understanding of the field of human movement science. The course also aims to introduce students to the fundamentals of biomechanics and to relate these to mechanical actions of, by and on the body.

Course Outcomes:

1. Ability to apply the biomechanics principle, anatomy terminologies and their relationships.
2. Ability to analyse the fundamental of mechanics to the structure and function of human body.
3. Ability to evaluate problems related to kinematics and kinetics of human movement.

NMJ20303 ELEKTRONIK ANALOG 2 [ANALOGUE ELECTRONICS 2]

No of Credits: 3

Course Synopsis:

The course introduces students to the concepts, operation, analysis, and design of operational amplifier circuits. Students are also required to analyze various types of these circuits, such as active filters, feedback circuits, oscillators, and voltage regulators. In addition, students will conduct experiments using operational amplifiers.

Course Outcomes:

1. Ability to analyze operational amplifier circuits in analog applications.
2. Ability to design operational amplifier circuits for analog applications.
3. Ability to apply relevant techniques and engineering tools to solve experimental problems in operational amplifier circuits.

NMJ20503 ELEKTRONIK DIGITAL 2 [DIGITAL ELECTRONIC 2]

No of Credits: 3

Course Synopsis:

This course introduces the students to the techniques in solving, designing and implementing complex engineering in digital electronics. The course emphasizes digital systems, focusing on sequential systems, computer design basics as well as memory devices. In this course, the students are exposed to digital basic, digital hardware and digital characteristics and parameters. For sequential systems, students are exposed to sequences in flip-flop systems and problem solving techniques. Through finite state machines, students learn how to design and solve sequential systems using the Mealy and Moore model and their implementation using flip-flops. In addition, the algorithmic state machines to describe the sequential operations of a digital system are also included. The students will also be introduced to the basic operation of memory, types of memory and computer design basics.

Course Outcomes:

1. Ability to apply fundamental concepts of digital electronic design for complex digital electronic systems.
2. Ability to design solutions for complex digital electronic systems.
3. Ability to apply appropriate techniques, resources and modern engineering tools to solve complex digital electronic problems.

NMJ20603 FIZIK SEMIKONDUKTOR [SEMICONDUCTOR PHYSICS]

No of Credits: 3

Course Synopsis:

This course is developed to provide the fundamental knowledge on semiconductor physics, devices characterizations and operation along with semiconductor technology. Recent advancement of semiconductor devices when scaling down the sizes also covers for this course. Semiconductor physics covers topics of introduction to semiconductor material, devices and technology, energy band and carrier concentration in thermal equilibrium, carrier transport phenomena and p-n junction. Meanwhile for semiconductor devices covers topics of bipolar transistor and related devices on the other hand other semiconductor such as MOSFET, MOS, MESFET and advanced devices related to recent semiconductor technology is discussed.

Course Outcomes:

1. Ability to apply the principles of semiconductor physics to solid-state conditions and the basic operation of semiconductor devices.
2. Ability to analyze fundamental engineering concepts by identifying problems, characteristics, and performance aspects related to semiconductor physics and devices.
3. Ability to evaluate the operation and characteristics of semiconductor devices in relation to performance enhancement and challenges associated with advanced semiconductor technologies.

NMJ20703 ISYARAT DAN SISTEM [SIGNAL AND SYSTEMS]

No of Credits: 3

Course Synopsis:

This course develops the mathematical foundation and computational tools for processing continuous time and discrete-time signals in both time and frequency domains. Key concepts and tools introduced and discussed in this class include linear time-invariant systems, impulse response, frequency response, convolution, filtering, sampling, and Fourier Series & transform, Laplace Transform and z-Transform.

Course Outcomes:

1. Ability to apply the concept of signal and system classifications, impulse response, and convolution in both continuous and discrete time domains.
2. Ability to apply the concept of the Fourier representation of continuous and discrete signals and their properties.
3. Ability to analyse linear and time-invariant systems using the Laplace transform and its application.
4. Ability to evaluate discrete systems using z transform and their properties.

NMJ21003 REKA BENTUK TERBANTU KOMPUTER [COMPUTER AIDED DESIGN]

No of Credits: 3

Course Synopsis:

This course provides a comprehensive introduction to 2D and 3D drawing and design, Finite Element Analysis (FEA), and 3D printing. Students will learn fundamental Computer Design Aided (CAD) concepts, techniques for creating precise 2D drawings, and advanced 3D modeling methods. The course also covers FEA principles for structural analysis and optimization. Additionally, students

will explore the workflow of 3D printing, including printer types, materials, and design considerations. Assessment components include lab assessments, lab tests, and a mini-project. At the end of the course, students are able to create and analyze digital designs using CAD software and apply them in biomedical engineering scenarios.

Course Outcomes:

1. Ability to utilize computer-aided design and finite element analysis tools for respective 2D and 3D designs, and biomedical models analysis.
2. Ability to design 3D model for solving biomedical engineering problems.
3. Ability to demonstrate effective communication skills in a mini-project.

NMJ21103 MEKANIK KEJURUTERAAN [ENGINEERING MECHANICS]

No of Credits: 3

Course Synopsis:

This course lays the groundwork for students to analyze and solve mechanical problems within biomedical contexts. The syllabus is tailored to equip non-mechanical engineering students with a solid foundation in mechanics, placing greater emphasis on statics while still addressing key aspects of dynamics.

Course Outcomes:

1. Ability to apply two-dimensional (2D) and three-dimensional (3D) static mechanical systems using engineering fundamentals.
2. Ability to analyse two-dimensional (2D) dynamic mechanical problems using appropriate analytical tools and engineering methods.

NMJ21203 MIKROPEMROSES [MICROPROCESSOR]

No of Credits: 3

Course Synopsis:

This course aims to study microprocessor architecture and apply that knowledge to the design of microprocessor-based systems, including design techniques for memory, input, and output. The instruction set of the microprocessor and various software development tools are also emphasized, as this knowledge is essential for designing microprocessor-based systems.

Course Outcomes:

1. Ability to apply microprocessor architecture and design principles in embedded system applications.
2. Ability to design microprocessor programming, interfacing, and operation using assembly language for complex engineering tasks.
3. Ability to construct microprocessor programs in solving engineering-related problems using modern programming tools and techniques.

NMJ21304 MIKROPENGAWAL DAN PENGANTARAMUKA [MICROCONTROLLER AND INTERFACES]

No of Credits: 4

Course Synopsis:

The aim of this course is to enable the students to learn the concepts and requirements, as well as design a self-contained embedded system. This includes the study on the characteristics of embedded systems, hardware and software development, single chip microcontroller and programming techniques as well as developing an embedded system application.

Course Outcomes:

1. Ability to develop a structured programming language for embedded system application.
2. Ability to develop embedded systems to solve real-world problems.
3. Ability to work individually and teamwork effectively in given task/miniproject.
4. Able to evaluate microcontroller-related literature to justify solutions to real-world problems.

NMJ21603 REKA BENTUK LITAR BERSEPADU [INTEGRATED CIRCUIT DESIGN]

No of Credits: 3

Course Synopsis:

The course will cover the basic logic circuit designs which include the design architecture from transistor and logic level, layout design, layout simulation of integrated circuits, as well as basic integrated circuits design techniques. The use of relevant software will also enable the students to understand better the IC Design concepts through simulations.

Course Outcomes:

1. Ability to analyse Boolean Algebra at transistor level using schematic design concept.
2. Ability to design the layout of a circuit based on the design rules specified.
3. Ability to evaluate the CMOS characteristics based on the design requirement.
4. Ability to work individually and as a team member or leader in performing IC Design-related tasks.

NMJ21803 TEORI ELEKTROMAGNET [ELECTROMAGNETIC THEORY]

No of Credits: 3

Course Synopsis:

This course covers the fundamental laws and principles of electromagnetics which is the study of electric and magnetic fields in both static and dynamic cases. The topics covered are electrostatics, magnetostatics, electric and magnetic properties of matter, electromagnetic induction, Maxwell's equations, and electromagnetic wave propagation. At the end of the course, students are expected to have a firm grasp of important concepts in electromagnetics, which will enable them to solve and analyze real-world complex engineering problems.

Course Outcomes:

1. Ability to apply vector calculus principles in solving electromagnetic field problems.
2. Ability to analyze electrostatic and magnetostatic fields using electromagnetic theory.
3. Ability to analyze time-varying electromagnetic fields and wave propagation in different media.

NMJ30003 BIOINSTRUMENTASI 1 [BIOINSTRUMENTATION 1]

No of Credits: 3

Course Synopsis:

This course provides an intensive introduction to medical electronics and bioinstrumentation. It will cover sensors and instrumentation for medical applications, and measurement of common biosignals, such as the electrocardiogram (ECG), and electroencephalography (EEG) as well as other biomedical recorders that measure various physiological signals. This course also covers the principle of measuring physiological signals related to blood circulation such as blood pressure, flow, volume, and sound. At the end of the course, the students are expected to provide a clear understanding of various medical instrumentation principles and demonstrate the ability to apply sensors and design electronic circuits for medical applications.

Course Outcomes:

1. Ability to analyse design requirements and constraints for diagnostic and therapeutic medical devices.
2. Ability to design analogue signal conditioning circuits for biomedical engineering applications.
3. Ability to demonstrate an appreciation for ethical responsibilities in the design of biomedical instrumentation circuits.
4. Ability to demonstrate effective communication through a written report or oral presentation documenting the design, implementation, and evaluation of a biomedical signal conditioning circuit.

NMJ30203 FABRIKASI MIKROELEKTRONIK 1 [MICROELECTRONIC FABRICATION 1]

No of Credits: 3

Course Synopsis:

This introductory course on microelectronic fabrication focuses on the concept and the basics of semiconductor materials, process technology and the fabrication processes of Integrated Circuits (ICs). Topics covered in this course are as follow: Introduction to Microelectronic Fabrication, Cleanroom Technology, Safety & Protocol, Basics of Semiconductor, Wafer Manufacturing, Semiconductor Materials, Wafer Cleaning, Thermal Processes I: Oxidation, Thermal Processes II: Diffusion, Thermal Processes III: Ion Implantation & Annealing, Photolithography I, Photolithography II, Metallization I: CVD, Metallization II: PVD and Etching.

Course Outcomes:

1. Ability to evaluate fundamental concepts in semiconductor fabrication technology which include materials, devices, processes, facilities, and standard practices.
2. Ability to manipulate appropriate parameters in wafer cleaning, photolithography, etching and thermal processes using microelectronic fabrication equipment.
3. Ability to propose solutions based on acquired knowledge and technological advancements in microelectronic fabrication technology.

NMJ30303 FABRIKASI MIKROELEKTRONIK 2 [MICROELECTRONIC FABRICATION 2]

No of Credits: 3

Course Synopsis:

This course provides students with an in-depth understanding of CMOS technology, including the well technology, isolation technology, and multi-level interconnect technology, as well as other related device issues mainly associated with device miniaturization for sustainable development. This course also focuses on the fabrication process module of the CMOS technology, where the students learn on how to design masks, prepare the runcard (process flow of the MOS devices), fabricate the MOS devices, and analyze and characterize the devices electrically. Emphasis is also placed on current CMOS industry trends and challenges, encouraging students to work collaboratively in teams to propose viable solutions.

Course Outcomes:

1. Ability to evaluate various process-related problems in the sub-integration module of CMOS technology for sustainable development.
2. Ability to apply appropriate resources in the fabrication process module for CMOS technology.
3. Ability to function effectively as a member or leader in addressing issues related to CMOS current technology.

NMJ30403 INSTRUMENTASI [INSTRUMENTATION]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental principles of electronic instrumentation. It covers the basics of measurement, including accuracy, precision, error analysis, and the static and dynamic characteristics of instruments. Students will explore various types of sensors and transducers used to measure physical quantities, including resistive, inductive, capacitive, and piezoelectric types. The course emphasizes signal conditioning techniques, including filtering and amplification using operational amplifiers and filters for signal processing. In the data acquisition section, students are introduced to analog-to-digital conversion, data logging, and signal transmission. They also learn how to handle and display data using digital meters. The course includes the basic control systems, including feedback and PID controllers, to demonstrate the role of instrumentation in monitoring and controlling engineering processes.

Course Outcomes:

1. Ability to apply the fundamentals of measurements, sensors and transducers, and signal conditioning in processing engineering data.
2. Ability to analyze the principles of data acquisition, data handling and basic control systems in optimizing the performance of instrumentation systems.
3. Ability to evaluate the concepts and applications of electronic instrumentation in addressing evolving engineering needs.

NMJ30602 JURUTERA PROFESIONAL [PROFESSIONAL ENGINEERS]

No of Credits: 2

Course Synopsis:

This introductory course equips students to critically evaluate engineering decisions through the lens of sustainable development, occupational health and safety, legal frameworks, and societal and economic considerations. Students will also develop ethical reasoning skills to identify and address challenges according to national and international engineering laws and standards. Through foundational materials, case studies, and regulatory analysis, students will gain an understanding of key factors that influence professional decision-making.

Course Outcomes:

1. Ability to evaluate sustainable development impacts to society, the economy, sustainability, occupational health and safety, legal frameworks,

- and the environment in professional engineering practice.
2. Ability to interpret the issues and challenges of engineering ethics, relevant national and international laws, and norms of engineering practice.

NMJ30703 KESELAMATAN, PIAWAIAN DAN ETIKA DALAM KEJURUTERAAN BIOPERUBATAN [SAFETY, STANDARDS AND ETHICS IN BIOMEDICAL ENGINEERING]

No of Credits: 3

Course Synopsis:

The course provides an introduction to standards and regulations in biomedical engineering. This course focuses on the regulations and standards in the management of medical device and its life cycle. It is also including safety and ethical issues associated to active medical devices. This course also discusses the requirements and guidelines to practice Biomedical Engineering in Malaysia. At the end of this course, students will appreciate on how regulations and standards are established with the requirements in compliance with global needs. Safety aspects and measures will be emphasized so that students will be able to understand and established control and prevention when dealing with hazards, as well as monitoring good ethical responsibility when assessing medical technology.

Course Outcomes:

1. Ability to evaluate risk management strategies in accordance to relevant standards addressing hazards throughout the medical device life cycle.
2. Ability to design solutions to problems related to healthcare technology by integrating regulatory standards and ethical principles.
3. Ability to analyse emerging trends, technological advancements, and regulatory changes in the medical device industry using appropriate healthcare assessment tools.

NMJ30803 KEBOLEHUJIAN DAN KEBOLEHARAPAN DALAM REKABENTUK LITAR TERKAMIR [RELIABILITY AND TESTABILITY IN INTEGRATED CIRCUIT DESIGN]

No of Credits: 3

Course Synopsis:

This course is basically divided into two areas: Reliability & testability. In the first section of Reliability, students will learn the concept of Reliability, its terms & definitions, the different types of Reliability Distributions and also the different types of Reliability Prediction Techniques. In the second section, which is testability, students will be exposed to overview of testing; components of design for testability such as ad hoc techniques, scan-path design, boundary scan testing (BScan) and built in self test (BIST).

Course Outcomes:

1. Ability to apply necessary theories of mathematics, natural science, computing and engineering fundamentals and an engineering specialization to the solution of complex engineering problems in Integrated Circuit Design Reliability and Testability.
2. Ability to function effectively as individual, and as a member or leader in diverse teams and in multidisciplinary, face-to-face, remote and distributed settings to solve Integrated Circuit Design Reliability and Testability problem.
3. Ability to evaluate lifelong learning needs, technological adaptability, and critical thinking in IC Design Reliability and Testability.

NMJ30905 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]

No of Credits: 5

Course Synopsis:

The course will expose students to technical and practical application as well as other aspects such as the company's operation, work culture, safety procedure, project management, communication, technical skills, and presentation in achieve appreciation and/or capability of carrying out complex engineering activities. Students are required to submit their logbook and written report at the end of the industrial training.

Course Outcomes:

1. Ability to execute practical procedures using appropriate techniques and tools.
2. Ability to apply reasoning in engineering practice with consideration of health, legal and cultural requirements in a working environment.

3. Ability to performs tasks with professional ethics and responsibilities.
4. Ability to work independently, interact with co-workers and work in a team.
5. Ability to write reports and communicate verbally on internship knowledge gains and skills.

NMJ31003 MEKANIK BAHAN [MECHANICS OF MATERIALS]

No of Credits: 3

Course Synopsis:

This course introduces the basic theories of mechanics of materials. The theories in statics and biomaterials will be extended and emphasized in this course. The course covers the fundamental law of engineering mechanics, concept of stress and strain, axial load, torsion and bending. Furthermore, it also covers the stress and strain transformation.

Course Outcomes:

1. Ability to apply the fundamental theory of mechanics of materials in engineering problems.
2. Ability to evaluate engineering problems related to various loadings.
3. Ability to analyse the combination cases by using the stress and strain transformation.

NMJ31203 MIKROPENGAWAL [MICROCONTROLLER]

No of Credits: 3

Course Synopsis:

The aim of this course is to study the concept and requirement of embedded microcontroller system to equip students with ability to innovate. This includes the characteristic of embedded microcontroller system, hardware and software development, single chip microcontroller and programming technique in the relevant language, basic multitasking concept, developing and embedded system application while considering impact on sustainable product lifetime, exploitation of resources and costs.

Course Outcomes:

1. Ability to apply fundamental principles of microcontroller-based system architecture to develop solutions for complex engineering problems.
2. Ability to design solutions for complex engineering problems and design systems, components or processes in programming language for the microcontroller-based system application while considering whole-life cost as well as resource exploitation.
3. Ability to construct microcontroller-based systems using appropriate techniques, resources, and modern engineering tools.

NMJ31303 PEMROSESAN ISYARAT DIGIT DALAM APLIKASI-APLIKASI BIOPERUBATAN [DIGITAL SIGNAL PROCESSING IN BIOMEDICAL APPLICATIONS]

No of Credits: 3

Course Synopsis:

This course introduces different types of signals and systems and explains the application of different types of transform domains for analysing the different types of signals and systems. The course covers the application of Discrete Fourier Transform (DFT) and Fast Fourier Transform (FFT) for analysing the signals. This course also covers the design of Finite Impulse Response (FIR) and Infinite Impulse Response (IIR) filters. At the end of this course, the biomedical applications of digital signal processing and digital signal processors are discussed. Laboratory sessions incorporate data processing software, typically programmed in languages commonly used in science and engineering applications.

Course Outcomes:

1. Ability to analyse biomedical signals using different types of Fourier transform domains.

2. Ability to design suitable types of transform domain and digital filters for processing biomedical signal.
3. Ability to design appropriate Fourier transform methods and digital filters for the processing of biomedical signals, using suitable techniques and engineering tools.

NMJ31403 PEMROSESAN ISYARAT DIGIT [DIGITAL SIGNAL PROCESSING]

No of Credits: 3

Course Synopsis:

This course introduces the fundamentals of Digital Signal Processing (DSP), covering discrete-time signals and systems, sampling theory, convolution, and frequency-domain analysis using Discrete Fourier Transform and Fast Fourier Transform. Some of the topics covered are Z-transform techniques, digital filter realization, design of FIR and IIR filters, and signal processing application using various signal processing techniques.

Course Outcomes:

1. Ability to apply mathematical and signal processing principles to analyze discrete-time signals and systems, Discrete Fourier Transform (DFT), and Fast Fourier Transform (FFT).
2. Ability to design digital finite impulse response and infinite impulse response filters.
3. Ability to analyse signal processing application using various signal processing techniques.

NMJ31603 PENGURUSAN UNTUK JURUTERA [MANAGEMENT FOR ENGINEERS]

No of Credits: 3

Course Synopsis:

This course aims to teach students how to apply project management skills when undertaking projects and provide essential tools of the engineering economy to enable the students to carry out professional-quality economic evaluations. In addition, the students will be able to identify and discuss issues and challenges faced by engineers relating to project management in the current economic scenario.

Course Outcomes:

1. Ability to formulate comprehensive project management solutions by integrating engineering management principles to plan, execute, and evaluate projects for optimal results.
2. Ability to propose economic decision-making solutions to address engineering problems and evaluate their implications within the context of project management.

NMJ31703 PERANTI-PERANTI TERMAJU [ADVANCED DEVICES]

No of Credits: 3

Course Synopsis:

In this course, students will learn about the operation of conventional MOSFETs and BJTs, including the investigations on the physical mechanisms underlying the delays and speed limitations of the devices. Moreover, since advances in the electronic industry are rapidly evolving, the aim of this course is to give sufficient background knowledge on the different semiconductor devices such as MESFETs, HEMTs, FinFETs, HBTs and BiCMOS.

Course Outcomes:

1. Ability to analyze the principle and theory for the operations, characteristics, and applications of advanced semiconductor devices.
2. Ability to develop engineering solutions involving various advanced semiconductor materials for next-generation devices, with emphasis on optimizing performance and enabling continued device scaling.
3. Ability to arrange strategies in the broadest context of the emerging advanced semiconductor devices technologies and provide informative evidence-based solutions.

NMJ32004 PROJEK REKA BENTUK BERSEPADU [INTEGRATED DESIGN PROJECT]

No of Credits: 4

Course Synopsis:

This course provides students with structured exposure to real-world engineering design through a collaborative, electronics-based project. It emphasizes the application of theoretical knowledge to practical challenges, requiring students to design and implement solutions to complex engineering problems. The project integrates the use of appropriate engineering tools, encourages sustainable and responsible design practices, and highlights the importance of ethical and professional conduct. Students will engage in teamwork across disciplines, communicate their ideas effectively, and develop essential project management skills. The course also promotes independent learning and adaptability in response to evolving technologies, preparing students for future roles in professional engineering environments.

Course Outcomes:

1. Ability to design solutions for complex engineering problems and design systems, components, or processes with appropriate engineering analysis.
2. Ability to apply appropriate engineering tools and techniques accurately to carry out complex design tasks and evaluate their limitations.
3. Ability to consider societal, economic, health and safety, legal, and environmental impacts in accordance with sustainable development principles when addressing complex engineering problems.
4. Ability to comply with professional ethics, responsibilities, and norms of engineering practice during project implementation.
5. Ability to function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings to accomplish the design project.
6. Ability to communicate effectively on complex engineering activities via written, oral presentation and demonstration of the design solution.
7. Ability to apply engineering management principles and economic decision-making in planning and executing project activities.
8. Ability to apply independent and lifelong learning strategies, adaptability to new and emerging technologies, and critical thinking skills in managing complex engineering project challenges.

NMJ32303 REKABENTUK LITAR BERSEPADU DIGITAL [DIGITAL INTEGRATED CIRCUIT DESIGN]

No of Credits: 3

Course Synopsis:

The course introduces the students to hardware modelling using Verilog Hardware Description Language, as a means of design entry, simulation, and verification of digital circuits. The course provides hands-on experience using EDA tools; ModelSim and Quartus Prime. The course also teaches the students the logic synthesis and rapid prototyping with FPGAs.

Course Outcomes:

1. Ability to apply Verilog HDL in digital electronic design.
2. Ability to design a complete digital system using Verilog HDL to meet design specification.
3. Ability to evaluate the principles and technology of Field Programmable Gate Array (FPGA).

NMJ32503 REKA BENTUK VLSI [VLSI DESIGN]

No of Credits: 3

Course Synopsis:

The course covers various important elements of VLSI design methodologies and physical implementation of combinational as well as sequential logic circuits. Important topics to be covered in this course include sequential circuit design, clock design, clock tree synthesis, chip interconnect, power dissipation and low power chip design. Computer Aided Design (CAD) and simulation packages will also be introduced for design, simulation and synthesize of digital circuits' functionality, physical routing and placement as well as prediction of a circuit performance which are essential to the practice of a successful silicon chip design.

Course Outcomes:

1. Ability to analyze the behavior of sequential circuits in VLSI design.
2. Ability to design VLSI circuits to meet design specifications.
3. Ability to evaluate the technological change pertaining to integrated circuit design technology.

NMJ32603 SENIBINA KOMPUTER [COMPUTER ARCHITECTURE]

No of Credits: 3

Course Synopsis:

This course will focus on the computer system with various designs of interface techniques, organization and architecture. The syllabus will cover the theory of basic computer system, format of instruction set, memory organization and arithmetic logic unit as well as certain issues of designing such as bus structure, parallel processing, pipelining and memory management.

Course Outcomes:

1. Ability to analyse the theory of computer system component and the interactions between components.
2. Ability to evaluate the theory of operation in term of central processing and control unit.
3. Ability to perform a computer simulation program to solve engineering related problem.

NMJ32703 SISTEM KAWALAN [CONTROL SYSTEMS]

No of Credits: 3

Course Synopsis:

This course will cover topics such as the concepts of control system, mathematical modeling, state variable models, transient response and forced response error. Stability of the system will be evaluated using Routh-Hurwitz Criterion, root locus and frequency response methods. Finally, various compensators and controllers will be designed based on the specification given.

Course Outcomes:

1. Ability to analyze electrical and mechanical systems, block and signal-flow diagrams, and state-space representations for deriving transfer functions.
2. Ability to evaluate system stability through time and frequency domain analysis.
3. Ability to design various controllers to achieve specified system performance requirements.

NMJ32804 SISTEM KAWALAN LELURUS [LINEAR CONTROL SYSTEMS]

No of Credits: 4

Course Synopsis:

This course will introduce students to linear control system techniques for analysis and design; includes mathematical modeling of electrical, mechanical and biomedical systems, stability analysis, time domain analysis and frequency domain analysis. PID and lead-lag controllers design using root locus will be discussed. The controller performance will be evaluated both in time and frequency domains. Modern engineering software will be used for the analysis and design. At the end of the course, the students should be able to analyze, evaluate, and design controlled systems

Course Outcomes:

1. Ability to apply the mathematical model for biomedical systems.
2. Ability to analyze system response and stability in time and frequency domain.
3. Ability to design appropriate controllers to solve engineering problems.
4. Ability to use suitable software proficiently to design PID controllers.

NMJ32903 SISTEM PERHUBUNGAN [COMMUNICATION SYSTEM]

No of Credits: 3

Course Synopsis:

This course covers the basic principles of analog and digital communication including elements of communication, signal analysis, amplitude modulation, angular modulation, digital modulation, various application forms and transmission channels in the presence of noise. At the end of this course, students are expected to exhibit a clear understanding of communication systems relating to various engineering applications.

Course Outcomes:

1. Ability to apply concept of communication principles and modulation methods to solve typical problems in communication systems.
2. Ability to evaluate the efficiency and limitations of various multiplexing techniques and coding schemes in the presence of channel impairments and noise.
3. Ability to function effectively as an individual and in diverse teams by organizing and leading collaborative tasks to solve analog and digital communication system problems.

NMJ33003 TERMOBENDALIR [THERMOFLUIDS]

No of Credits: 3

Course Synopsis:

Thermofluid is one of the main foundations in Fluid Mechanics, Thermodynamics, and Heat Transfer, which is the backbone of Biomedical Electronic Engineering. Knowledge in engineering thermofluid is fundamental in static and dynamic solutions for fluid and thermal systems, such as medical electronic devices.

Course Outcomes:

1. Ability to analyze the principles of fluid mechanics.
2. Ability to analyze principles of thermodynamics-related problems.
3. Ability to apply the fundamental principles of heat transfer.

NMJ33103 MESIN ELEKTRIK DAN PEMACU [ELECTRICAL MACHINES AND DRIVES]

No of Credits: 3

Course Synopsis:

This course provides a comprehensive foundation in electromechanical energy conversion by integrating core concepts from both electrical and mechanical engineering. It covers the principles, construction, and operating characteristics of electrical machines and drives, including DC machines, transformers, induction machines, and synchronous machines. Students will analyze the bidirectional conversion of mechanical and electrical energy through machines such as motors and generators. The course emphasizes the development of analytical and evaluative skills to assess machine behavior, control strategies, and system suitability in biomedical and general engineering applications.

Course Outcomes:

1. Ability to analyze the principles, construction, and operating characteristics of various types of electrical machines and drives.
2. Ability to evaluate the performance and control strategies of various types of electrical machines and drives under different operating conditions.

NMJ40003 BIOINSTRUMENTASI II [BIOINSTRUMENTATIONS II]

No of Credits: 3

Course Synopsis:

This course provides in-depth look at various types of medical equipment, such as measuring, recording and monitoring instruments, together with therapeutic equipment. At the end of the course, the students are expected to provide clear understanding in various medical instrumentation principles and demonstrate the ability to design basic system for implementation in medical and healthcare based on engineering principles and computer applications.

Course Outcomes:

1. Ability to analyze the application of science and engineering principles in bioinstrumentations and medical devices system.
2. Ability to design bioinstrumentations and medical devices system based on specific requirements.
3. Ability to organize report or article of recent application or advancement on the bioinstrumentations and medical devices system.
4. Ability to engage in a multidisciplinary team by applying problem-solving strategies, assuming appropriate roles and responsibilities for tasks related to bioinstrumentation, medical device and healthcare system.
5. Ability to communicate effectively through written, oral or visual means in presenting works related to bioinstrumentation, medical devices and healthcare system.

NMJ40103 BIOPENDERIA DAN BIOMEMS [BIOSENSOR AND BIOMEMS]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental concepts of biosensors, including their main structural components, various sensing mechanisms, and the types of transducers employed in biosensor technologies. Students will be exposed to bioelectronic-based analytical devices commonly utilized in clinical settings. The course also explores the operation of biosensors in both in vivo and in vitro environments, with particular emphasis on issues related to biocompatibility and the selection of suitable biomaterials. Additionally, the fundamentals of Biomicroelectromechanical Systems (BioMEMS) are presented, covering core principles and highlighting their applications in the medical field which also involving the aspect of design.

Course Outcomes:

1. Ability to analyze biosensors based on their core scientific principles and design architecture.
2. Ability to develop biosensor applications by integrating suitable biological elements based on experimental findings.
3. Ability to analyse MEMS fabrication and technology based on scientific principles and engineering methodologies in microsystems engineering.
4. Ability to propose appropriate applications of biosensor and bioMEMS systems in biomedical engineering with consideration of user and healthcare needs.

NMJ40303 KEBOLEHHARAPAN DAN ANALISA KEGAGALAN [RELIABILITY AND FAILURE ANALYSIS]

No of Credits: 3

Course Synopsis:

This course intends to give students an extensive knowledge in the field of semiconductor reliability and failure analysis (FA). In the first part of the course, students will learn the concept of reliability, all the related terms & definitions, the different types of Reliability Distributions and also the different types of Reliability Prediction Techniques such as FMEA & FTA. In the second part of the course, students will be exposed to the different types of FA techniques that are commonly conducted on a failed semiconductor devices and the test instrumentation associated with each technique.

Course Outcomes:

1. Ability to analyze reliability theories in a reliability system.
2. Ability to develop solutions for different types of semiconductor failures for failure analysis.
3. Ability to apply appropriate techniques for failure analysis of semiconductor devices with recognition of their limitations.

NMJ40403 KEJURUTERAAN NANOELEKTRONIK [NANOELECTRONIC ENGINEERING]

No of Credits: 3

Course Synopsis:

The aim of this course is to study the underlying physical principles, the fabrication technologies, and applications of a broad range of nano-electronic devices. This includes field effect transistor (FET) in nanoscale dimensions, quantum effects and electron transport in nanostructures and their applications, nano-characterization, and nanofabrication methods (e.g., submicron optical lithography and electron-beam lithography).

Course Outcomes:

1. Ability to analyse various nanoscience, nanomaterials and nanoelectronic devices and fabrication techniques with regards to the latest nanoelectronic technology.
2. Ability to develop an innovative solutions in nanoelectronics fabrication and technology within diverse teams.
3. Ability to plan advanced materials and methodologies, integrating research-based knowledge to formulate innovative solutions for complex nanoelectronic technology challenges within the context of rapid technological advancement.

NMJ40603 KEPINTARAN BUATAN [ARTIFICIAL INTELLIGENCE]

No of Credits: 3

Course Synopsis:

In this course, the students will learn the fundamental concepts of Artificial Intelligence (AI), modern AI techniques and tools; and apply them to the design of intelligent systems that solve real-world AI problems. This course will cover machine learning, deep learning, and search and optimization algorithms in AI. The students will also learn the history, philosophy, ethics, and the future of AI.

Course Outcomes:

1. Ability to apply basic principles, models and algorithms in artificial intelligence to solve complex problem.
2. Ability to analyze the available artificial intelligence concepts and techniques for complex problem solving.
3. Ability to design solutions for complex engineering problems by using artificial intelligence techniques.

NMJ40703 SISTEM MIKROELEKTROMEKANIKAL [MICROELECTROMECHANICAL SYSTEM]

No of Credits: 3

Course Synopsis:

This course introduces the fundamentals and advanced concepts of Micro-Electro-Mechanical Systems (MEMS), focusing on sustainable development through innovative microfabrication technologies. Students will develop the ability to critically analyze existing MEMS fabrication techniques and their relevance to modern engineering challenges. The course emphasizes the design of MEMS-based sensors and actuators using diverse transduction principles such as capacitive, thermal, piezoresistive and piezoelectric mechanisms. Learners will also gain hands-on experience in applying appropriate tools, techniques, and resources to design and simulate MEMS structures for applications in communication systems, healthcare, automotive, environmental monitoring, and industrial automation. By integrating principles of sustainability and innovation, the course supports the development of technologies aligned with global goals such as SDG 9: Industry, Innovation, and Infrastructure.

Course Outcomes:

1. Ability to evaluate the available technology in MEMS fabrication for sustainable development.
2. Ability to design MEMS sensors and actuators using different types of transduction principles for various application areas.
3. Ability to apply appropriate techniques and resources in designing MEMS structures.

NMJ40903 PERHUBUNGAN OPTIK [OPTICAL COMMUNICATION]

No of Credits: 3

Course Synopsis:

This course is intended to present essential concepts involved in optical communications. Topics studied include communication, networks and signal processing which are the main system elements in transmitting and receiving data. Various issues relating to signals propagation in optical fibers such as dispersion compensation, amplification, attenuation and nonlinear effects are presented. Students will have the opportunity for analysis and simulation of optical communication systems by using software and be exposed to the latest trend in optical communication and signal processing engineering.

Course Outcomes:

1. Ability to analyse the signal propagation, degradation, transmitting and receiving signals in optical communication.
2. Ability to create solutions to engineering problem in amplification, nonlinear impairments and applications of optical communication.
3. Ability to design methods to investigate the attenuation and dispersion effects in optical fiber, amplifier system and optical communication system.

NMJ41003 ORGAN BUATAN [ARTIFICIAL ORGANS]

No of Credits: 3

Course Synopsis:

This course covers the artificial organ for the heart, kidney, lung, pancreas and ear. These topics focus on the implementation of artificial organs by understanding the anatomical, physiological and biological transport aspects as well as mathematical concepts of the respective organs. At the end of the course, students are expected to have the ability to apply the fundamental principles of the artificial organs, perform simple modeling and able to propose the suitable methods/devices for each problematic organ.

Course Outcomes:

1. Ability to analyse the mathematical concepts of human physiology, biotransport, and artificial organs.
2. Ability to propose appropriate artificial organ devices for specific problems using fundamental concepts and principles.
3. Ability to develop models and simulations of human physiological systems and artificial organs.

NMJ41103 PEMBUNGKUSAN SEMIKONDUKTOR [SEMICONDUCTOR PACKAGING]

No of Credits: 3

Course Synopsis:

This course will cover topics on the general semiconductor process flow and IC assembly which include topics such as sealing and encapsulation, interconnection in IC assembly and thermal management in electronic packages. Other topics that will be included are of advanced packaging technologies (i.e TSVs, silicon interposer, 2.5D and 3D integration with TSV and others) and of the latest packaging technology trends and their associated challenges. There will also be 2 labs being embedded in this course which are of wire bonding and decapsulation.

Course Outcomes:

1. Ability to analyze semiconductor packaging processes and its flow.
2. Ability to develop solutions to specific packaging issues and processes.
3. Ability to formulate assessments of semiconductor packaging developments regarding future trends and challenges.

NMJ41303 PEMROSESAN IMEJ PERUBATAN [MEDICAL IMAGE PROCESSING]

No of Credits: 3

Course Synopsis:

This course introduces fundamental knowledge of medical image processing. It covers key aspects such as image fundamentals, image representation, image quality, spatial filtering, enhancement, segmentation, morphological operations, color image processing, feature extraction, and an introduction to machine learning. The subject also exposes students to the processing of medical images for various medical and healthcare-related domains.

Course Outcomes:

1. Ability to analyse fundamental image processing concepts to solve problems in medical images.
2. Ability to assess the effectiveness of image processing techniques for medical images by investigating and analysing relevant data.
3. Ability to develop image processing solutions for medical image analysis.

NMJ41503 PENGIMEJAN PERUBATAN [MEDICAL IMAGING]

No of Credits: 3

Course Synopsis:

This course highlights the different principles of medical imaging modalities. This will provide them the understanding of various types of diagnostic radiology such as general X-Ray, Mammography, Ultrasound, Computed Tomography (CT) and Magnetic Resonance Imaging (MRI). Radiation therapy is introduced to provide a better understanding of how radiation is used not only for diagnosis but also for treatment such as cancer treatment. Upon completion, students will be able to apply the fundamental principles and evaluate the efficiency of the medical imaging modalities that have been used in healthcare industry.

Course Outcomes:

1. Ability to apply the principles of medical imaging modalities to solve clinical diagnostic problems.
2. Ability to determine the selection of appropriate imaging techniques for specific medical conditions.
3. Ability to propose treatment plan for radiation-based diagnostic or therapeutic solutions, considering safety and clinical requirements.

NMJ41603 PERUBATAN ROBOTIK [MEDICAL ROBOTICS]

No of Credits: 3

Course Synopsis:

The course is designed to introduce the basic principles of robotic technology which includes kinematics and kinetics of manipulator motion, safety and application of robotics in medical field. In addition, the course will provide some computational foundation of robotic technology. At the end of the course, students are expected to understand the main concept of robot manipulator and capable in analyzing and solving related problems.

Course Outcomes:

1. Ability to analyze the principles of robotic technology.
2. Ability to solve problems related to kinematics and kinetics aspect of robotic manipulator.
3. Ability to develop kinematic solutions for robotic applications based on fundamental principles of medical robotic technology.

NMJ41802 PROJEK TAHUN AKHIR 1 [FINAL YEAR PROJECT 1]

No of Credits: 2

Course Synopsis:

This course is designed to expose final year students on investigative research-based projects, related to electronic, computer, biomedical electronics and microelectronic engineering. Students learn to solve engineering problems using appropriate research methodologies, formulating engineering knowledge and performing analysis. Assessments will be on project management, technical writing and oral presentation.

Course Outcomes:

1. Ability to apply engineering knowledge to define and formulate a research problem, including establishing research background, objectives and scope relevant to the chosen field of study.
2. Ability to analyze complex engineering problems through critical review of relevant literature using appropriate research approaches and first principles.
3. Ability to design appropriate research methodology including research flow, experimental setup or system framework to address complex engineering problems.
4. Ability to evaluate complex engineering problems by investigating, synthesizing, and analyzing findings from previous research to form a valid and well-justified research direction.
5. Ability to communicate effectively in written and oral forms to defend and justify the proposed solutions.
6. Ability to execute research activities systematically to meet the required research objectives and timeline.

NMJ41904 PROJEK TAHUN AKHIR 2 [FINAL YEAR PROJECT 2]

No of Credits: 4

Course Synopsis:

This course is designed to expose final year students on investigative research-based projects, related to electronic, computer, biomedical electronics and microelectronic engineering. Students learn to solve engineering problems using appropriate research methodologies, formulating engineering knowledge and performing analysis. Assessments will be on project management, technical writing and oral presentation.

Course Outcomes:

1. Ability to design effective engineering solutions based on well-defined objectives, aligned methodology, and validated experiments.
2. Ability to justify the findings through investigation, data interpretation, individual analysis and capable of being assessed independently.
3. Ability to apply appropriate techniques, tools and resources to produce engineering solutions.
4. Ability to communicate effectively in written and oral presentation to defend and justify the engineering solutions.
5. Ability to execute research activities systematically to meet the required research objectives and timeline.
6. Ability to reflect critically on project outcomes for future improvements and adaptability to emerging technologies.

NMJ42003 REKABENTUK DAN FABRIKASI MEMS [MEMS DESIGN AND FABRICATION]

No of Credits: 3

Course Synopsis:

This course covers the fundamentals of MEMS, microfabrication techniques, MEMS materials, MEMS device principle of operation, design, simulation and fabrication. Different types of MEMS sensors and actuators are introduced in this course i.e. MEMS Electrostatic Sensor, MEMS Electrostatic Actuator, MEMS Thermal Sensor, MEMS Thermal Actuator, MEMS Piezoresistive Sensor, MEMS Piezoelectric Sensor and MEMS Piezoelectric Actuator. The course team project provides students experience in MEMS device design and analysis using Finite Element Method/Analysis (FEM/FEA) simulation tool and fabrication simulation using Computer Aided Design (CAD) tool. At the end of the course, the students are expected to be able to design and simulate MEMS devices.

Course Outcomes:

1. Ability to analyze MEMS devices fabrication process for sustainable developments.
2. Ability to design MEMS devices for sustainable solutions.
3. Ability to adapt appropriate finite element modelling and computer-aided design simulation tools for MEMS design and fabrication.

NMJ42103 REKABENTUK LITAR BERSEPADU ANALOG [ANALOGUE INTEGRATED CIRCUIT DESIGN]

No of Credits: 3

Course Synopsis:

This course introduces the essential characteristics of MOS devices, including fundamental analyses of operating regions and the impact of second-order effects due to scaling issues. It also covers the concepts of single-stage and differential amplifiers, providing students with foundational knowledge for IC design projects using CAD simulation tools. The course concludes with a review of MOS operational amplifiers and related applications to deepen understanding of analogue circuit design.

Course Outcomes:

1. Ability to analyse the transistor behaviour based on fundamental concepts and circuit theorems in integrated circuit design.
2. Ability to design analogue sub-circuits using appropriate techniques to meet design requirements.
3. Ability to evaluate the performance of analogue systems through circuit investigation to meet the required specifications.

NMJ42203 SISTEM ATAS CIP [SYSTEM ON CHIP]

No of Credits: 3

Course Synopsis:

This course will expose the students to the system-on-chip design methodology, IP design and platform-based design, and essential components for system-on-chip such as processors, memory, and system level interconnect. The student will be learned various important elements for successful system-on-chip design implementation such as design flow requirement, system performance evaluation and system integration issues.

Course Outcomes:

1. Ability to construct efficient integration methods in the development of System-on-Chip (SoC) solutions.
2. Ability to design System-On-Chip architectures that meet specified functional and performance requirements.
3. Ability to build System-on-Chip integrated circuits using modern engineering design tools and methodologies.

NMJ42403 SISTEM OPTOELEKTRONIK [OPTOELECTRONIC SYSTEM]

No of Credits: 3

Course Synopsis:

The development of this course basically to enhance knowledge and understanding of the principles and practices of modern optoelectronic device includes fiber optic, semiconductor laser, photodiode, LED and display technology. The broad contents of this course also require for designing a optoelectronic system that acquire the knowledge of optical fiber communication, LED, photodiode or any device sensing. Specific of optical fiber communication software is used to design a communication system which can be apply to the level of network system. The important functions for applications for these optoelectronic devices will acquire in optoelectronic system such as optical communication, photodetection, sensing and display technology.

Course Outcomes:

1. Ability to analyze the engineering fundamentals underlying the basic operating principles of optical fiber and optoelectronic devices and technology.
2. Ability to create solutions to engineering problems that meet specified needs in optical fiber communications and optoelectronics devices and systems

including consideration of sustainable development.

3. Ability to design optical communication systems through experiments and provide valid conclusions.

NMJ43103 REKABENTUK SISTEM FPGA [FPGA SYSTEM DESIGN]

No of Credits: 3

Course Synopsis:

The course provides comprehensive knowledge and practical experience in the design and implementation of high-performance, intelligent digital systems using modern FPGA technologies. Students will learn how to integrate machine learning models into FPGA using AI Tool Suite, accelerate application development across heterogeneous computing platforms using unified programming model, and design efficient digital signal processing systems on FPGA using model-based approach. Emphasis is placed on real-world applications in embedded AI, edge computing, and digital signal processing. Course deliverables include lectures, hands-on labs, and projects. At the end of the course, student will be able to design intelligent hardware and reconfigurable computing systems.

Course Outcomes:

1. Ability to apply high-level design methodologies for developing hardware accelerators for AI models on FPGA platforms.
2. Ability to design efficient digital signal processing (DSP) systems on FPGAs and accelerate application development using a unified programming model across heterogeneous computing platforms.
3. Ability to create efficient hardware systems on FPGA platforms using modern engineering tools.

UR6523007
Bachelor of Electronic Engineering Technology
(Electronic System) with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Engineering technology graduates engaged in the field of electronic engineering technology as demonstrated through career advancement.

PEO 2

Engineering technology graduates who are members and contribute to professional society.

PEO 3

Engineering technology graduates embracing in life-long learning or pursuing continuing education opportunities.

PEO 4

Engineering technology graduates who are technopreneurs.

PROGRAMME OUTCOMES (PO)

PO 1

Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals and an engineering specialization to defined and applied engineering procedures, processes, systems or methodologies.

PO 2

Problem analysis: Identify, formulate, research literature and analyse broadly-defined engineering problems reaching substantiated conclusions using analytical tools appropriate to their discipline or area of specialisation with considerations for sustainable development.

PO 3

Design/development of solutions: Design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO 4

Investigation: Conduct investigations of broadly-defined engineering problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions.

PO 5

Tool Usage: Select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to broadly-defined engineering problems.

PO 6

The Engineering Technologist and the World: Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving broadly-defined engineering problems.

PO 7

Ethics: Understand and commit to professional ethics and norms of engineering technology practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO 8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings.

PO 9

Communications: Communicate effectively and inclusively on broadly-defined engineering activities with the engineering community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO 10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making to one's own work, as a member and leader in a team and to manage projects in multidisciplinary environments.

PO 11

Lifelong Learning: Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of new specialist technologies.

PO 12

Personal and Entrepreneurial Skills: Demonstrate ability to engage effectively in self-improvement initiatives for career, professional or educational goals and engage in entrepreneurial activities.

CURRICULUM STRUCTURE								
UR6523007 BACHELOR OF ELECTRONIC ENGINEERING TECHNOLOGY (ELECTRONIC SYSTEM) WITH HONOURS INTAKE 2025/2026								
YEAR	FIRST		SECOND		THIRD		FOURTH	
SEMESTER	1	2	3	4	5	6	7	8
DISCIPLINE CORE & ELECTIVE COURSES (112 CREDITS)	NMK10103 Electric Circuit	NMK10503 Electrical Engineering Technology	NMK20103 Microprocessor	NMK20603 Computer Architecture	NMK30103 Communication System	NMK30004 Final Year Project 1	NMK40006 Final Year Project 2	NMK40412 Industrial Training
	NMK10203 Engineering Science	NMK10603 C Programming	NMK20203 Analog Electronic I	NMK21103 Electromagnetic Theory	NMK32003 Power Electronics	NMK31003 Digital Signal Processing	NMK42003 Instrumentation	
	NMK10403 Digital Electronics	NMK10702 Writing in Engineering Technology	NMK20503 Signals and Systems	NMK21303 Analog Electronic II	NMK32103 Digital Integrated Circuit Design	NMK31203 Modern Control System	Elective I	
	NMK11103 Electronic Engineering Skill	NMK10803 Digital Systems	NMK20703 Object Oriented Programming	NMK22003 Integrated Circuit Design	NMK32203 Microcontroller	NMK31704 Design Project	Elective II	
	NMK12003 Engineering Materials				NMK34403 Engineering Technology Management	NMK32303 Verification on Chip		
						NMK44403 Engineering Technologist in Society		
COMMON CORE COURSES (12 CREDITS)	IMQ11103 Mathematics For Engineering Technology 1	IMQ11203 Mathematics For Engineering Technology 2	IMQ21303 Mathematics for Engineering Technology 3	IMQ27303 Statistics For Engineering Technology				
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMZXXX01 Co-Curriculum 1	SMB41002 University Malay Language ^[2]	SMB20102 English for General Communication ^[4]	SMU13002 Philosophy and Current Issues	SMB31202 English for Technical Communication			
		SMU12102 Integrity and Anti-Corruption ^[3]	SMU22402 Engineering Entrepreneurship	SMU13102 Appreciation of Ethics and Civilizations				
		SMZXXX01 Co-curriculum 2						
TOTAL CREDITS (140 CREDITS)	19	19	19	19	17	20	15	12
AUDIT COURSES		SMB10102 Preparatory English ^[1]						

ELECTIVE COURSES:

NMK33003 Microelectronics Fabrication Technology, NMK33103 Nanoelectronics, NMK33203 Semiconductor Packaging, NMK33303 Reliability and Failure Analysis, NMK42103 Semiconductor Testing, NMK42203 Analog Integrated Circuit Design, NMK42403 IoT Technology, NMK43103 Optoelectronic System, NMK43003 MicroElectroMechanical System

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).

SMB10102 Preparatory English is an Audit course.

[2] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[3] International students should register SMU13202 Malaysian Studies.

[4] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Courses with 2 credits.

UR6523008
Bachelor of Electronic Engineering Technology
(Electronic Telecommunication Design) with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Engineering technology graduates engaged in the field of electronic engineering technology as demonstrated through career advancement.

PEO 2

Engineering technology graduates who are members and contribute to professional society.

PEO 3

Engineering technology graduates embracing in life-long learning or pursuing continuing education opportunities.

PEO 4

Engineering technology graduates who are technopreneurs.

PROGRAMME OUTCOMES (PO)

PO 1

Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals and an engineering specialization to defined and applied engineering procedures, processes, systems or methodologies.

PO 2

Problem analysis: Identify, formulate, research literature and analyse broadly-defined engineering problems reaching substantiated conclusions using analytical tools appropriate to their discipline or area of specialisation with considerations for sustainable development.

PO 3

Design/development of solutions: Design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO 4

Investigation: Conduct investigations of broadly-defined engineering problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions.

PO 5

Tool Usage: Select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to broadly-defined engineering problems.

PO 6

The Engineering Technologist and the World: Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving broadly-defined engineering problems.

PO 7

Ethics: Understand and commit to professional ethics and norms of engineering technology practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO 8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings.

PO 9

Communications: Communicate effectively and inclusively on broadly-defined engineering activities with the engineering community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO 10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making to one's own work, as a member and leader in a team and to manage projects in multidisciplinary environments.

PO 11

Lifelong Learning: Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of new specialist technologies.

PO 12

Personal and Entrepreneurial Skills: Demonstrate ability to engage effectively in self-improvement initiatives for career, professional or educational goals and engage in entrepreneurial activities.

CURRICULUM STRUCTURE
UR6523008 BACHELOR OF ELECTRONIC TECHNOLOGY ENGINEERING (ELECTRONIC TELECOMMUNICATIONS DESIGN) WITH HONOURS INTAKE 2025/2026

YEAR	FIRST		SECOND		THIRD		FOURTH	
SEMESTER	1	2	3	4	5	6	7	8
DISCIPLINE CORE & ELECTIVE COURSES (112 CREDITS)	NMK10103 Electric Circuit	NMK10503 Electrical Engineering Technology	NMK20103 Microprocessor	NMK20603 Computer Architecture	NMK31003 Digital Signal Processing	NMK30004 Final Year Project 1	NMK40006 Final Year Project 2	NMK40412 Industrial Training
	NMK10203 Engineering Science	NMK10603 C Programming	NMK20203 Analog Electronic I	NMK21103 Electromagnetic Theory	NMK31203 Modern Control System	NMK31103 Antenna and Propagation	NMK41003 Satellite Technology	
	NMK10403 Digital Electronics	NMK10702 Writing in Engineering Technology	NMK20503 Signals and Systems	NMK21303 Analog Electronic II	NMK31303 Digital Communication Technology	NMK31403 Optical Technology	Elective II	
	NMK11103 Electronic Engineering Skill	NMK10803 Digital Systems	NMK22003 Integrated Circuit Design	NMK30103 Communication System	NMK31503 RF and Microwave Technology	NMK31704 Design Project	Elective III	
	NMK11203 Measurement and Instrumentation				NMK34403 Engineering Technology in Management	Elective I		
						NMK44403 Engineering Technologist in Society		
COMMON CORE COURSES (12 CREDITS)	IMQ11103 Mathematics For Engineering Technology 1	IMQ11203 Mathematics For Engineering Technology 2	IMQ21303 Mathematics for Engineering Technology 3	IMQ27303 Statistics For Engineering Technology				
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMZ1XX01 Co-Curriculum 2	SMZ2XX01 Co-Curriculum 2	SMU22402 Engineering Entrepreneurship	SMU13002 Philosophy and Current Issues	SMB31202 English for Technical Communication			
		SMB41002 University Malay Language ^[4]	SMB20102 English for General Communication ^[2] OR	SMU13102 Appreciation of Ethics & Civilization				
		SMU12102 Integrity and Anti-Corruption ^[3]	SMB1XX02 Option Subject (Foreign Language) ^[2]					
TOTAL CREDITS (140 CREDITS)	19	19	19	19	17	20	15	12
AUDIT COURSES		SMB10102 Preparatory English ^[1]						

Elective I: NMK31603 Mobile and Wireless Communications, NMK42403 IoT Technology, NMK41203 Wireless Internetworking Technology

Elective II & III: NMK41103 Electronic and RF Circuit Design, NMK40403 Artificial Intelligence, NMK41303 Data Communication and Network.

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).

SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students should register SMU13202 Malaysian Studies.

[4] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

UR6523009
Bachelor of Electronic Engineering Technology
(Electronic Network Design) with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Engineering technology graduates engaged in the field of electronic engineering technology as demonstrated through career advancement.

PEO 2

Engineering technology graduates who are members and contribute to professional society.

PEO 3

Engineering technology graduates embracing in life-long learning or pursuing continuing education opportunities.

PEO 4

Engineering technology graduates who are technopreneurs.

PROGRAMME OUTCOMES (PO)

PO 1

Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals and an engineering specialization to defined and applied engineering procedures, processes, systems or methodologies.

PO 2

Problem analysis: Identify, formulate, research literature and analyse broadly-defined engineering problems reaching substantiated conclusions using analytical tools appropriate to their discipline or area of specialisation with considerations for sustainable development.

PO 3

Design/development of solutions: Design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO 4

Investigation: Conduct investigations of broadly-defined engineering problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions.

PO 5

Tool Usage: Select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to broadly-defined engineering problems.

PO 6

The Engineering Technologist and the World: Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving broadly-defined engineering problems.

PO 7

Ethics: Understand and commit to professional ethics and norms of engineering technology practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO 8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings.

PO 9

Communications: Communicate effectively and inclusively on broadly-defined engineering activities with the engineering community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO 10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making to one's own work, as a member and leader in a team and to manage projects in multidisciplinary environments.

PO 11

Lifelong Learning: Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of new specialist technologies.

PO 12

Personal and Entrepreneurial Skills: Demonstrate ability to engage effectively in self-improvement initiatives for career, professional or educational goals and engage in entrepreneurial activities.

CURRICULUM STRUCTURE UR6523009 BACHELOR OF ELECTRONIC ENGINEERING TECHNOLOGY (ELECTRONIC NETWORK DESIGN) WITH HONOURS INTAKE 2025/2026								
YEAR	FIRST		SECOND		THIRD		FOURTH	
SEMESTER	1	2	3	4	5	6	7	8
DISCIPLINE CORE & ELECTIVE COURSES (106 CREDITS)	NMK10003 Networking Technology	NMK10503 Electrical Engineering Technology	NMK20703 Object Oriented Programming	NMK20403 Internetworking Technology I	NMK30103 Communication System	NMK30004 Final Year Project I	NMK40006 Final Year Project II	NMK40412 Industrial Training
	NMK10103 Electric Circuit	NMK10603 C Programming	NMK20103 Microprocessor	NMK20503 Signals & Systems	NMK30203 Embedded Software Technology	NMK30503 Network Management	NMK40103 Network Security Technology	
	NMK10203 Engineering Science	NMK10702 Writing in Engineering Technology	NMK20203 Analogue Electronics 1	NMK20603 Computer Architecture	NMK30303 Operating Systems	NMK31704 Design Project	Elective II	
	NMK10403 Digital Electronics	NMK10803 Digital Systems	NMK20303 Database Management Systems	NMK20803 Data Structures	NMK30403 Internetworking Technology II	NMK30703 Programming for Networking	Elective III	
	NMK11103 Electronic Engineering Skills					Elective I		
COMMON CORE COURSES (18 CREDITS)	IMQ11103 Mathematics for Engineering Technology 1	IMQ11203 Mathematics for Engineering Technology 2	IMQ21303 Mathematics for Engineering Technology 3	IMQ27303 Statistics for Engineering Technology	NMK34403 Engineering Technology Management	NMK44403 Engineering Technologist in Society		
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMZXXX/1 Co-Curriculum 1	SMB41002 University Malay Language ^[3]	SMU22402 Engineering Entrepreneurship	SMU13002 Philosophy and Current Issues				
		SMU12102 Integrity and Anti- Corruption ^[4]	SMB20102 English for General Communication ^[2]	SMU13102 Appreciation of Ethics and Civilization	SMB31202 English for Technical Communication			
		SMZXXX/1 Co-Curriculum 2						
TOTAL CREDITS (140 CREDITS)	19	19	19	19	17	20	15	12
AUDIT COURSES		SMB10102 Preparatory English ^[1]						

Elective I : NMK40203 Mobile Computing, NMK34003 Switching, Routing and Wireless Essentials.

Elective II : NMK40803 Enterprise Networking, Security and Automation, NMK40403 Artificial Intelligence.

Elective III : NMK30903 Cloud Infrastructure and Services, NMK42403 IOT Technology.

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).
SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
NMK10103	Litar Elektrik [Electric Circuits]	-
NMK10203	Sains Kejuruteraan [Engineering Science]	-
NMK10403	Elektronik Digit [Digital Electronics]	-
NMK10503	Kemahiran Kejuruteraan Elektrik [Electrical Engineering Technology]	-
NMK10603	Pengaturcaraan C [C Programming]	-
NMK10703	Penulisan dalam Teknologi Kejuruteraan [Writing in Engineering Technology]	-
NMK10803	Sistem Digital [Digital Systems]	-
NMK11103	Kemahiran Kejuruteraan Elektronik [Electronic Engineering Skill]	-
NMK12003	Bahan Kejuruteraan [Engineering Materials]	-
NMK20103	Mikropemproses [Microprocessor]	-
NMK20203	Elektronik Analog I [Analog Electronic I]	-
NMK20503	Isyarat dan Sistem [Signals and Systems]	-
NMK20603	Senibina Komputer [Computer Architecture]	-
NMK20703	Object Oriented Programming [Pengaturcaraan Berasaskan Objek]	-
NMK21103	Teori Elektromagnetik [Electromagnetic Theory]	-
NMK21303	Elektronik Analog II [Analog Electronic II]	-
NMK22003	Reka Bentuk Litar Bersepadu [Integrated Circuit Design]	-
NMK30004	Projek Tahun Akhir 1 [Final Year Project 1]	SDG 09, SDG 11

COURSE CODE	COURSE NAME	SDG
NMK30103	Sistem Komunikasi [Communication Systems]	-
NMK31003	Pemprosesan Isyarat Digital [Digital Signal Processing]	-
NMK31203	Sistem Kawalan Moden [Modern Control System]	-
NMK31704	Projek Rekabentuk [Design Project]	SDG 03, SDG 09, SDG 11
NMK32003	Elektronik Kuasa [Power Electronics]	-
NMK32103	Rekabentuk Litar Bersepadu Digital [Digital Integrated Circuit Design]	-
NMK32203	Mikropengawal [Microcontroller]	-
NMK32303	Verifikasi Atas Cip [Verification on Chip]	-
NMK33003	Teknologi Fabrikasi Mikroelektronik [Microelectronic Fabrication Technology]	-
NMK33103	Nanoelektronik [Nanoelectronics]	-
NMK33203	Pembungkusan Semikonduktor [Semiconductor Packaging]	-
NMK33303	Kebolehpercayaan Dan Analisis Kegagalan [Reliability and Failure Analysis]	-
NMK34403	Pengurusan dalam Teknologi Kejuruteraan [Management in Engineering Technology]	-
NMK40006	Projek Tahun Akhir 2 [Final Year Project 2]	-
NMK40412	Latihan Industri [Industrial Training]	SDG 09, SDG 12
NMK42003	Instrumentasi [Instrumentation]	-
NMK42103	Pengujian Semikonduktor [Semiconductor Testing]	-
NMK42203	Rekabentuk Litar Terkamir Analog [Analog Integrated Circuit Design]	-
NMK42403	Teknologi IoT [IoT Technology]	-

COURSE CODE	COURSE NAME	SDG
NMK43103	Sistem Optoelektronik [Optoelectronic System]	-
NMK43003	Sistem Mikroelektromekanikal [Microelectromechanical System]	-
NMK44403	Jurutera Teknologis dalam Masyarakat [Engineering Technologist in Society]	SDG 03, SDG 08
NMK10702	Penulisan dalam Teknologi Kejuruteraan [Writing in Engineering Technology]	-
NMK11203	Pengukuran dan Instrumentasi [Measurement and Instrumentation]	-
NMK31103	Antena Dan Perambatan [Antenna and Propagation]	-
NMK31303	Teknologi Komunikasi Digital [Digital Communication Technology]	-
NMK31403	Teknologi Optik [Optical Technology]	-
NMK31503	Teknologi RF dan Gelombang Mikro [RF and Microwave Technology]	-
NMK31603	Komunikasi Tanpa Wayar dan Mudah Alih [Mobile and Wireless Communications]	-
NMK40403	Kepintaran Buatan [Artificial Intelligence]	-
NMK41003	Teknologi Satelit [Satellite Technology]	-
NMK41103	Elektronik Dan Rekabentuk Litar [RF Electronic and RF Circuit Design]	-
NMK41203	Teknologi Antara Rangkaian Tanpa Wayar [Wireless Internetworking Technology]	-
NMK41303	Komunikasi Data dan Rangkaian [Data Communication and Network]	-
NMK10003	Networking Technology [Teknologi Rangkaian]	SDG 04
NMK20103	Microprocessor [Mikropemproses]	-
NMK20303	Database Management Systems [Sistem Pengurusan Pangkalan Data]	-
NMK20403	Internetworking Technology I [Teknologi Antara Rangkaian I]	-

COURSE CODE	COURSE NAME	SDG
NMK20803	Data Structures [Struktur Data]	-
NMK30203	Embedded Software Technology [Teknologi Perisian Terbenam]	-
NMK30303	Operating Systems [Sistem Pengoperasian]	-
NMK30403	Internetworking Technology II [Teknologi Antara Rangkaian II]	SDG 04, SDG 16
NMK30503	Network Management [Pengurusan Rangkaian]	SDG 09
NMK30703	Programming for Networking [Pengaturcaraan Rangkaian]	-
NMK30903	Cloud Infrastructure and Services [Infrastruktur dan Perkhidmatan Awan]	-
NMK34003	Switching, Routing and Wireless Essentials [Pensuisan, Penghalaan dan Keperluan Tanpa Wayar]	-
NMK40103	Network Security Technology [Teknologi Keselamatan Rangkaian]	SDG 03
NMK40203	Mobile Computing [Pengkomputeran Mudah Alih]	-
NMK40803	Enterprise Networking, Security and Automation [Rangkaian Enterprise, Keselamatan dan Automasi]	-

NMK10103 LITAR ELEKTRIK [ELECTRIC CIRCUIT]

No of Credits: 3

Course Synopsis:

This course provides students with a mathematical foundation and practical measurement tools for analyzing electric circuits. It focuses on the analysis of circuits composed of fundamental components using established methods and techniques. Key topics include basic electrical measurements, Ohms Law, Kirchhoffs Laws, and circuit analysis using nodal and mesh techniques in series and parallel configurations. The course also covers essential circuit theorems, source transformations, and the analysis of circuits containing capacitors, inductors, and RLC components.

Course Outcomes:

1. Ability to explain basic concepts of electrical current, voltage, resistance, capacitance and inductance
2. Ability to analyse the concept of Ohms and Kirchhoffs laws, nodal and mesh analysis, circuit theorems and conversions, and RLC circuits
3. Ability to perform the appropriate technique using measurement tools for electric circuit analysis

NMK10203 SAINS KEJURUTERAAN [ENGINEERING SCIENCE]

No of Credits: 3

Course Synopsis:

This course covers introduction to physic and science which are force and motion, circular motion, work, power and energy, electrostatic, magnetism, electric current and resistance. Fundamental physics is combined with problem solving and engineering skills through suitable tutorials. This course will expose the students to the elements and principles of basic concepts of physics and its application.

Course Outcomes:

1. Ability to apply the fundamental principles of physics to interpret and solve basic engineering problems in defined systems and processes.
2. Ability to examine circular motion principles in the context of oscillation and wave-related phenomena.
3. Ability to analyze the fundamental principles of electrostatics and electromagnetism in solving related problems.
4. Ability to examine fundamental concepts of electric current and resistivity in analyzing related problems.

NMK10403 ELEKTRONIK DIGIT [DIGITAL ELECTRONICS]

No of Credits: 3

Course Synopsis:

Introduction and discussion of fundamentals of digital circuit design and analysis. The lecture and tutorial exercise/ practical lab modules cover the following topics: Boolean Algebra, Numbering System, Basic Logic Gates, Combinational Circuit Design, Timing Diagram, and Bi-Stable Memory Device - latch and flip-flops.

Course Outcomes:

1. Ability to describe numbering systems, Boolean algebra, and Boolean expression.
2. Ability to analyze Boolean expression for combinational logic circuits.
3. Ability to design combinational logic circuits.
4. Ability to construct combinational logic circuits by conducting experiments under guided conditions.

NMK10503 TEKNOLOGI KEJURUTERAAN ELEKTRIK [ELECTRICAL ENGINEERING TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course emphasizes basic electrical engineering and power electronics which consists of three parts: the introduction of electrical systems, equipment, electrical machines, and drives. This course also provides knowledge in the field of power transmission, machinery, equipment, and power processing meter. Teaching and learning involve theoretical, simulation of computer aided design (CAD) software and also practical skills in the fields of electricity and electromagnetism, transformer, Alternating Current (AC) and Direct Current (DC) machines.

Course Outcomes:

1. Solve the problems on electricity, electromagnetism, single and three phase system with respect to their application, reliability, and safety.
2. Analyze the basic operations of DC/AC meters and transformer based on their construction, types and application.
3. Design a basic connection to support the comprehensive solution to DC/AC machines problem with respect to their efficiency, equivalent circuits and losses.

NMK10603 PENGATURCARAAN C (C PROGRAMMING)

No of Credits: 3

Course Synopsis:

The course introduces basic programming using high-level language (C language). The main objective of this course is to prepare the students with the ability of problem solving with programming, to be able to do analysis with programming tools such as flowcharts and pseudo code and then to implement them by developing C programme.

Course Outcomes:

1. Ability to describe programming concepts and principles.
2. Ability to operate tools for coding, compiling, executing and debugging computer programs.
3. Ability to develop software solutions to solve engineering related problems using computer programming techniques.

NMK10702 PENULISAN DALAM TEKNOLOGI KEJURUTERAAN [WRITING IN ENGINEERING TECHNOLOGY]

No of Credits: 2

Course Synopsis:

This course introduces technical writing and communication related to engineering technology field. Students will be exposed to the methodology in accessing engineering technology information and common requirements and expectations to the formats, techniques and ethics in writing various types of engineering technology documents.

Course Outcomes:

1. Ability to produce engineering technology documents with proper attention to ethics, correct spelling and grammar, and avoidance of typing errors, while ensuring logical flow and continuity of ideas.
2. Ability to analyze technical documents with reference to credible sources of information within the engineering technology field.
3. Ability to perform group work involving presentations, report writing, and communication tasks.

NMK10803 SISTEM DIGITAL [DIGITAL SYSTEMS]

No of Credits: 3

Course Synopsis:

This course is a continuation of the digital electronic course. This course exposes students to enhancement knowledge in digital systems. Students can develop technical skills in design, analyze and verify digital systems. The topic covers combinational and sequential logic system design.

Course Outcomes:

1. Ability to analyze combinational and sequential logic circuits for digital systems.
2. Ability to construct and analyze various types of sequential circuits and counter including interpret state table, state diagram (Finite State Machine – FSM) charts.
3. Ability to design a digital system.

NMK11103 KEMAHIRAN KEJURUTERAAN ELEKTRONIK [ELECTRONIC ENGINEERING SKILLS]

No of Credits: 3

Course Synopsis:

This course is 100% of practical works and carries 3 credit hours. It contains five essential modules to develop basic engineering skills for the electronic students. The modules include an introduction to electronic components and instrumentation, electronic circuit design and simulation, PCB design and fabrication, technical drawing and as well as product design and integration.

Course Outcomes:

1. Ability to handle electronic components using appropriate instrumentation tools for circuit testing and validation.
2. Ability to construct electronic schematic diagrams using suitable software to support design activities.
3. Ability to create Printed Circuit Boards (PCB) to meet identified design requirements and functionality.
4. Ability to construct two-dimensional (2D) and three-dimensional (3D) technical drawings using engineering tools for documentation and modelling.
5. Ability to build three-dimensional (3D) models of electronic product.

NMK12003 BAHAN KEJURUTERAAN [ENGINEERING MATERIALS]

No of Credits: 3

Course Synopsis:

The course is tailored to give students a basic principles study that governs the materials properties, limitations and behaviour of materials. At the end of this course, the student will be familiar with the basic understanding of different material classes in order to relate the material with its characteristics.

Course Outcomes:

1. Ability to explain the characteristics of material families based on their structure-property relationships and engineering applications.
2. Ability to evaluate various material characteristics and properties, including mechanical, electrical, magnetic, and optical properties.
3. Ability to analyze material reliability in terms of life cycle, oxidation, and corrosion mechanisms.

NMK20103 MIKROPEMROSES [MICROPROCESSOR]

No of Credits: 3

Course Synopsis:

The aim of this course is to study the Intel 8085 microprocessor architecture and relate that knowledge to the design of microprocessor based systems. This includes the design technique for designing memory, input and output for the systems. The study of 8085 instruction set and various software development tools are also emphasized as the knowledge are needed in the design of the microprocessor-based systems.

Course Outcomes:

1. Ability to describe the theory, operation and basic architecture of microprocessor system.
2. Ability to construct assembly language programs using the instruction set and addressing modes.
3. Ability to design a simple application on a microprocessor-based system.
4. Ability to analyze the architecture, instruction set, and operation of a microprocessor system.

NMK20203 ELEKTRONIK ANALOG I [ANALOG ELECTRONIC I]

No of Credits: 3

Course Synopsis:

This course exposes the student the basic knowledge in analog electronic. The exposure encompasses amplifier design based on bipolar and field effect transistors, for single and multi-stage, power amplifier, frequency response analysis of amplifiers. Emphasis is placed on basic design aspects and applications. The course has been designed to provide basic analog electronic skills covering theories and practices. At the end of the course, the students are expected to be able to solve engineering problems of diode application and circuits analysis related to analog electronic.

Course Outcomes:

1. Ability to apply the concept of diode application and basic configuration of BJT and FET amplifier.
2. Ability to analyze DC and AC, small signal analysis and frequency performance of basic configuration of BJT and FET amplifier.
3. Ability to analyze simple design of Classes A, B, AB of FET and BJT power amplifier in-terms of their equivalent circuit and gain.
4. Ability to utilize modern tools for characterizing the diode application as well as DC and AC analysis of amplifier.

NMK20503 ISYARAT DAN SISTEM [SIGNALS AND SYSTEMS]

No of Credits: 3

Course Synopsis:

This course introduces students to the mathematical foundation and computational tools for processing continuous-time and discrete-time signals in both time and frequency domains. Key concepts introduced and discussed in this course include linear time-invariant systems (LTI), impulse response, frequency response, convolution, filtering, sampling, Fourier series and transform, Laplace transform and Z-transform.

Course Outcomes:

1. Ability to explain types, characteristics and basic operation of signals and systems.
2. Ability to determine the concept of signal representations and transformations of continuous-time and discrete-time signals.
3. Ability to perform the appropriate technique using computational software for continuous-time and discrete-time signal analysis.

NMK20603 SENIBINA KOMPUTER [COMPUTER ARCHITECTURE]

No of Credits: 3

Course Synopsis:

This course covers both the architectural and organizational aspects of computer systems. Architectural aspects of a system are defined as the features that are available to the operating system kernel such as the instruction set, data representations and peripheral interfaces. On the other hand, organizational aspects of a system are defined as the physical implementations that realize the features given for a system. These include the design of basic building blocks such as the ALU and the control unit, as well as the logic level interface of both internal and external units. This course expects the students to have a good fundamental on digital logic design (both combinatorial and sequential logic).

Course Outcomes:

1. Ability to interpret the theoretical aspects of computer organization and architecture.
2. Ability to operate simulation tools and apply theoretical knowledge to evaluate existing designs accurately.
3. Ability to design the basic central processing unit (CPU) based on given specifications.

NMK20703 PENGATURCARAAN BERASASKAN OBJEK [OBJECT ORIENTED PROGRAMMING]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental concepts and techniques of object-oriented programming (OOP) with an emphasis on solving problems relevant to engineering technology. Topics include classes and objects, encapsulation, inheritance, polymorphism, and exception handling. Students will learn to design and implement modular, reusable, and maintainable software using object-oriented principles. The course also covers practical application development including the use of packages, graphical user interfaces (GUIs), and event-driven programming. Emphasis will be given to developing applications that relate to engineering technology contexts using Java languages.

Course Outcomes:

1. Ability to apply the basic concepts of class, object, instance, attributes, methods, inheritance and polymorphism in solving object-oriented problems.

2. Ability to evaluate technology problems and determine appropriate solutions using an object-oriented paradigm.
3. Ability to demonstrate the use of Java and an IDE to develop, test, and debug robust object-oriented applications based on problem-solution design.

NMK21103 TEORI ELEKTROMAGNETIK [ELECTROMAGNETIC THEORY]

No of Credits: 3

Course Synopsis:

The course covers basic concepts and understanding of fundamental laws of electrostatic and magnetostatic. Applications of these laws for different field configurations are also introduced. The course also introduces transmission line theory and the use of transmission lines as circuit elements. Calculation of transmission line parameters like VSWR, reflection coefficient, and impedance matching using Smith's chart is also included in this course.

Course Outcomes:

1. Ability to analyze the concept of vector analysis coordinate systems in electromagnetic theory.
2. Ability to evaluate the concepts of electrostatic and magnetostatic.
3. Ability to evaluate the concept of electromagnetics in transmission line analysis.
4. Ability to perform the appropriate technique using computational tools to support the electromagnetic analysis.

NMK21303 LITAR ELEKTRONIK ANALOG II [ANALOG ELECTRONIC CIRCUIT II]

No of Credits: 3

Course Synopsis:

This course offers the students an exposure to the operational amplifier: operation, differential amplifier, common-mode, parameters, basic op-amp, practical op-amp circuits; Applications of op-amp: Summing amplifier, Voltage follower, Comparator, Integrator, Differentiator; oscillator: Basic operating principles of an oscillator, phase shift, Wien Bridge, Crystal oscillator, uni-junction. Active Analog Filters: Basic filter, filter response characteristics, low-pass filter, high-pass filter, band-pass filter, band-stop filter, frequency response measurement, design of filter, Butterworth, Chebyshev and Elliptic.

Course Outcomes:

1. Ability to explain the basic characteristics of the op-amp, oscillators, filters, and voltage regulators.
2. Ability to analyse the operations of analogue electronic circuits.
3. Ability to measure and conclude the output of analogue circuits.

NMK22003 REKA BENTUK LITAR BERSEPADU [INTEGRATED CIRCUIT DESIGN]

No of Credits: 3

Course Synopsis:

In this course, students learn about VLSI design, with emphasis on designing circuits to meet certain performance criteria. Important issues when designing a VLSI circuit are discussed. MOS transistors are reviewed, including their characteristics, structure, switch-level behavior, and current equation. SPICE model of a MOS transistor is also described. The inverter circuit is studied in detail. IC fabrication process is reviewed. Layout, design rules and stick diagram are explained. This course emphasizes circuit design for speed and power performances. Factors that affect speed are explained. Logical effort concept is introduced to explain how to design a fast circuit. Similarly, effect of input signal transitions on power dissipation is explained.

Course Outcomes:

1. Ability to analyze CMOS transistor characteristics and fabrication-related parameters to identify and interpret issues in circuit-level behavior.
2. Ability to design combinational logic circuits at the transistor level with consideration for speed optimization in integrated circuit design solutions.
3. Ability to construct circuit at the transistor and layout level using appropriate

engineering tools.

4. Ability to communicate effectively in a team to present and document integrated circuit design solutions.

NMK30004 PROJEK TAHUN AKHIR 1 [FINAL YEAR PROJECT 1]

No of Credits: 4

Course Synopsis:

This is a development project that involves solving practical engineering technology problem under the supervision of faculty member. The project undertaken might be one of the following areas: hardware and/or software development and device fabrication. Each student prepares comprehensive engineering reports, presents and demonstrates project work findings and results.

Course Outcomes:

1. Ability to analyse information to develop a literature review on engineering technology problems related to sustainable development.
2. Ability to design solutions during conducting experiments for engineering technology problems by using a suitable methodology and an appropriate project solution.
3. Ability to evaluate engineering technology projects with regard to sustainability, societal impact, economy, health and safety, and environmental responsibility.
4. Ability to communicate effectively through oral presentation to defend and justify proposed solutions and project progress.
5. Ability to apply engineering technology project activities systematically by planning and executing on time.
6. Ability to evaluate learning needs while executing the final year project through independent and lifelong learning.

NMK30103 SISTEM KOMUNIKASI [COMMUNICATION SYSTEMS]

No of Credits: 3

Course Synopsis:

This course includes basic principles and concepts of communication engineering system such as an introduction to the basic elements of communications, information theory and signal analysis. Knowledge in Amplitude Modulation (AM), Frequency Modulation (FM) and Pulse Modulation techniques are introduced. Some pulse modulation technique is also present such as Amplitude Shift Keying (FSK), Phase Shift Keying (PSK) Frequency Shift Keying (FSK) and Pulse Code Modulation (PCM).

Course Outcomes:

1. Ability to analyze the fundamentals of communication systems and information theory, and the essentials of signal analysis in communication systems.
2. Ability to evaluate continuous wave modulation and digital modulation parameters involved in data transmission.
3. Ability to perform investigation on the fundamentals of communication systems and the types of modulation techniques applied in real-world practical systems.

NMK31003 PEMROSESAN ISYARAT DIGITAL [DIGITAL SIGNAL PROCESSING]

No of Credits: 3

Course Synopsis:

Digital signal processing (DSP) manipulates an information signal by modifying or improving it via some mathematical approaches. DSP has been revolutionized and applied in various areas including electronic audio/video/image media, communications, radar, automotive, biomedical, and military. Since DSP is significant for developing numerous emerging digital products and applications in information age, it becomes as a core subject in most electronics/computer/communications engineering curricula. This course will focus the mathematical basis of discrete-time signal analysis, explain the theory and implementation of Fourier transform (FT) algorithms and z-domain transform, and discuss the design and implementation of digital filters. In practical, this course will make extensive use of a mathematical software and/or a DSP kit and board as an analysis, design, and visualization tool.

Course Outcomes:

1. Ability to apply the Fourier transform and z-transform domain representation of discrete-time signals, as well as the sampling and recovery process for continuous signals.
2. Ability to design digital filters implementing finite impulse response (FIR) and infinite impulse response (IIR) filters taking account on their structures and the digital transfer function.
3. Ability to operate using software tools proficiently to solve digital signal processing problems using appropriate techniques.

NMK31203 SISTEM KAWALAN MODEN [MODERN CONTROL SYSTEM]

No of Credits: 3

Course Synopsis:

This course introduces modern control techniques and tools in performing control and realizing control system. The implementation of mathematics and control theory become the core of this subject.

Course Outcomes:

1. Ability to explain control systems and control systems design.
2. Ability to describe the mathematical models for such mechanical, electrical and electromechanical systems. (state variable systems, stability in feedback control systems, and frequency domain).
3. Ability to analyse and design linear feedback systems using root locus method, digital control systems.

NMK31704 PROJEK REKABENTUK [DESIGN PROJECT]

No of Credits: 4

Course Synopsis:

In this course, students are expected to propose a design solution of broadly defined engineering problem which consist of several integration parts development such as components, processes, modules, systems. Throughout the course implementation, participation among team members were evaluated. Upon completion, students will have the ability to design an ideal project solution with consideration of societal, health, safety, cultural and environmental issues. Related act and regulation compliance are emphasized towards sustainable design development.

Course Outcomes:

1. Ability to design solutions for broadly-defined engineering technology problems with appropriate consideration for public health and safety, cultural, societal and sustainability considerations.
2. Ability to prioritise societal, health, safety, legal, cultural, environmental, and sustainability considerations into engineering technology solutions.
3. Ability to demonstrate commitment to ethical responsibilities and professionalism in project implementation.
4. Ability to function effectively as an individual, and as a member or leader in diverse technical teams.
5. Ability to deliver effective communication through writing, presentation and collaborative tasks.
6. Ability to assess the application of project management and finance principles in project implementation.
7. Ability to apply entrepreneurial skills to develop user-focused solutions and promote products effectively based on identified user needs.

NMK32003 ELEKTRONIK KUASA [POWER ELECTRONICS]

No of Credits: 3

Course Synopsis:

This course introduces Power Electronics as a Multidisciplinary & Interdisciplinary Applications Orientated Technology emphasising the main criterion of energy efficiency. Topics for this course also cover Fundamental Concepts of Power Electronics, Power Semiconductor Devices, Power Electronic Circuits, AC-DC Conversion, AC-AC Conversion, DC-DC Conversion and DC-AC Conversion, including waveform analysis, is developed from the blended skills of theory –

simulation - laboratory.

Course Outcomes:

1. Ability to analyse power electronic systems operation, applications area and need for efficiency design.
2. Ability to design different types of power semiconductor components and power electronic converters.
3. Ability to design power electronic devices using appropriate tools and techniques.

NMK32103 REKABENTUK LITAR BERSEPADU DIGITAL [DIGITAL INTEGRATED CIRCUIT DESIGN]

No of Credits: 3

Course Synopsis:

This course introduces students to the use of computer-aided-design (CAD) tools and hardware description language (HDL) for the design of complex digital systems. Students will use CAD tools to model, design, analyze, synthesize, implement, and verify systems that are specified using the Register Transfer Level (RTL) methodology. Systems verification methods using scripts and testbenches will be introduced.

Course Outcomes:

1. Ability to analyze digital system using Hardware Description Language (HDL) programming.
2. Ability to design digital systems using the RTL methodology to meet functional and timing requirements in the development of digital integrated circuit.
3. Ability to use modern CAD tools to implement and verify digital circuit designs on FPGA platforms for digital IC module development.

NMK32203 MIKROPENGAWAL [MICROCONTROLLER]

No of Credits: 3

Course Synopsis:

The aim of this course is to study the concept and requirement of embedded software development, single chip microcontroller and programming technique in assembly language and C, basic multitasking concept, developing and embedded system application.

Course Outcomes:

1. Ability to analyse the hardware architecture of a microcontroller system, including its behaviour through fundamental diagrams.
2. Ability to develop a structured microcontroller program for system applications.
3. Ability to assemble embedded applications on a single-chip microcontroller platform using relevant tools and techniques.
4. Ability to organise in diverse teams to manage and deliver an embedded system project effectively.

NMK33003 TEKNOLOGI FABRIKASI MIKROELEKTRONIK [MICROELECTRONIC FABRICATION TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course on Microelectronic Fabrication Technology focuses on the concepts and basics of semiconductor materials, process technology, and the fabrication processes of integrated circuits (ICs). Students will be exposed to various fabrication steps, including oxidation, lithography, etching, diffusion, implantation, metallization, and characterization techniques. The course also emphasizes CMOS fabrication, covering the integration of nMOS and pMOS transistors and the process flow required to build complementary metal-oxide-semiconductor devices.

Course Outcomes:

1. Ability to evaluate the essential aspects of semiconductor fabrication technology, including materials, devices, processes.
2. Ability to develop device structures by applying appropriate process parameters in semiconductor fabrication technology.
3. Ability to utilize relevant skills and tools in semiconductor fabrication process.

NMK33103 NANOELEKTRONIK [NANO ELECTRONIC]

No of Credits: 3

Course Synopsis:

Fundamentals of nanotechnology and its application to engineering technology systems, emphasizing basic principles, materials, measurement methods, fabrication techniques and applications.

Course Outcomes:

1. Ability to analyze basic principles, methods of measuring properties and structures in nanoelectronic.
2. Ability to evaluate properties of particles and materials in nanoelectronic.
3. Ability to design nanomachines and nanodevices.
4. Ability to evaluate emerging technologies in nanomachines and nanodevices as part of continuous lifelong learning.

NMK33203 PEMBUNGKUSAN SEMIKONDUKTOR [SEMICONDUCTOR PACKAGING]

No of Credits: 3

Course Synopsis:

Students will be exposed to microsystems packaging, the role of packaging in microelectronics, the general semiconductor process flow, fundamentals of interconnection in IC assembly, design for reliability, thermal management, fundamentals of sealing and encapsulation, packaging materials and processes, and the latest trends in packaging technology. They will develop essential knowledge of key processes and current advancements in IC packaging technology.

Course Outcomes:

1. Ability to apply engineering concepts to electronic packaging process flow, microsystems packaging, and the role of packaging in microelectronics.
2. Ability to evaluate the process and technology needed to package the semiconductor product.
3. Ability to utilize skills and technologies in semiconductor packaging process.

NMK33303 KEBOLEHPERCAYAAN DAN ANALISIS KEGAGALAN [RELIABILITY AND FAILURE ANALYSIS]

No of Credits: 3

Course Synopsis:

This course is basically divided into two areas: Reliability & Failure Analysis. In the first section of Reliability, students will learn the concept of Reliability, its terms & definitions, the different types of Reliability Distributions and also the different types of Reliability Prediction Techniques such as FMEA & FTA. In the second section of Failure Analysis, students will be exposed to the different types of FA techniques commonly conducted on a failed semiconductor device and the test instrumentation associated with each technique.

Course Outcomes:

1. Ability to differentiate the reliability aspects of electronic systems by applying core reliability concepts and stress-related techniques.
2. Ability to devise a failure analysis flow by selecting suitable techniques to detect and evaluate faults in semiconductor devices using advanced analytical methods.
3. Ability to perform the operation of advanced failure analysis tools and techniques through systematic laboratory procedures.

NMK34403 PENGURUSAN DALAM TEKNOLOGI KEJURUTERAAN [ENGINEERING TECHNOLOGY IN MANAGEMENT]

No of Credits: 3

Course Synopsis:

This course aims to teach students on how to apply the project management skills and economic techniques in evaluating the design. The role of economics is to assess the appropriateness of a given project, estimate its value, and justify it from an engineering technology standpoint. At the end of the course, students will be able to identify and discuss issues and challenges faced by engineering technologist relating to project management in the current economic scenarios.

Course Outcomes:

1. Ability to appraise project management knowledge in engineering technology-related projects or scenarios.
2. Ability to evaluate the use of economic principles and decision-making techniques in engineering technology-related projects or scenarios.
3. Ability to demonstrate personal and entrepreneurial skills in managing

- engineering technology-related project or scenarios.
4. Ability to function effectively as an individual or as a member in managing engineering technology-related project or scenarios.

NMK40006 PROJEK TAHUN AKHIR 2 [FINAL YEAR PROJECT 2]

No of Credits: 6

Course Synopsis:

The course would expose students toward the second part of a development project that involves manage solving practical engineering technology problem under the supervision of a faculty member within the time given. The project undertaken may fall under one of the following areas: hardware and/or software development or device fabrication. Each student would prepares comprehensive engineering reports, communicate effectively by presenting and demonstrating the finding in order to defend the results of project work.

Course Outcomes:

1. Ability to analyze broadly-defined engineering technology problems related to electronic engineering technology by reviewing relevant literature and applying appropriate analytical tools to derive substantiated conclusions, considering sustainability aspects.
2. Ability to design appropriate engineering technology solutions or prototypes for broadly-defined electronic engineering technology problems, incorporating public safety, environmental, and societal considerations.
3. Ability to communicate effectively through technical reports, documentation, and presentations, and demonstrate the ability to convey technical ideas clearly to both technical and non-technical audiences.
4. Ability to organize project management principles through planning, execution, and monitoring of engineering technology projects, including basic cost estimation and resource analysis.
5. Ability to evaluate personal learning needs and actively engage in lifelong learning through independent study, participation in seminars/talks, and adaptation to new technologies.
6. Ability to demonstrate professional growth by initiating self-directed and innovative efforts within and beyond final year project development, in support of career, academic, and entrepreneurial goals.

NMK40412 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]

No of Credits: 12

Course Synopsis:

This practical-based course exposes students to a company technical functions and organizational structure and operation such as departmental function, work procedure, safety procedure, communication, technical skills and project management. During this course, the students will apply knowledge learned in the university and increased the related skills required in their future profession.

Course Outcomes:

1. Ability to integrate and adapt technical knowledge and practical skills to perform effectively in real industrial settings.
2. Ability to practice the health, safety, legal and cultural issues in working environment.
3. Ability to practise appropriate engineering tools, technologies, and procedures relevant to the industrial working environment.
4. Ability to objectively interpret engineering problems with concern for ethical, social, and professional responsibilities.
5. Ability to perform as an individual, a member or a leader in diverse technical teams.
6. Ability to operate the assigned task given by the host company.
7. Ability to engage in independent and life-long learning in specialist technologies.

NMK42003 INSTRUMENTASI [INSTRUMENTATION]

No of Credits: 3

Course Synopsis:

This course covers the fundamental of electronic instrumentation. The core of electronic instrumentation is the embedded controller, which controls sensors and actuators. The importance of the working principle, transduction properties of transducers and sensors, and signal conditioning is highlighted. Element and principle of data conversion and acquisition, data transmission, and their applications are discussed. Local and network electronic instrumentation requirement and wireless sensor network are discussed. The technique to send acquired data from the embedded controller and smart sensors to cloud storage to be shared and used by actuators is covered.

Course Outcomes:

1. Ability to analyse electronic instrumentation including embedded controllers, sensors, actuators, data acquisition, and storage in electronic system applications.
2. Ability to design local system, wired and wireless network system, internet and cloud-based data storage.
3. Ability to operate engineering tools to implement instrumentation design in electronic system applications with precision.

NMK42203 REKABENTUK LITAR ANALOG BERSEPADU [ANALOG INTEGRATED CIRCUIT DESIGN]

No of Credits: 3

Course Synopsis:

The aim of this course is to expose the student to the basic knowledge in analog integrated circuit design. The course includes study and analysis of the MOS characteristics and its second-order effects, the basic cells, single stage amplifier and differential amplifier. Emphasis is put on design aspect of the circuits. The course has been designed to provide fundamental analog integrated circuit knowledge covering theories and practices.

Course Outcomes:

1. Ability to analyse the MOS transistor operation and basic building block for analog circuit.
2. Ability to design single stage and differential amplifier.
3. Ability to evaluate emerging technologies in Analog IC Design as part of continuous lifelong learning.

NMK42403 TEKNOLOGI IOT [IOT TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course which is practical in nature introduces current enabling technologies, architectures and applications of IOT using real/actual devices. These devices are integrated within local area network and the internet wirelessly. Implementation of these seamless interconnections and interactions are made between people and machines, and machines and machines. Examples of these interactions manifest in home, transport, health, office and factory automation and security. Emphasis is given in hands-on applications involving Bluetooth, RFID, WiFi, ZigBee and GSM technology. Data involve may be stored locally, in local network and in cloud storage.

Course Outcomes:

1. Ability to select appropriate IoT technology
2. Ability to evaluate sensors, actuators, and embedded systems.
3. Ability to design IoT based applications.

NMK43003 SISTEM MIKROELEKTROMEKANIKAL [MICROELECTROMECHANICAL SYSTEM]

No of Credits: 3

Course Synopsis:

This course will explore about Microelectromechanical System (MEMS) which focus on the introduction, micro fabrication process, sensors and actuating systems. Measurement techniques and MEMS related applications will be covered in this course.

Course Outcomes:

1. Ability to analyze basic fabrication process, electrical and mechanical properties for MEMS technologies.
2. Ability to explain and investigate the concepts of MEMS sensors and actuators systems for different applications.
3. Ability to design and evaluate MEMS application device.

NMK43103 SISTEM OPTOELEKTRONIK [OPTOELECTRONIC SYSTEM]

No of Credits: 3

Course Synopsis:

The students studying this course will develop a basic understanding of the principles and practices of modern optoelectronic device includes fiber optic, semiconductor laser, photodiode and LED. The important functions for applications for these optoelectronic devices will acquire in optoelectronic system such as optical communication and display technology. Practical skills by using software in optical fiber systems and measurement will also be acquired.

Course Outcomes:

1. Ability to demonstrate light properties, principle in optical fiber fundamental and optical component and passive device.
2. Ability to construct the concept, principles and operation of LEDs principles and operation of lasers concept.
3. Ability to design laser diode and photo detectors.
4. Ability to evaluate non-linear optics activity, acoustic optics and systems and applications for display.

NMK44403 JURUTERA TEKNOLOGIS DALAM MASYARAKAT [ENGINEERING TECHNOLOGIST IN SOCIETY]

No of Credits: 3

Course Synopsis:

This course aims to explain the main concepts in engineer and technology ethics, risk management and occupational safety and health as well as to expose the students to basic if law in the engineering and technology context. The course presents the introductory nature to enable technologists to appreciate factors that must be considered in decision-making. Examine and assess issues and challenges faced by technologist relating to engineering and technology ethics, risk management and to understand the legal requirements related engineering and technology field.

Course Outcomes:

1. Ability to examine the issues and challenges of Engineering and Technology ethics
2. Ability to assess Hazard, the function of risk management and occupational safety and health (OSHA)
3. Ability to evaluate aspect and procedures of legal on Engineering and Technologies Issues

NMK10702 PENULISAN DALAM TEKNOLOGI KEJURUTERAAN [WRITING IN ENGINEERING TECHNOLOGY]

No of Credits: 2

Course Synopsis:

This course introduces technical writing and communication related to engineering technology field. Students will be exposed to the methodology in accessing engineering technology information and common requirements and expectations to the formats, techniques and ethics in writing various types of engineering technology documents.

Course Outcomes:

1. Ability to produce engineering technology documents with proper attention to ethics, correct spelling and grammar, and avoidance of typing errors, while ensuring logical flow and continuity of ideas.
2. Ability to analyze technical documents with reference to credible sources of information within the engineering technology field.
3. Ability to perform group work involving presentations, report writing, and communication tasks.

NMK11203 PENGUKURAN DAN INSTRUMENTASI [MEASUREMENT AND INSTRUMENTATION]

No of Credits: 3

Course Synopsis:

This course intends to give students fair knowledge of measurement and instrumentation which covers the topics of measurements standards and units, voltage and current measurement, measurement of resistance, DC and AC bridge, transducers and sensors, oscilloscope, and data acquisition (DAQ). The subtopics that will be emphasized are such as accuracy, precision, resolution, sensitivity and linearity, error in measurement, classification of measuring instruments, DC and AC Bridge, digital oscilloscope, analog-digital-converter (ADC), and DAQ device.

Course Outcomes:

1. Ability to explain the standards of measurement and instrument application.
2. Ability to analyze the fundamentals, concepts and operational principles of DC & AC meter, bridges, transducers, and sensors.
3. Ability to assemble tools for data acquisition systems in instrumentation and measurement.

NMK31103 ANTENA DAN PERAMBATAN [ANTENNA AND PROPAGATION]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental principles of antennas and their propagation. Students will learn to explain the concepts of waves and waveguides, identify key antenna properties such as gain, directivity, and bandwidth, design various types of antennas, and analyze their radio wave propagation characteristics and radiation performance.

Course Outcomes:

1. Ability to analyze antenna characteristics, fundamental antenna parameters and radio wave propagation concepts to identify and solve broadly defined engineering problems.
2. Ability to design antenna systems by applying antenna theory, fundamental parameters, and wave propagation principles to develop effective solutions for broadly defined engineering problems.
3. Ability to apply suitable design principles for various types of antennas and explore their propagation characteristics using appropriate engineering tools and techniques for broadly-defined engineering problems.
4. Ability to demonstrate antenna types and propagation concepts effectively through appropriate technical communication methods.

NMK31303 TEKNOLOGI KOMUNIKASI DIGITAL [DIGITAL COMMUNICATION TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course introduces the students with the basic digital communications systems including parameters, modulation technique, line and source coding, channel coding on modems and noises. The exposures in amplitude modulations and frequency modulations will help in understanding the real applications. The introduction of digital communications will enhance the students understanding about the revolution of digital communications and the latest technology.

Course Outcomes:

1. Ability to apply the principles of digital communication systems including line coding, modulation, source and channel coding techniques.
2. Ability to analyze performance metrics of digital systems including error rates, multiplexing, multiple access schemes, and spread-spectrum techniques.
3. Ability to use engineering tools to evaluate the performance of digital modulation systems.

NMK31403 TEKNOLOGI OPTIK [OPTICAL TECHNOLOGY]

No of Credits: 3

Course Synopsis:

The students studying this module will develop a basic understanding of the principles and practices of optical communication components and applications to communication systems. The technology of optical communication systems which includes laser, fiber optics and amplifier fundamentals, semiconductor sources, optical detectors, optical amplifiers, the optical devices, an introduction to modern optics, tailored to the needs of the optoelectronic, photonics, and optical communications industry. Practical skills in optical fiber systems and measurement will also be acquired.

Course Outcomes:

1. Ability to analyze the light properties, parameters describing optical fiber and elements in optical communications link.
2. Ability to design optical fiber systems and evaluate factors influencing system performance.
3. Ability to assemble the related optical technology equipment in performing the measurement of appropriate signals parameter.

NMK31503 TEKNOLOGI RF DAN GELOMBANG MIKRO [RF AND MICROWAVE TECHNOLOGY]

No of Credits: 3

Course Synopsis:

Radio frequency (RF) and microwave engineering relates with electrical components designed to operate specifically with alternating current (AC) or electromagnetic (EM) wavefrequencies in range between 100 megahertz (MHz) and 1000 gigahertz (GHz). Through RF and microwave engineering, engineers/technologists can provide/control coverage via some kind of antenna/transmission system and also generate/receive signals to/from that transmission system to other communications electronics or controls. This course focuses on in-depth knowledge of mathematics, physics, general electronics theory as well as hands-on in RF and microwave areas including transmission lines, network analysis, filters design, dividers, couplers, amplifiers, oscillators, mixers, etc. Practically, this course utilizes test equipments, such as digital oscilloscope, spectrum analyzer and network analyzer for RF and microwave signal analysis and measurements.

Course Outcomes:

1. Ability to apply basic microwave concept, transmission line theory, and network analysis systematically.
2. Ability to analyze the microwave devices including filters, dividers, couplers amplifiers, oscillators, and mixer.
3. Ability to design microwave filters using electronic automation software.
4. Ability to perform investigations on various RF and microwave technology problems using modern test equipment.

NMK31603 KOMUNIKASI TANPA WAYAR DAN MUDAH ALIH [MOBILE AND WIRELESS COMMUNICATIONS]

No of Credits: 3

Course Synopsis:

This course on Microelectronic Fabrication Technology focuses on the concepts and basics of semiconductor materials, process technology, and the fabrication processes of integrated circuits (ICs). Students will be exposed to various fabrication steps, including oxidation, lithography, etching, diffusion, implantation, metallization, and characterization techniques. The course also emphasizes CMOS fabrication, covering the integration of nMOS and pMOS transistors and the process flow required to build complementary metal-oxide-semiconductor devices.

Course Outcomes:

1. Ability to interpret the essential cellular concept, modulation technique and standard of mobile and wireless communication systems.
2. Ability to analyze the mobile radio environments, propagation effect and traffic engineering.
3. Ability to measure the mobile communications signal characteristic using modern tools.
4. Ability to collaborate effectively within teams, demonstrating accountability and leadership in modern wireless and mobile networks.

NMK40403 KEPINTARAN BUATAN [ARTIFICIAL INTELLIGENCE]

No of Credits: 3

Course Synopsis:

This subject focuses on the concept of Artificial Intelligence (AI) field in terms of definition, history and characteristics including some examples of applications in this specific field. This subject conveys understanding and skill in several AI techniques. This subject is an interesting subject and an additional skill for students to design and develop coding using advanced techniques for sophisticated systems.

Course Outcomes:

1. Ability to analyse broadly-defined AI problems by applying analytical AI mechanisms to reach substantiated conclusions.
2. Ability to design the concepts of AI and conventional computing systems by providing solutions that address real-world problems.
3. Ability to apply modern tools and techniques in AI modeling, and recognizing limitations for solving broadly-defined AI problems.
4. Ability to function in team for successful deliver AI project for solving broadly-defined AI problems.

NMK41003 TEKNOLOGI SATELIT [SATELLITE TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental principle of the function, types and characteristic of satellite technology. Student should be able to describe the satellite system, frequency bands, satellite orbits and basic satellite systems. Student should also have ability to explain the satellite access techniques, the propagation considering and be able to analyze propagation models of satellite system.

Course Outcomes:

1. Ability to analyze satellite systems, characteristics, access methods, and propagation effects on earth links.
2. Ability to design satellite system by evaluating and planning propagation models of the satellite system.
3. Ability to work effectively as an individual/team member to evaluate and present solutions for the satellite system.

NMK41103 ELEKTRONIK DAN REKABENTUK LITAR RF [ELECTRONICS AND RF CIRCUIT]

No of Credits: 3

Course Synopsis:

This course focuses on RF electronic components characterizations and measurements theoretically and practically. Students will use modern tools, which include RF transmitter and RF receiver training kits, RF trainer control software, signal generator (SG), vector network analyzer (VNA), spectrum analyzer (SA) besides electronic design automation (EDA) software for RF electronic component design and analysis.

Course Outcomes:

1. Ability to analyze radio frequency transmission line configurations, transformation network principles and impedance matching concepts.
2. Ability to design active and passive radio frequency components, and to evaluate their performance in solving broadly-defined engineering issues.
3. Ability to demonstrate radio frequency electronic circuit measurements with proper modern tools.
4. Ability to interpret radio frequency electronic component design details effectively using appropriate technical communication methods.

NMK41203 TEKNOLOGI ANTARA RANGKAIAN TANPA WAYAR [WIRELESS INTERNET WORKING TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course will introduce students with the fundamental knowledge of wireless internetworking technology. Precisely, topics related to wireless standard, architecture, protocol, switching, security, distribution, mesh, bridging, and tunnel will be focused. Apart from that, modern tools will be used to do field testing including design, install and measure wireless computer network.

Course Outcomes:

1. Ability to discuss wireless network protocol and layered architecture.
2. Ability to evaluate wireless network switching, security, distribution, mesh, bridging and tunnel.
3. Ability to design and manage wireless communication networking by applying network topology and network planning to have optimum internet capacity and coverage.
4. Ability to measure wireless computer network design parameters using modern tools.

NMK41303 KOMUNIKASI DATA DAN RANGKAIAN [DATA COMMUNICATION AND NETWORK]

No of Credits: 3

Course Synopsis:

This course introduces the theory and basic of data communication and network that help students to identify the concept of multimedia networking, network security and network management. Students will be familiarized with the data communication equipment and tools to measure the computer network performance.

Course Outcomes:

1. Ability to explain the basic concept of data communication and layered protocol model.
2. Ability to interpret the multimedia networking, network security and network management.
3. Ability to operate modern tools to assess computer network performance accurately.
4. Ability to demonstrate teamwork skills in analysing and solving data communication and networking problems.

NMK10003 TEKNOLOGI RANGKAIAN [NETWORKING TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course introduces students to networking architectures, models, protocols, and components. These components facilitate the connection of users, devices, applications and data through the internet and across modern computer networks. By the end of the course, students can perform basic configurations for routers and switches to build simple local area networks (LANs) that integrate IP addressing schemes and foundational network security.

Course Outcomes:

1. Ability to apply fundamental networking concepts using the reference model as a framework
2. Ability to analyze local area network requirements and configurations by applying networking principles to design and troubleshoot IP addressing schemes.
3. Ability to design a small-scale computer network, including appropriate topology and network maps, based on given requirements

4. Ability to configure small-scale computer networks by selecting and applying appropriate topologies, network devices, and industry-standard tools, based on defined network requirements.

NMK20103 MIKROPEMROSES [MICROPROCESSOR]

No of Credits: 3

Course Synopsis:

The aim of this course is to study the Intel 8085 microprocessor architecture and relate that knowledge to the design of microprocessor based systems. This includes the design technique for designing memory, input and output for the systems. The study of the 8085 instruction set and various software development tools are also emphasized as the knowledge is needed in the design of the microprocessor-based systems.

Course Outcomes:

1. Ability to describe the theory, operation and basic architecture of microprocessor systems.
2. Ability to construct assembly language programs using the instruction set and addressing modes.
3. Ability to design a simple application on a microprocessor-based system.
4. Ability to analyze the architecture, instruction set, and operation of a microprocessor system.

NMK20303 SISTEM PENGURUSAN PANGKALAN DATA [DATABASE MANAGEMENT SYSTEMS]

No of Credits: 3

Course Synopsis:

This subject focuses on the concept of database system and architecture. This includes data models, schemas and instances, and system environment. Students will be exposed to data modeling by using high-level conceptual data models for relational database design that includes Entity Relationship Diagram(ERD), Structured Query Language(SQL) and normalization and also covers database storage and management.

Course Outcomes:

1. Ability to explain concepts of database system, database storage and management
2. Ability to analyze SQL statements
3. Ability to evaluate relational database
4. Ability to use a database management tool to model Relational Databases

NMK20403 TEKNOLOGI RANGKAIAN I [INTERNETWORKING TECHNOLOGY I]

No of Credits: 3

Course Synopsis:

This course will introduce students with the fundamental knowledge and tools for studying internetworking. Principles of computer networks cover so many aspects and it is expanding rigorously. Therefore this course focuses on the fundamental concept and theories, applications and advantages of internetworks. Related technologies such as Local Area Network, Wide Area Network and techniques used in data transmission as well as latest technologies. Practical exercises such as design, install and testing of a simple computer internetworking which improve understanding and develop skills on networking are integrated in laboratories exercises.

Course Outcomes:

1. Ability to explain, discuss and apply the concepts and principles of computer networking technologies.
2. Ability to apply internetworking tools to understands the principles behind theoretical concepts of internetworking technology
3. Ability to design and evaluate the connectivity of computer networks

NMK20803 STRUKTUR DATA [DATA STRUCTURE]

No of Credits: 3

Course Synopsis:

This course introduces data types, algorithms and data structures. The topics of array, pointers, structure and union in C is revisited. Then, the linear data structure i.e. stack, queue linked list and nonlinear data structure i.e. tree and graph is discussed in depth. In addition, sorting and searching algorithms are also included.

Course Outcomes:

1. Ability to determine the systematic way of solving problem
2. Ability to analyse different methods of organizing large amounts of data
3. Ability to develop and implement the different data structures in solving problems

NMK30203 TEKNOLOGI PERISIAN TERBENAM [EMBEDDED SOFTWARE TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course introduces contemporary software technology for embedded systems. Students will be exposed to the requirements of embedded systems that frequently impose time and/or memory constraints. Among the topics that will be discussed are embedded systems, platform hardware, cross-compilations, barebone systems, peripheral interfacing and embedded operating system. Knowledge in this subject is important for electronics engineers who are interested in system development and integration.

Course Outcomes:

1. Ability to describe the concept of embedded software.
2. Ability to analyze the hardware and software components in embedded software implementations.
3. Ability to develop the system using raspberry pi and bare metal programming based on theoretical knowledge and/or simulation tools.
4. Ability to design embedded software for specific applications.

NMK30303 SISTEM PENGOPERASIAN [OPERATING SYSTEM]

No of Credits: 3

Course Synopsis:

This course presents the fundamental concepts and design of operating systems. Students will be guided to explore basic operating system concepts like processes, memory management, scheduling, file systems and IO management. Basic design and implementation of some of these concepts will be covered during laboratory sessions.

Course Outcomes:

1. Able to discuss basic operating systems concepts
2. Able to implement basic operating systems concepts
3. Able to evaluate implementations of basic operating systems concepts

NMK30403 TEKNOLOGI ANTARA RANGKAIAN II [INTERNETWORKING TECHNOLOGY II]

No of Credits: 3

Course Synopsis:

Comprehensive overview of communications software and hardware involved in wide area networks and their relationship to local area networks are introduced. The course is designed for computer networking majors. The students are able to identify the major components of the WAN and the flow of data between the bridges and routers.

Course Outcomes:

1. Ability to apply the principles of the OSI and TCP/IP Models, their layers and the open communication principles for LAN and WAN interconnections
2. Ability to design efficient network architectures by optimizing IP addressing schemes and implementing static routing to meet defined technical specifications and criteria.
3. Ability to construct the network and its behavior via network simulation tools in solving network problems.
4. Ability to demonstrate the application of contextual knowledge to explain societal, ethical, legal, and cultural implications of computer networking technologies through presentation.

NMK30503 PENGURUSAN RANGKAIAN [NETWORK MANAGEMENT]

No of Credits: 3

Course Synopsis:

This course aims to give knowledge of operation, and maintenance of modern computers and global networks. Network Management basics, and standards is described with focus on Internet Management with the aid of Simple Network Management Protocol (SNMP), as well as the application of the same. It discusses the components of network management framework, i.e. fault management, performance management, configuration management, security management and accounting management. This course also gives practical knowledge and skill in system and network administration as well as network supervision.

Course Outcomes:

1. Ability to differentiate functional areas of fault, configuration, accounting, performance, and security management (FCAPS).
2. Ability to design solutions for maintaining a stable and efficient network.
3. Ability to manipulate network management concepts, tools and protocols in managing practical networks.
4. Ability to relate network management concepts and principles with current issues and challenges.

NMK30703 PENGATURCARAAN RANGKAIAN [NETWORK PROGRAMMING]

No of Credits: 3

Course Synopsis:

The aims of this course are to introduce the students of the programming in computer networks and students get familiar with the mechanism of protocols that consists in the network. This course provides the skills to programme the network protocols to work properly to transfer data from the sender to the receiver are exposed. The students are able to analyze, test, develop and design the protocols that are setting up a network.

Course Outcomes:

1. Ability to explain and apply the concepts of network programming and the related network protocols involved.
2. Ability to apply network programming in computer networking environments.
3. Ability to design the architecture of network applications/web.
4. Ability to develop and improve Java language as an application by using network programming techniques learned.

NMK30903 INFRASTRUKTUR DAN PERKHIDMATAN AWAN [CLOUD INFRASTRUCTURE AND SERVICES]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental concepts, architecture, and operations of cloud computing. It explores key cloud infrastructure components including compute, storage, networking, databases, identity and access management, and monitoring. Students will gain hands-on experience with leading cloud platforms. Emphasis is placed on understanding cloud service models (IaaS, PaaS, SaaS), deployment models (public, private, hybrid), security best practices, and cost optimization strategies. Through labs, case studies, and a mini project, students will develop the skills required to deploy, manage, and troubleshoot cloud-based systems and services.

Course Outcomes:

1. Ability to apply foundational concepts of cloud computing, including service and deployment models, and core infrastructure services.
2. Ability to design basic cloud infrastructure solutions using appropriate compute, storage, networking, and database services.
3. Ability to demonstrate hands-on proficiency in provisioning, configuring, and managing cloud-based resources using cloud platforms and tools.

NMK34003 PENSUISAN, PENGHALAAN DAN KEPERLUAN TANPA WAYAR [SWITCHING, ROUTING AND WIRELESS ESSENTIALS]

No of Credits: 3

Course Synopsis:

The second course in the CCNA curriculum focuses on switching technologies and router operations that support small-to-medium business networks and includes wireless local area networks (WLANs) and security concepts. Students learn key switching and routing concepts. They can perform basic network configuration and troubleshooting, identify and mitigate LAN security threats, and configure and secure a basic WLAN. This course focuses on switching technologies and router operations that support small-to-medium business networks. It includes wireless local area networks (WLANs) and security concepts. Students learn key switching and routing concepts. They can perform basic network configuration and troubleshooting, identify and mitigate LAN security threats, and configure and secure a basic WLAN.

Course Outcomes:

1. Ability to explain the switching, routing, FHRP, LAN Security and wireless essentials.
2. Ability to determine the configuration of switches, routers, and wireless essentials.
3. Ability to analyse the troubleshooting of inter-VLAN routing, EtherChannel on switched networks.

NMK40103 TEKNOLOGI KESELAMATAN RANGKAIAN [NETWORK SECURITY TECHNOLOGY]

No of Credits: 3

Course Synopsis:

The aims of this course are to introduce basic concept of network security technology. It includes concepts, security practice and encryption and decryption techniques. Discussion in network security will involved network defence concepts and network intruders. Firewall application software will be discussed together with computer security services and security management.

Course Outcomes:

1. Ability to differentiate types of security threats, vulnerabilities and attacks in modern network security technology.
2. Ability to recommend solutions to network security threats and attacks.
3. Ability to manipulate network security concepts using network security tools.
4. Ability to relate network security concepts with current issues.

NMK40203 PENGKOMPUTERAN MUDAH ALIH [MOBILE COMPUTING]

No of Credits: 3

Course Synopsis:

This course introduces students to the fundamentals of mobile computing and mobile application development through three key perspectives which are mobile technology, application development and user interaction. The course begins with an overview of various mobile computing applications, technologies and wireless communication systems. Students will then explore common paradigms in mobile computing such as low-power computing, operating in resource-constrained environments, fault tolerance, security and data persistence. The course also covers mobile application frameworks and development environments, enabling students to use these tools effectively. Topics related to user interface (UI), user experience (UX) and application development guidelines will be discussed and analyzed. Finally, the course examines current research trends and challenges in mobile computing. Students are expected to learn at least one mobile application development framework and use it to complete their assignments and course project.

Course Outcomes:

1. Ability to analyze the functionalities, components, and features of mobile computing technologies and address the key issues involved in their development.
2. Ability to effectively use relevant tools and techniques to implement mobile computing functionalities and develop applications based on their characteristics and requirements.
3. Ability to communicate effectively about mobile computing technologies and applications by preparing comprehensive technical documentation and delivering well-structured presentations.

NMK40803 RANGKAIAN ENTERPRISE, KESELAMATAN DAN AUTOMASI [ENTERPRISE NETWORKING, SECURITY, AND AUTOMATION]

No of Credits: 3

Course Synopsis:

The Enterprise Networking, Security, and Automation (ENSA) course is the third course in the CCNAv7 curriculum. This course describes the architectures and considerations related to designing, securing, operating, and troubleshooting enterprise networks. This course covers wide area network (WAN) technologies and quality of service (QoS) mechanisms used for secure remote access. It also

introduces software-defined networking, virtualization, and automation concepts that support the digitalization of networks. Students gain skills to configure and troubleshoot enterprise networks and learn to identify and protect against cybersecurity threats. They are introduced to network management tools and learn key concepts of software-defined networking, including controller-based architectures and how application programming interfaces (APIs) enable network automation.

Course Outcomes:

1. Ability to explain Single-Area OSPFv2, network security, VPN, WAN concepts, QoS concepts, software-defined networking, virtualization and automation concepts.
2. Ability to analyse Single-Area OSPFv2, ACLs, NAT services, PAT services, network management on the Integrated Services Router.
3. Ability to construct with configuring and testing Single-Area OSPFv2, ACLs, NAT services, PAT services and network management on the Integrated Services Router.

UR6523011

Bachelor of Technology in Industrial Electronic Automation with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

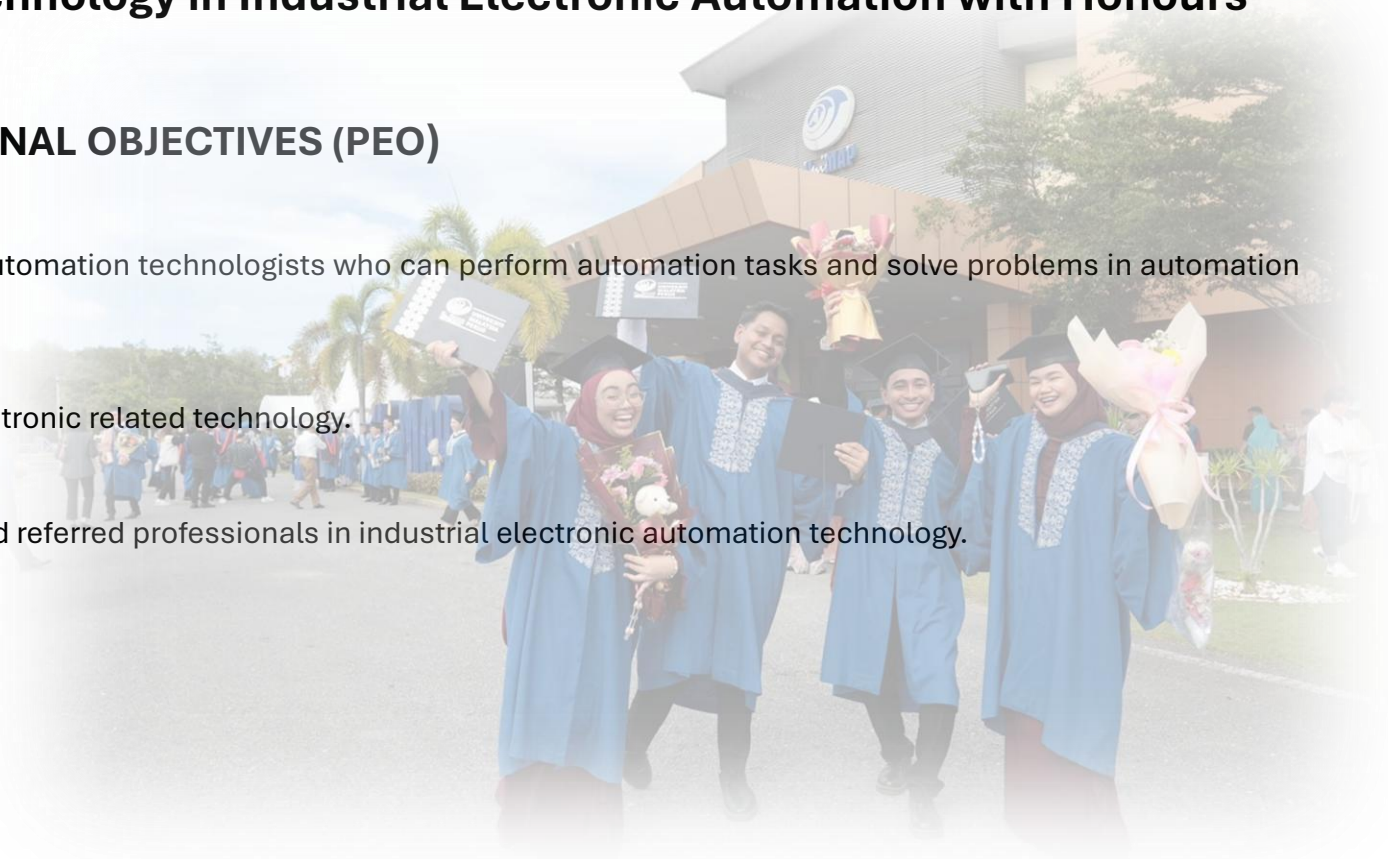
To produce industrial electronic automation technologists who can perform automation tasks and solve problems in automation work.

PEO 2

To produce technopreneurs in electronic related technology.

PEO 3

To produce relevant, respected and referred professionals in industrial electronic automation technology.



PROGRAMME OUTCOMES (PO)

PO 1

Apply knowledge of technology fundamentals to broadly-defined procedures, processes, systems and methodologies in industrial electronic automation.

PO 2

Able to suggest and apply latest tools and techniques to solve broadly-defined problems.

PO 3

Demonstrate strong analytical and critical thinking skills to solve broadly-defined problems in industrial electronic automation.

PO 4

Able to communicate and articulate effectively in both verbal and written among technologist communities and society at large.

PO 5

Demonstrate understanding of the societal related issues and the consequent responsibilities relevant to broadly-defined technology practices.

PO 6

Recognize the needs for professional development and to engage independent lifelong learning in specialist technologists.

PO 7

Demonstrate an awareness of management and technopreneurship practices in real perspective.

PO 8

Demonstrate professionalism and social and ethical consideration.

PO 9

Demonstrate leadership quality, mentoring and work effectively in diverse teams.

CURRICULUM STRUCTURE								
UR65230111 BACHELOR OF TECHNOLOGY IN INDUSTRIAL ELECTRONIC AUTOMATION WITH HONOURS INTAKE 2025/2026								
YEAR	FIRST		SECOND		THIRD			FOURTH
SEMESTER	1	2	3	4	5	6	BREAK	7
DISCIPLINE CORE & ELECTIVE COURSES (103 CREDITS)	NMT11602 Technology and Development Skills	NMT12202 Industrial Networking Technology	NMT21603 Data Acquisition Technology	NMT22104 Advanced Data Acquisition Technology	NMT31104 System Optimization Technology	NMT32310 Final Industrial Project		NMT41112 Industrial Training
	NMT11205 Fundamental Electronic	NMT12703 Industrial Programming Technology	NMT21403 Network Security Implementation	NMT20204 Industrial IoT and Data Analytic	NMT32105 System Integration Design	NMT31304 Quality Management Technology		
	NMT11702 Programming Technology	NMT22402 Operation Management	NMT11505 Industrial Automation	NMT22302 Database Design and Development	NMT31204 Application System Development	NMT3XX04 Elective		
	NMT12604 Electronic Digital Technology	NMT21304 Embedded System Programming Tool		NMT12505 Advanced Industrial Automation	NMT21502 Professional Practices			
				NMT22504 Technopreneur Project I	NMT31404 Technopreneur Project II			
UNIVERSITY REQUIREMENT COURSES (18 CREDITS)	SMZ1XX01 Co-Curriculum 1	SMZ2XX01 Co-Curriculum 2	SMB31202 English for Technical Communication					
	SMB41002 University Malay Language ^[3]	SMU22402 Engineering Entrepreneurship	SMB1XX02 Third Language ^[5]					
	SMU13002 Philosophy and Current Issues	SMB20102 English for General Communication ^[2]	SMU13102 Appreciation of Ethics and Civilization					
		SMU12102 Integrity and Anti- Corruption ^[4]						
TOTAL CREDITS (121 CREDITS)	18	18	17	19	19	8	10	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]							

Elective : NMT32204 Maintenance Management System [Sistem Pengurusan Penyelenggaraan]

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).

SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

[5] SMB1XX02: Germany, Mandarin or Japanese

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG (sila nyatakan)
NMT11205	Product Development Technology [Teknologi Pembangunan Produk]	-
NMT11505	Industrial Automation I [Automasi Industri I]	-
NMT11602	Technology and Development Skills in Electronic Automation I [Kemahiran Teknologi dan Pembangunan dalam Automasi Elektronik I]	-
NMT11702	System Programming Technology I [Teknologi Pengaturcaraan Sistem I]	-
NMT12202	Network, Switching and Routing [Rangkaian, Pensuisan dan Penghalaan]	-
NMT12505	Industrial Automation II [Automasi Industri II]	-
NMT12604	Technology and Development Skills in Electronic Automation II [Kemahiran Teknologi dan Pembangunan dalam Automasi Elektronik II]	-
NMT12704	System Programming Technology II [Teknologi Pengaturcaraan Sistem II]	-
NMT21305	Embedded System Programming Tool [Perkakasan Pengaturcaraan Sistem Terbenam]	-
NMT21403	Network Security Implementation [Pelaksanaan Keselamatan Rangkaian]	-
NMT21503	Professional Practices [Amalan Profesional]	-
NMT21602	Data Acquisition Technology and Analysis I [Teknologi Perolehan Data dan Analisis I]	-
NMT22104	Data Acquisition Technology and Analysis II [Teknologi Perolehan Data dan Analisis II]	-
NMT22202	System Optimization Technology I [Teknologi Sistem Pengoptimum I]	-
NMT22302	Application System Development I [Pembangunan Sistem Aplikasi I]	-
NMT22404	Operation Management Technology [Teknologi Pengurusan Operasi]	-
NMT22504	Technopreneur Project I [Projek Keusahawanan Teknologi I]	-
NMT31104	System Optimization Technology II [Teknologi Sistem Pengoptimum II]	-

COURSE CODE	COURSE NAME	SDG (sila nyatakan)
NMT31204	Application System Development II [Pembangunan Sistem Aplikasi II]	-
NMT31304	Quality Management Technology [Teknologi Pengurusan Kualiti]	-
NMT31404	Technopreneur Project II [Projek Keusahawanan Teknologi II]	-
NMT32105	System Integration Design [Rekabentuk Sistem Integrasi]	-
NMT32205	Maintenance Management System [Sistem Pengurusan Penyelenggaraan]	-
NMT32310	Final Year Project [Projek Tahun Akhir]	-
NMT41112	Industrial Training [Latihan Industri]	-

NMT11205 PRODUCT DEVELOPMENT TECHNOLOGY [TEKNOLOGI PEMBANGUNAN PRODUK]

No of Credits: 5

Course Synopsis:

This course focuses on the fundamental concepts of circuit analysis and electronic devices. It covers the operational behaviour and application circuit of passive and active components, which includes resistor, capacitor, inductor, diode, and transistor. Important parts of electronic systems such as the operational amplifier, filter, power supply and other electronic circuits related to industrial electronic automation are also discussed and emphasized.

Course Outcomes:

1. Ability to apply the knowledge of passive and active electronic components.
2. Ability to construct electronic circuits and perform their operation.
3. Ability to act as a team member in completing tasks.

NMT11505 INDUSTRIAL AUTOMATION I [AUTOMASI INDUSTRI I]

No of Credits: 5

Course Synopsis:

The course is meant to be an introductory course on industrial automation. In this context, the course covers the basic electrical control circuit, electro mechanical, electro pneumatic system and integration of Programmable Logic Controller (PLC) to automate industrial processes. The program covers the following areas: basic control circuit and PLC hardware and software platform. Students will learn about the basic structure of automation, control circuit knowledge. They also will be taught to configure the PLC's hardware, as well as the logic control system, timer, counter, human machine integration (HMI) as well as common programming languages such as Ladder Diagram (LD) and Function Block Diagram (FBD). Finally, students will have to troubleshoot and clear any existing faults thus implementing the standard maintenance procedure for the PLC system. The course has a strong practical component whereby the students have the opportunity of getting hands-on experience on the subjects taught in the theoretical lectures.

Course Outcomes:

1. Ability to apply the basic knowledge in industrial automation and control, programmable logic control (PLC) components and system.
2. Ability to manipulate circuit layout, construct for operation, troubleshoot and maintenance the PLC system in a correct order.

3. Ability to demonstrate and show relevant justification for performing programming into the PLC to match the required outcome.

NMT11602 TECHNOLOGY AND DEVELOPMENT SKILLS IN ELECTRONIC AUTOMATION I [KEMAHIRAN TEKNOLOGI DAN PEMBANGUNAN DALAM AUTOMASI ELEKTRONIK I]

No of Credits: 2

Course Synopsis:

This course aims to provide students with knowledge of the basic technical skills in electronic automation based on the use of electronic technology in the field of production and measurement. This includes basic knowledge of technical drawings, design drawings for 2D and 3D technique, electronic formulations, visualization techniques, circuit simulation techniques and print circuit design board (PCB).

Course Outcomes:

1. Ability to interpret the basic knowledge and standard practices of electronic circuit design layout using software.
2. Ability to perform a standard practice of manual technical drawing and able to construct a product using Computer-aided Design (CAD) tool.
3. Ability to demonstrate technical analysis ideas presented in electronic design.

NMT11702 SYSTEM PROGRAMMING TECHNOLOGY I [TEKNOLOGI PENGATURCARAAN SISTEM I]

No of Credits: 2

Course Synopsis:

This course delivers the competency to students in applying the fundamental programming concepts and ability to analyse problems and produce the solution using algorithm development tools. The course will be delivered using the basic programming language (C programming).

Course Outcomes:

1. Ability to apply the fundamental programming concepts and its principles.
2. Ability to construct a program using computer programming techniques based on a given problem.
3. Ability to demonstrate a problem-solving approach in algorithm development.

NMT12202 NETWORK, SWITCHING AND ROUTING [RANGKAIAN, PENSUISAN DAN PENGHALAAN]

No of Credits: 2

Course Synopsis:

This course focuses on networking structure and functions. The course introduces the principles and structure of IP addressing and the fundamentals of networks, switching and routing. It covers topics such as the introduction of networking, type of network, network layer, type of network topologies, network media, network design and basic network performance.

Course Outcomes:

1. Ability to describe the fundamental concept of networking.
2. Ability to setup the local area network and identify the network IP.
3. Ability to build a small network.

NMT12505 INDUSTRIAL AUTOMATION II [AUTOMASI INDUSTRI II]

No of Credits: 5

Course Synopsis:

This course is practical in nature. It introduces current industrial automation technology, from device level until system architecture through PLC programming. This course also introduces the Modular Production System (MPS), ranging from the concept and its core elements, navigate to Smart Manufacturing for the development of Industry 4.0 Modular Production System.

Course Outcomes:

1. Ability to construct Automation System using Advanced PLC Programming.
2. Ability to construct Modular Production System using Advanced PLC Programming.
3. Programming.
4. Ability to justify the implementation of Product Identification System.

NMT12604 TECHNOLOGY AND DEVELOPMENT SKILLS IN ELECTRONIC AUTOMATION II [KEMAHIRAN TEKNOLOGI DAN PEMBANGUNAN DALAM AUTOMASI ELEKTRONIK II]

No of Credits: 4

Course Synopsis:

This course aims to demystify the digital electronics through hands-on work in the lab creating simple machines with embodied behaviors. This course brings students over the beginner's threshold to a basic understanding of the use, terminology and potential of digital electronics. The skills and concepts taught in this course are presented from an interdisciplinary approach which merges practices in sciences and technology.

Course Outcomes:

1. Ability to describe Boolean functions and logic circuit in digital applications.
2. Ability to construct simple logical operations using combinational and sequential logic circuits.
3. Ability to build the digital logic systems.

NMT12704 SYSTEM PROGRAMMING TECHNOLOGY II [TEKNOLOGI PENGATURCARAAN SISTEM II]

No of Credits: 4

Course Synopsis:

This course teaches students how to write programmes that can solve problems using high level programming. The course will be taught in the current market's most popular programming language. The student can create a programme that uses basic input and output to solve problems.

Course Outcomes:

1. Ability to analyse problems using programming language.
2. Ability to implement a programming language solution appropriately based on a programming concept.
3. Ability to demonstrate a solution in developing a program to solve a problem.

NMT21305 EMBEDDED SYSTEM PROGRAMMING TOOL [PERKAKASAN PENGATURCARAAN SISTEM TERBENAM]

No of Credits: 5

Course Synopsis:

This course emphasizes the role of microcontroller in an automation system. It covers input and output topics as well as memory usage. In addition, this course will also focus on how to program using language C. Meanwhile, the Raspberry Pi or latest controller board will be used as a controller.

Course Outcomes:

1. Ability to determine the theory and basic architecture of microcontroller system.
2. Ability to construct program into microcontroller.
3. Ability to design simple system of microcontroller interface with input and output device.

NMT21403 NETWORK SECURITY IMPLEMENTATION [PELAKSANAAN KESELAMATAN RANGKAIAN]

No of Credits: 3

Course Synopsis:

This course focuses on the foundational understanding of cybersecurity and how it relates to information and network security. It provides core security skills needed for monitoring, detecting, investigating, analyzing and responding to security events, thus protecting systems and organizations from cybersecurity risks, threats and vulnerabilities. It covers topics such as introduction to cybersecurity and cybersecurity operations.

Course Outcomes:

1. Ability to apply network security principles as well as the tools and configurations available.
2. Ability to manipulate security incidents.
3. Ability to identify data confidentiality, integrity, availability and security controls on networks, servers and applications.

NMT21503 PROFESSIONAL PRACTICES [AMALAN PROFESIONAL]

No of Credits: 3

Course Synopsis:

Professional practices course aims to explain the main concepts in engineering and technology ethics, risk management and occupational safety and health as well as to expose the students to basic law in the engineering and technology context.

Course Outcomes:

1. Ability to interpret hazards, the function at risk management and occupational safety and health (OSHA).
2. Ability to explain the issues and challenges of professionalism, social and ethical consideration.
3. Ability to demonstrate understanding of the societal related in technology issues.

NMT21602 DATA ACQUISITION TECHNOLOGY AND ANALYSIS I [TEKNOLOGI PEROLEHAN DATA DAN ANALISIS I]

No of Credits: 2

Course Synopsis:

This course covers the basics of operation and analysis of electronic instruments, including the working principles and nature of transducers and sensors, signal conditioning and data acquisition system. Software tool interface with a microprocessor also introduced. The importance of application and signal conduction techniques is emphasized. Elements and principles of data exchange, acquisition and application are discussed.

Course Outcomes:

1. Ability to apply knowledge of transducer and sensor, signal conditioning and data acquisition system.
2. Ability to employ electronic apparatus interfacing to device consists of sensors and others.
3. Ability to justify the working principles of measurement and instrumentation in data acquisition system.

NMT22104 DATA ACQUISITION TECHNOLOGY AND ANALYSIS II [TEKNOLOGI PEROLEHAN DATA DAN ANALISIS II]

No of Credits: 4

Course Synopsis:

This course covers data transfer, monitoring and control. This includes data transfer techniques using wired and wireless communication technology. Also introduced is development of mobile applications which allow data monitoring and data storage using mobile devices. In addition, elements of modern control systems are introduced. Control techniques of motors are included.

Course Outcomes:

1. Ability to analyze data transfer techniques.
2. Ability to perform wired and wireless communication techniques.
3. Ability to demonstrate the technical approach in developing mobile applications for monitoring and control.

NMT22202 SYSTEM OPTIMIZATION TECHNOLOGY I [TEKNOLOGI SISTEM PENGOPTIMUM I]

No of Credits: 2

Course Synopsis:

This course covers the fundamentals of data communication network, measurement and instrumentation. This includes working with current data networks, measurement techniques and network technology. System application, configuration and troubleshooting data communication network and electronic measurement is emphasized.

Course Outcomes:

1. Able to explain the theory and basic principle of data communication, network and electronic measurement.
2. Able to apply data communication tools and working principles of measurement to further understand the theoretical concepts.
3. Able to justify a small network technology including topology maps or network
4. maps.

NMT22302 APPLICATION SYSTEM DEVELOPMENT I [PEMBANGUNAN SISTEM APLIKASI I]

No of Credits: 2

Course Synopsis:

This course provides a foundation in data management concepts and database systems. It includes representing information with the relational database model, manipulating data with an interactive query language (SQL), database development using standard Database Management System, and integration of database to application development.

Course Outcomes:

1. Ability to apply logical database design concept to represent a functioning
2. database.
3. Ability to build a working database using relevant technology according to
4. database standards and procedures.
5. Ability to independently seek solution to technical issues arose during
6. development.

NMT22404 OPERATION MANAGEMENT TECHNOLOGY [TEKNOLOGI PENGURUSAN OPERASI]

No of Credits: 4

Course Synopsis:

Technology Operation Management gives knowledge of concepts and principles for production and operations management in Industrial Electronic Automation. This course emphasizes production functions, forecasting techniques, efficiency theory, layout techniques, economics order quantity level, control of source acquisition and project scheduling, and production standards must be complied with. This course also provides knowledge and skills in planning, decision and control of production in the Electronic Industry Automation.

Course Outcomes:

1. Ability to apply theories and concepts of operational management in Industrial
2. Electronic Automation.
3. Ability to perform project scheduling and source allocation in project management using Project Evaluation and Review Techniques (PERT), Critical Path Method (CPM) and Linear Programming.
4. Ability to demonstrate ethical values in operational management for the benefit of society.

NMT22504 TECHNOPRENEUR PROJECT I [PROJEK KEUSAHAWANAN TEKNOLOGI I]

No of Credits: 4

Course Synopsis:

Entrepreneurs need money to start and to grow their business. It is important to understand how revenue is generated, how to source for funds, how to control cash flow, how to assess the success of the company in monetary terms, and how to value a company for various purposes. The course exposes students to the various financial aspects relating to new ventures. These include approaches to secure start-up capital and venture financing. Students learn about the basic accounting, essential financial indicators, the types of funds available, the different categories of investors, the importance of intellectual property in securing finance, the financial details to be included in a business plan required for investment purpose, valuation of the company and the art of negotiation with investors.

Course Outcomes:

1. Ability to apply various financial indicators & tools to prepare for financial information for a new business venture.
2. Ability to integrate effective project management and technopreneur skills in solving given problems.
3. Ability to perform effectively teamwork and leadership skills in completing the technopreneur project.

NMT31104 SYSTEM OPTIMIZATION TECHNOLOGY II [TEKNOLOGI SISTEM PENGOPTIMUM II]

No of Credits: 4

Course Synopsis:

This course integrates with concepts and mathematical models. It teaches students how to apply basic principles of analyzing signals and relate with real engineering and technology applications. This course is divided into three sections. The first section will be signal acquisition and processing, where various types of signals are measured and analyzed to facilitate the control and automation. The second section will be focused on the embedded system and integration, and the third section will be on system development and mobile applications.

Course Outcomes:

1. Ability to integrate basic principles of analyzing signals with real technology
2. application.

3. Ability to construct system design and application using embedded system
4. module.
5. Ability to explain mobile application, embedded system integration and
6. optimization.

NMT31204 APPLICATION SYSTEM DEVELOPMENT II [PEMBANGUNAN SISTEM APLIKASI II]

No of Credits: 4

Course Synopsis:

This course focuses on the analysis and development of systems to meet the increasing need for information management within organizations. It covers topics such as systems development life cycle, analysis and design techniques, software project planning, process modeling, data modeling, data management, system design and implementation, and testing.

Course Outcomes:

1. Ability to integrate different components of a system to develop a working software application.
2. Ability to build an efficient database based on a well-designed data model using cloud data storage technology.
3. Ability to organize a plan to solve technical issues faced during application system development.

NMT31304 QUALITY MANAGEMENT TECHNOLOGY [TEKNOLOGI PENGURUSAN KUALITI]

No of Credits: 4

Course Synopsis:

This course provides the understanding and knowledge of total quality principles and the use of quality tools to enable students to apply the principles of management, design and production in Industrial Electronic Automation. This course covers the introduction to quality and the principles of total quality, its relationship to global competitiveness, ethics and culture in quality management, the 7 quality tools, quality function deployment, continuous improvements benchmarking and the implementation aspects of total quality. Finally, the students will be able to relate several quality management tools and decide the most suitable amongst them for certain issues/ problems.

Course Outcomes:

1. Ability to analyse quality problems effectively using the principles and tools of quality management in Industrial Electronic Automation.
2. Ability to manipulate quality control in measures for improving products and business performance.
3. Ability to relate values in several quality management tools to solve problems in quality management.

NMT31404 TECHNOPRENEUR PROJECT II [PROJEK KEUSAHAWANAN TEKNOLOGI II]

No of Credits: 4

Course Synopsis:

The start-up and growth of an enterprise invariably involves both human and financial capital. To manage the increasing pool of human resources and to convince venture capitalists to invest become two main issues especially for growing ventures. This course consists of two parts: in the first part, organization and human resource management are introduced; in the second part, the focus is on writing a convincing business plan to attract venture capital investment. When an enterprise starts to take shape and grow, more people will be hired, proper organization, team building and human resource management will become important issues. In this course, students will be exposed to the various organizational aspects relevant to new ventures and established companies. These include the pros and cons of the different organization structures, conflicts that may arise among employees, and approaches to building strong teams. Human resource management techniques will also be introduced and discussed. In the second part of the course, the business model canvas will be described listing the connections among the different components of a business. The value of a business plan and the techniques of writing a business plan will be introduced.

Course Outcomes:

1. Ability to design vital organizational behaviours necessary to grow a new venture.
2. Ability to arrange the business model canvas incorporating human and financial elements.
3. Ability to influence and motivate all stakeholders to build a cohesive venture team.

NMT32105 SYSTEM INTEGRATION DESIGN [REKABENTUK SISTEM INTEGRASI]

No of Credits: 5

Course Synopsis:

The aim of this course is to provide students with the technical knowledge and practical experience on Supervisory Control and Data Acquisition (SCADA) in automation technology. SCADA is a system of software and hardware elements that allows industrial organizations to control industrial processes locally or at remote locations as well as monitoring, gathering, and processing real-time data.

Course Outcomes:

1. Ability to configure machine and plan-specific HMI tasks using the SCADA software based on the Totally Integrated Automation Portal (TIA Portal).
2. Ability to apply and manage the TIA portal and structure of automation system, configuration and parameterization of hardware and PLC programming and SCL Programming.
3. Ability to apply virtual machine and plants concept, IOT, virtual commissioning and integrated energy management.

NMT32205 MAINTENANCE MANAGEMENT SYSTEM [SISTEM PENGURUSAN PENYELENGGARAAN]

No of Credits: 5

Course Synopsis:

This course will introduce students to the principle of maintenance management system. The topics to be covered include Introduction to Maintenance Management, Reliability performance of production plants, Total Productive Maintenance (TPM), Maintenance methods and techniques and Maintenance Software Application. Apart from the course implementation, there will be an industrial visit to related industries in order to expose students to the actual practices of the maintenance management system.

Course Outcomes:

1. Ability to apply of contemporary maintenance management practices.
2. Ability to display competency in managing and developing industrial environment maintenance activities.
3. Ability to justify maintenance activities in a cost effective manner.

NMT32310 FINAL YEAR PROJECT [PROJEK TAHUN AKHIR]

No of Credits: 10

Course Synopsis:

This course is to fulfil students with knowledge in conducting research methods, particularly in the field of technical and vocational education in Malaysia. The main idea is to take the knowledge and background that students have learnt throughout the semester and use it to propose new and creative projects. It is important in providing human capital development equivalent with global developments.

Course Outcomes:

1. Ability to organize solution based on identified issues in industrial technology.
2. Ability to perform related tasks for the implementation of Final Year Project I.
3. Ability to communicate effectively related to the proposed solutions and progress.

NMT41112 INDUSTRIAL TRAINING [LATIHAN INDUSTRI]

No of Credits: 12

Course Synopsis:

The course will expose students to technical and practical application and other aspects such as the company operation, work culture, safety procedure, project management, communication, technical skills, and presentation to achieve appreciation and/or capability of carrying out technologist activities.

Course Outcomes:

1. Ability to correlate theory and practical with the knowledge gained from industrial training.
2. Ability to display/demonstrate related skills in industrial environment.
3. Ability to practice self-discipline and responsibility attitude working in a team.

FACULTY OF MECHANICAL ENGINEERING & TECHNOLOGY (FKTM)

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Programmes Offered:

- Bachelor of Mechanical Engineering with Honours
- Bachelor of Manufacturing Engineering with Honours
- Bachelor of Agricultural Engineering with Honours
- Bachelor of Mechanical Engineering Technology (Machining) with Honours
- Bachelor of Mechanical Engineering Technology (Agricultural Systems) with Honours
- Bachelor of Mechanical Engineering Technology (Product Design) with Honours
- Bachelor of Mechanical Engineering Technology (Materials Processing) with Honours
- Bachelor of Technology in Industrial Machining with Honours
- Bachelor of Technology in Automotive with Honours
- Bachelor of Technology in Welding with Honours
- Diploma in Manufacturing Engineering
- Diploma in Mechanical Engineering Technology

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UR6521001

Bachelor of Mechanical Engineering with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates who have demonstrated career advancement in the field of Mechanical Engineering or related engineering field.

PEO 2

Graduates who are involved in a professional body or society.

PEO 3

Graduates who pursue lifelong learning.



PROGRAMME OUTCOMES (PO)

PO1

Engineering Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization as specified in WK1 to WK4 respectively to develop solutions to complex engineering problems

PO2

Problem Analysis: Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development (WK1 to WK4).

PO3

Design/ Development of Solutions: Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required (WK5).

PO4

Investigation: Conduct investigation of complex engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions (WK8).

PO5

Tool Usage: Create, select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems (WK2 and WK6).

PO6

The Engineer and The World: Analyse and evaluate sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment in solving complex engineering problems (WK1, WK5, and WK7).

PO7

Ethics: Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion (WK9).

PO8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings (WK9).

PO9

Communication: Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments.

PO11

Lifelong Learning: Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change (WK8).

CURRICULUM STRUCTURE UR6521001 BACHELOR OF MECHANICAL ENGINEERING WITH HONOURS INTAKE 2025/2026									
YEAR	FIRST		SECOND		THIRD			FOURTH	
SEMESTER	1	2	3	4	5	6	BREAK	7	8
DISCIPLINE CORE & ELECTIVE COURSES (107 CREDITS)	MMJ10103 Engineering Statics	MMJ10203 Engineering Dynamics	MMJ10303 Solid Mechanics I	MMJ22103 Solid Mechanics II	MMJ32103 Mechanisms & Machines	MMJ32903 Control Engineering	MMJ39905 Industrial Training	MMJ40202 Final Year Project I	MMJ40304 Final Year Project II
	MMJ12202 Engineering Materials	MMJ12403 Manufacturing Processes	MMJ22203 Materials in Design	MMJ22303 Component Design	MMJ32503 Engineering Design Process	MMJ32402 Integrated Design Project I		MMJ42503 Integrated Design Project II	MMJ42602 Production & Operations
	MMJ12302 Mechanical Workshop	MMJ10403 Thermodynamics I	MMJ20103 Fluid Mechanics I	MMJ22503 Fluid Mechanics II	MMJ32203 Finite Element Analysis	MMJ32603 Heat Transfer		MMJ42103 Vibration Mechanics	MMJ4XX03 Elective II
	MMJ12102 Computer Aided Drafting	MMJ12603 Electrical Circuit & Machines	MMJ22403 Thermodynamics II	MMJ22603 Instrumentations & Measurements	MMJ32703 Fluid Machinery	MMJ32303 Parametric Modelling & Analysis		MMJ4XX03 Elective I	MMJ4XX03 Elective III
	MMJ12503 Computer Programming					MMJ32803 Electronics & Microprocessors		MMJ40102 Professional Engineers	MMJ30103 Management for Engineers
COMMON CORE COURSES (12 CREDITS)	IMQ10103 Engineering Mathematics 1	IMQ10203 Engineering Mathematics 2	IMQ20303 Engineering Mathematics 3	IMQ27103 Engineering Statistics					
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMU13102 Appreciation of Ethics & Civilization	SMB20102 English for General Communication ^[2]	SMU13002 Philosophy and Current Issues	SMB31202 English for Technical Communication	SMB41002 University Malay Language ^[3]	SMU12102 Integrity and Anti-Corruption ^[4]			
	SMZ1XX01 Co-Curriculum 1	SMZ2XX01 Co-Curriculum 2			SMU22402 Engineering Entrepreneurship				
TOTAL CREDITS (135 CREDITS)	18	18	17	17	16	16	5	13	15
AUDIT COURSES	SMB10102 Preparatory English ^[1]								

Elective Courses : MMJ42203 Fracture Mechanics / MMJ42303 Mechanics of Composite Materials / MMJ42403 Acoustic & Noise Control / MMJ42803 Additive Manufacturing / MMJ42703 Design Optimization / MMJ42903 Refrigeration & Air Conditioning / MMJ43103 Renewable Energy / MMJ43303 Computational Fluid Dynamics / MMJ43203 Internal Combustion Engine

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

UR6540001

Bachelor Of Manufacturing Engineering With Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

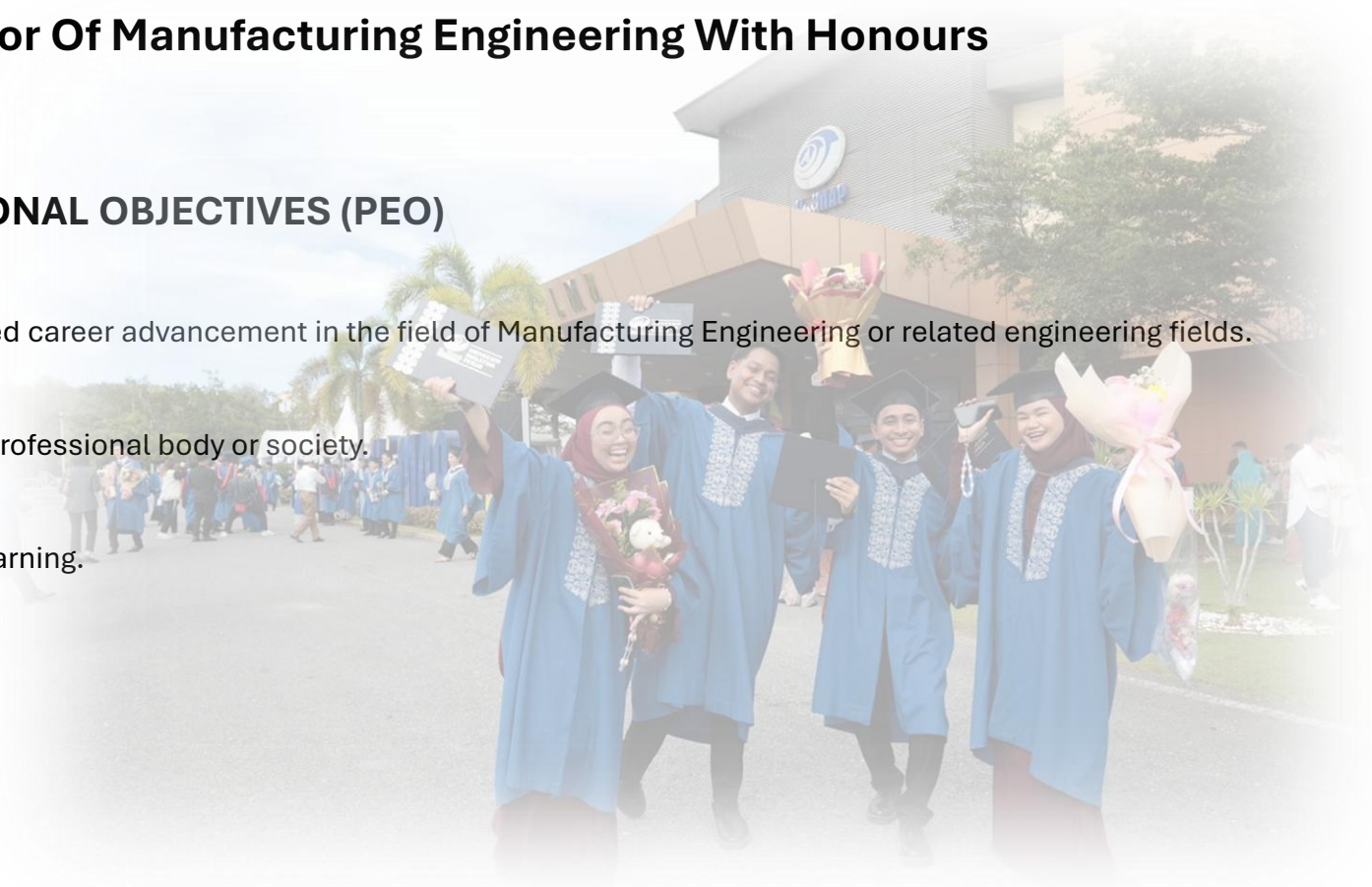
Graduates who have demonstrated career advancement in the field of Manufacturing Engineering or related engineering fields.

PEO 2

Graduates who are involved in a professional body or society.

PEO 3

Graduates who pursue lifelong learning.



PROGRAMME OUTCOMES (PO)

PO1

Engineering Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization as specified in WK1 to WK4 respectively to develop solutions to complex engineering problems

PO2

Problem Analysis: Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development (WK1 to WK4).

PO3

Design/ Development of Solutions: Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required (WK5).

PO4

Investigation: Conduct investigation of complex engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions (WK8).

PO5

Tool Usage: Create, select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems (WK2 and WK6).

PO6

The Engineer and The World: Analyse and evaluate sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment in solving complex engineering problems (WK1, WK5, and WK7).

PO7

Ethics: Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion (WK9).

PO8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings (WK9).

PO9

Communication: Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments.

PO11

Lifelong Learning: Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change (WK8).

CURRICULUM STRUCTURE UR6520001 BACHELOR OF MANUFACTURING ENGINEERING WITH HONOURS INTAKE 2025/2026									
YEAR	FIRST		SECOND		THIRD			FOURTH	
SEMESTER	1	2	3	4	5	6	BREAK	7	8
DISCIPLINE CORE & ELECTIVE COURSES (107 CREDITS)	MMJ16103 Materials	MMJ10303 Solid Mechanics I	MMJ10203 Engineering Dynamics	MMJ20103 Fluid Mechanics I	MMJ36102 Heat Transfer	MMJ36203 Computer-Aided Engineering	MMJ39905 Industrial Training	MMJ40202 Final Year Project I	MMJ40304 Final Year Project II
	MMJ10103 Engineering Statics	MMJ15203 Electronics	MMJ10403 Thermodynamics I	MMJ25203 Control Systems	MMJ36303 Mechanics of Machines And Vibration	MMJ37203 Industrial Ergonomics		MMJ47003 Manufacturing Integrated Design Project	MMJ4XXX2 Elective III*
	MMJ15103 Electrical Technology	MMJ15402 Computer Programming	MMJ25102 Instrumentation	MMJ26203 Machine Components Design	MMJ37103 Production Planning and Control	MMJ37403 Lean Manufacturing		MMJ4XXX2 Elective I*	
	MMJ17102 Manufacturing Process I	MMJ17203 Manufacturing Process II	MMJ27102 Computer-Aided Manufacturing	MMJ27203 Quality Engineering	MMJ37303 Advanced Manufacturing Technology	MMJ37603 Industrial Automation		MMJ4XXX2 Elective II*	
	MMJ17302 Engineering Workshop	MMJ16202 Engineering Design	MMJ26103 Design for Manufacture	MMJ27403 Industrial Engineering	MMJ37503 Pneumatic and Hydraulic System	MMJ30103 Management for Engineers			MMJ40102 Professional Engineers
	MMJ17502 Engineering Drawing								
COMMON CORE COURSES (12 CREDITS)	IMQ10103 Engineering Mathematics 1	IMQ10203 Engineering Mathematics 2	IMQ20303 Engineering Mathematics 3	IMQ27103 Engineering Statistics					
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMZ1XX01 Co-Curriculum 1	SMZ2XX01 Co-Curriculum 2	SMU12102 Integrity and Anti- Corruption ^[4]		SMB20102 English for General Communication ^[2]	SMB31202 English for Technical Communication		SMU13002 Philosophy and Current Issues	SMU22402 Engineering Entrepreneurship
								SMU13102 Appreciation of Ethics & Civilization	SMB41002 University Malay Language ^[3]
TOTAL CREDITS (135 CREDITS)	19	17	18	18	16	17	5	13	12
AUDIT COURSES			SMB10102 Preparatory English ^[1]						

Elective I : MMJ46102 Design for Sustainability, MMJ47602 Artificial Intelligent in Manufacturing

Elective II : MMJ46302 Tool and Die Design, MMJ47202 Operational Research, MMJ47402 Maintenance Engineering and Management

Elective III : MMJ46202 Injection Mould Design, MMJ47502 Supply Chain Management

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

UR6524003

Bachelor of Agricultural Engineering with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

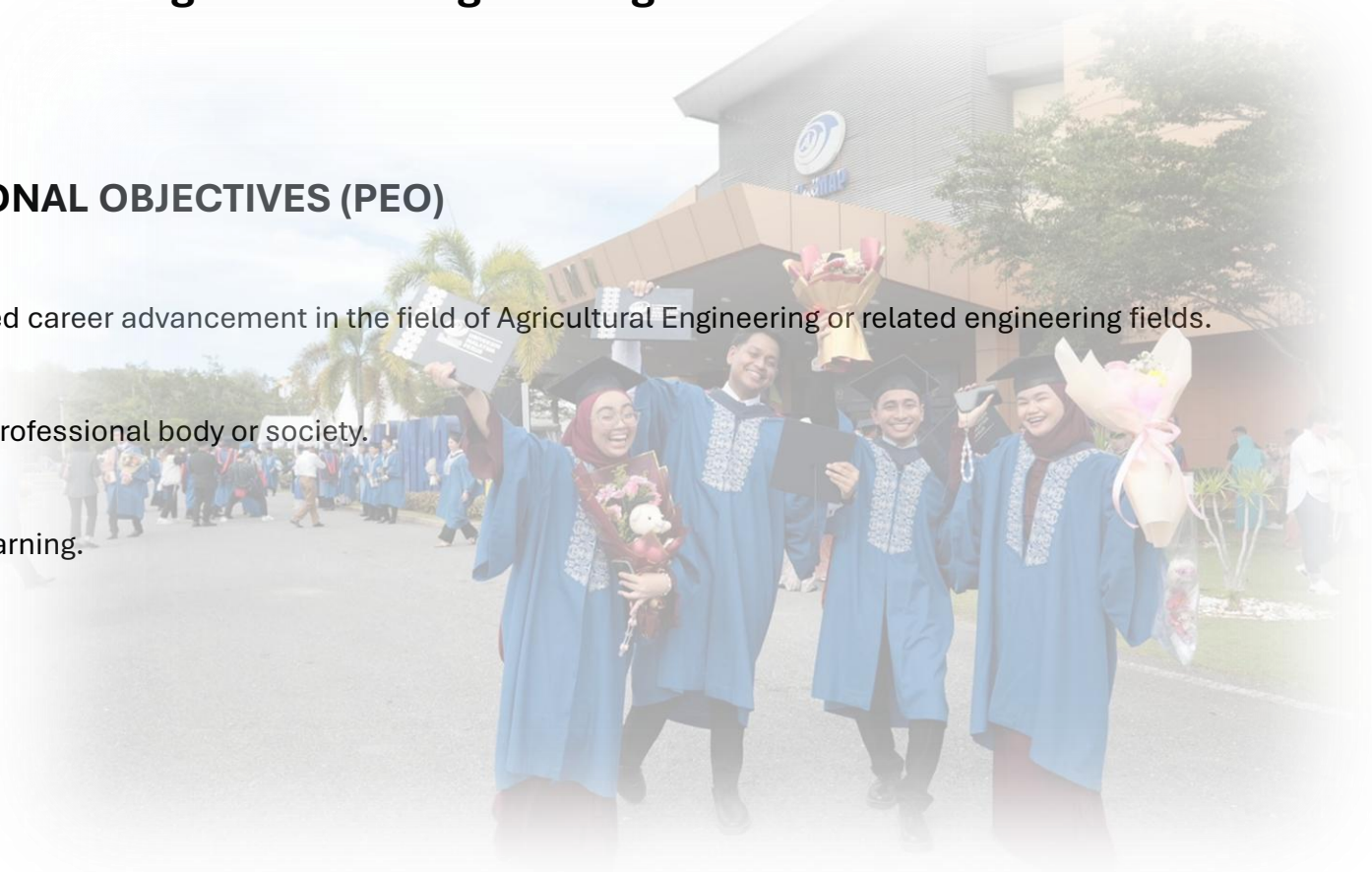
Graduates who have demonstrated career advancement in the field of Agricultural Engineering or related engineering fields.

PEO 2

Graduates who are involved in a professional body or society.

PEO 3

Graduates who pursue lifelong learning.



PROGRAMME OUTCOMES (PO)

PO1

Engineering Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization as specified in WK1 to WK4 respectively to develop solutions to complex engineering problems

PO2

Problem Analysis: Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development (WK1 to WK4).

PO3

Design/ Development of Solutions: Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required (WK5).

PO4

Investigation: Conduct investigation of complex engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions (WK8).

PO5

Tool Usage: Create, select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems (WK2 and WK6).

PO6

The Engineer and The World: Analyse and evaluate sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment in solving complex engineering problems (WK1, WK5, and WK7).

PO7

Ethics: Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion (WK9).

PO8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings (WK9).

PO9

Communication: Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments.

PO11

Lifelong Learning: Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change (WK8).

CURRICULUM STRUCTURE UR6524003 BACHELOR OF AGRICULTURAL ENGINEERING WITH HONOURS INTAKE 2025/2026									
YEAR	FIRST		SECOND		THIRD			FOURTH	
SEMESTER	1	2	3	4	5	6	BREAK	7	8
DISCIPLINE CORE & ELECTIVE COURSES (102 CREDITS)	MMJ14003 Plant and Animal Sciences	MMJ10203 Engineering Dynamics	MMJ20103 Fluid Mechanics I	MMJ24303 Heat and Mass Transfer	MMJ34003 Soil Engineering	MMJ34503 Farm Machinery	MMJ39905 Industrial Training	MMJ40202 Final Year Project I	MMJ40304 Final Year Project II
	MMJ14102 Physical Science	MMJ10303 Solid Mechanics I	MMJ24003 Thermodynamics	MMJ24403 Irrigation and Drainage Engineering	MMJ34103 Farm Structural Design	MMJ34602 Agricultural Integrated Design Project I		MMJ44003 Agricultural Integrated Design Project II	MMJ44503 Controlled Environment Agriculture
	MMJ12102 Computer Aided Drafting	MMJ14203 Geomatics Engineering	MMJ24103 Electrical and Electronic Technology	MMJ24503 Engineering Properties of Biological Materials	MMJ34203 Instrumentation, Measurement and Control	MMJ34703 Unit Operation		MMJ44103 Precision Agriculture	MMJ4XX03 Elective II
	MMJ10103 Engineering Statics	MMJ14303 Agricultural Production Systems	MMJ24203 Hydrology and Water Resources Engineering	MMJ12503 Computer Programming	MMJ34303 Energy and Power	MMJ34803 Design of Automation Systems		MMJ4XX03 Elective I	
	MMJ12302 Mechanical Workshop				MMJ34403 Machine Design	MMJ34902 Modelling and Simulation			
COMMON CORE COURSES (17 CREDITS)	IMQ10103 Engineering Mathematics 1	IMQ10203 Engineering Mathematics 2	IMQ20303 Engineering Mathematics 3	IMQ27103 Engineering Statistics		MMJ30103 Management for Engineers			MMJ40102 Professional Engineers
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMZ1XX01 Co-Curriculum 1	SMZ2XX01 Co-Curriculum 2	SMU13002 Philosophy and Current Issues	SMB31202 English for Technical Communication	SMU12102 Integrity and Anti- Corruption ^[4]			SMU22402 Engineering Entrepreneurship	
	SMU13102 Appreciation of Ethics & Civilization	SMB20102 English for General Communication ^[2]	SMB41002 University Malay Language ^[3]						
TOTAL CREDITS (135 CREDITS)	18	18	19	17	17	16	5	13	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]								

Elective I : MMJ44203 Remote Sensing, MMJ44303 Biowaste Management and Technology, MMJ44403 Bioproduct Manufacturing

Elective II : MMJ44603 Artificial Intelligence for Agriculture, MMJ43103 Renewable Energy, MMJ44703 Postharvest Engineering

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).
SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
MMJ10103	Statik Kejuruteraan [Engineering Statics]	SDG 11
MMJ10203	Dinamik Kejuruteraan [Engineering Dynamics]	SDG 09
MMJ10303	Mekanik Pepejal I [Solid Mechanics I]	-
MMJ10403	Termodinamik I [Thermodynamics I]	SDG 07
MMJ12102	Lukisan Terbantu Komputer [Computer Aided Drafting]	-
MMJ12202	Bahan Kejuruteraan [Engineering Materials]	-
MMJ12302	Bengkel Mekanikal [Mechanical Workshop]	-
MMJ12403	Proses-proses Pembuatan [Manufacturing Processes]	SDG 09
MMJ12503	Pengaturcaraan Komputer [Computer Programming]	-
MMJ12603	Litar dan Mesin Elektrik [Electrical Circuit & Machine]	SDG 07
MMJ20103	Mekanik Bendalir I [Fluid Mechanics I]	SDG 06
MMJ22103	Mekanik Pepejal II [Solid Mechanics II]	-
MMJ22203	Bahan dalam Reka Bentuk [Materials in Design]	SDG 13
MMJ22303	Reka Bentuk Komponen [Component Design]	-
MMJ22403	Termodinamik II [Thermodynamics II]	SDG 07
MMJ22503	Mekanik Bendalir II [Fluid Mechanics II]	-
MMJ22603	Instrumentasi dan Pengukuran [Instrumentation & Measurement]	-
MMJ30103	Pengurusan Untuk Jurutera [Management for Engineers]	-

COURSE CODE	COURSE NAME	SDG
MMJ32103	Mekanisma dan Mesin[Mechanism & Machine]	-
MMJ32203	Analisis Unsur Terhingga [Finite Element Analysis]	SDG 09
MMJ32303	Pemodelan dan Analisa Parametrik [Parametric Modelling & Analysis]	-
MMJ32402	Projek Reka Bentuk Bersepadu I [Integrated Design Project I]	-
MMJ32503	Proses Reka Bentuk Kejuruteraan [Engineering Design Process]	SDG 09
MMJ32603	Pemindahan Haba [Heat Transfer]	-
MMJ32703	Jentera Bendalir [Fluid Machinery]	-
MMJ32803	Elektronik & Mikropemproses [Electronics & Microprocessors]	-
MMJ32903	Kejuruteraan Kawalan [Control Engineering]	-
MMJ39905	Latihan Industri [Industrial Training]	SDG 09
MMJ40102	Jurutera Professional [Professional Engineer]	SDG 07
MMJ40202	Projek Tahun Akhir I [Final Year Project I]	-
MMJ40304	Projek Tahun Akhir II [Final Year Project II]	-
MMJ42103	Mekanik Getaran [Vibration Mechanics]	SDG 04
MMJ42203	Mekanik Patah [Fracture Mechanics]	SDG 09
MMJ42303	Mekanik Bahan Komposit [Mechanics of Composite Materials]	-
MMJ42403	Akustik & Kawalan Hingar [<i>Acoustic & Noise Control</i>]	SDG 11
MMJ42503	Projek Reka Bentuk Bersepadu II [Integrated Design Project II]	SDG 09
MMJ42602	Pengeluaran & Operasi [Production & Operations]	-

COURSE CODE	COURSE NAME	SDG
MMJ42703	Pengoptimuman Reka Bentuk [Design Optimization]	SDG 09
MMJ42803	Pembuatan Penambahan [Additive Manufacturing]	SDG 09
MMJ42903	Penyejukan dan Penyamanan Udara [Refrigeration & Air Conditioning]	SDG 07
MMJ43103	Tenaga Diperbaharui [Renewable Energy]	SDG 07
MMJ43203	Enjin Pembakaran Dalam [Internal Combustion Engine]	SDG 07
MMJ43303	Perkomputeran Dinamik Bendalir [Computational Fluid Dynamics]	SDG 07, SDG 13
MMJ16103	Bahan [Materials]	SDG 07
MMJ15103	Teknologi Elektrik [Electrical Technology]	SDG 07
MMJ17102	Proses-Proses Pembuatan I [Manufacturing Process I]	-
MMJ17302	Bengkel Kejuruteraan [Engineering Workshop]	SDG 09
MMJ17502	Lukisan Kejuruteraan [Engineering Drawing]	-
MMJ15203	Elektronik [Electronics]	SDG 09
MMJ15402	Pengaturcaraan Komputer [Computer Programming]	SDG 09
MMJ17203	Proses-Proses Pembuatan II [Manufacturing Process II]	SDG 09
MMJ16202	Reka Bentuk Kejuruteraan [Engineering Design]	-
MMJ25102	Instrumentasi [Instrumentation]	SDG 09
MMJ27102	Pembuatan Berbantu-Komputer [Computer Aided-Manufacturing]	SDG 09
MMJ26103	Reka Bentuk Untuk Pembuatan [Design for Manufacturing]	SDG 09
MMJ25203	Sistem Kawalan [Control Systems]	SDG 09

COURSE CODE	COURSE NAME	SDG
MMJ26203	Reka Bentuk Komponen Mesin [Machine Components Design]	SDG 09
MMJ27203	Kejuruteraan Kualiti [Quality Engineering]	SDG 09
MMJ27403	Kejuruteraan Industri [Industrial Engineering]	SDG 09
MMJ36102	Pemindahan Haba [Heat Transfer]	SDG 13
MMJ36303	Mekanik Mesin Dan Getaran [Mechanics of Machines and Vibration]	SDG 09
MMJ37103	Perancangan Pengeluaran dan Kawalan [Production Planning and Control]	SDG 09
MMJ37303	Teknologi Pembuatan Termaju [Advanced Manufacturing Technology]	SDG 12
MMJ37503	Sistem Pneumatik dan Hidraulik [Pneumatic and Hydraulic System]	SDG 09
MMJ36203	Kejuruteraan Berbantu-Komputer [Computer-Aided Engineering]	-
MMJ37203	Ergonomik Industri [Industrial Ergonomics]	SDG 08
MMJ37403	Pembuatan Lean [Lean Manufacturing]	SDG 09
MMJ37603	Automasi Industri [Industrial Automation]	SDG 09
MMJ47003	Projek Reka Bentuk Bersepadu Pembuatan [Manufacturing Integrated Design Project]	SDG 09
MMJ47202	Penyelidikan Operasi [Operational Research]	-
MMJ47402	Kejuruteraan Dan Pengurusan Penyelenggaraan [Maintenance Engineering And Management]	SDG 09
MMJ46102	Reka Bentuk Untuk Kelestarian [Design For Sustainability]	SDG 09
MMJ46202	Reka Bentuk Acuan Suntikan [Injection Mold Design]	SDG 09
MMJ46302	Reka Bentuk Acuan Dan Perkakasan [Tool And Die Design]	SDG 09
MMJ47502	Pengurusan Rantaian Bekalan [Supply Chain Management]	SDG 09

COURSE CODE	COURSE NAME	SDG
MMJ14102	Sains Fizikal [Physical Science]	-
MMJ14203	Kejuruteraan Geomatik [Geomatics Engineering]	-
MMJ14303	Sistem Pengeluaran Pertanian [Agricultural Production Systems]	-
MMJ24003	Termodinamik [Thermodynamics]	SDG 07
MMJ24103	Teknologi Elektrik dan Elektronik [Electrical and Electronic Technology]	-
MMJ24203	Kejuruteraan Hidrologi dan Sumber Air [Hydrology and Water Resources Engineering]	SDG 06, SDG 13
MMJ24303	Pemindahan Haba dan Jisim [Heat and Mass Transfer]	-
MMJ24403	Kejuruteraan Pengairan dan Saliran [Irrigation and Drainage Engineering]	-
MMJ24503	Sifat Kejuruteraan Bahan Biologi [Engineering Properties of Biological Materials]	-
MMJ34003	Kejuruteraan Tanah [Soil Engineering]	-
MMJ34103	Reka Bentuk Struktur Ladang [Farm Structural Design]	SDG 11
MMJ34203	Peralatan, Pengukuran dan Kawalan [Instrumentation, Measurement and Control]	-
MMJ34303	Tenaga dan Kuasa [Energy and Power]	SDG 07
MMJ34403	Reka Bentuk Mesin [Machine Design]	-
MMJ34503	Jentera Ladang [Farm Machinery]	-
MMJ34602	Reka Bentuk Bersepadu Pertanian I [Agricultural Integrated Design Project I]	-
MMJ34703	Operasi Unit [Unit Operation]	-
MMJ34803	Reka Bentuk Sistem Automasi [Design of Automation Systems]	-
MMJ34902	Pemodelan dan Simulasi [Modelling and Simulation]	-

COURSE CODE	COURSE NAME	SDG
MMJ44003	Reka Bentuk Bersepadu Pertanian II [Agricultural Integrated Design Project II]	-
MMJ44103	Pertanian Persis [Precision Agriculture]	-
MMJ44503	Kejuruteraan Persekitaran Terkawal [Controlled Environment Agriculture]	-
MMJ44203	Penderiaan Jauh [Remote Sensing]	-
MMJ44303	Teknologi dan Pengurusan Sisa Bio [Biowaste Management and Technology]	SDG 09
MMJ44403	Pembuatan Bioproduk [Bioproduct Manufacturing]	-
MMJ44603	Kecerdasan Buatan Untuk Pertanian [Artificial Intelligence for Agriculture]	-
MMJ44703	Kejuruteraan Lepas Tuai [Postharvest Engineering]	SDG 02

MMJ10103 STATIK KEJURUTERAAN [ENGINEERING STATICS]

No of Credits: 3

Course Synopsis:

The objective of the course is to look into problems related to mechanics concepts in static conditions. This course deals with balanced force systems applied to rigid bodies that are at rest. Methods to determine support reactions and relationships between internal and external forces, as well as internal force distribution will be introduced in this course. This course is important as it serves as pre-requisite and fundamental in later engineering courses.

Course Outcomes:

1. Ability to analyse engineering problems by applying the fundamental concept and principle of statics.
2. Ability to evaluate static problems using the principles of equilibrium.

MMJ10203 DINAMIK KEJURUTERAAN [ENGINEERING DYNAMICS]

No of Credits: 3

Course Synopsis:

This course introduces the basic laws of motion involving kinematics and kinetics of a particle and rigid body. The concepts of force, energy, momentum, and impulse are reviewed for both particle and rigid body where several techniques are introduced to assist in the analysis of a mechanical system. At the end of the course, the students are expected to be able to solve engineering problems related to mechanisms and motions.

Course Outcomes:

1. Ability to analyze problems related to kinematics of a particle and planar kinematics of a rigid body.
2. Ability to evaluate problems related to kinetics of particle.
3. Ability to evaluate problems related to planar kinetics of a rigid body.

MMJ10303 MEKANIK PEPEJAL I [SOLID MECHANICS I]

No of Credits: 3

Course Synopsis:

This course introduces concept of stress and strain as well as mechanical properties of materials. It is also covering various type of loadings which occur in beam, shaft and member related to axial load, torsion, bending and transverse shear. The stress strain transformation analysis will also be discussed. At the end of this course, students will be able to solve related engineering problems applied by various loadings.

Course Outcomes:

1. Ability to analyze engineering problems using fundamental theory of solid mechanics and produce stress strain transformation analysis
2. Ability to analyze engineering problems using fundamental theory of solid mechanics and produce stress strain transformation analysis

MMJ10403 TERMODINAMIK I [THERMODYNAMICS I]

No of Credits: 3

Course Synopsis:

Thermodynamics is one of the main foundations in mechanics which is the backbone of the Mechanical Engineering. This field is a combination of the concepts of thermal energy and energy movement in engineering. The extension of knowledge of the field of thermodynamics leads to the application of heat transfer, thermal-fluid and subsequently to dynamics gas.

Course Outcomes:

1. Ability to analyse the properties of pure substance.
2. Ability to formulate energy balance accordingly to the first law of thermodynamics for a system.
3. Ability to evaluate the second law of thermodynamics with entropy changes of substances in a system.

MMJ12102 LUKISAN TERBANTU KOMPUTER [COMPUTER AIDED DRAFTING]

No of Credits: 2

Course Synopsis:

This course provides the foundation for mechanical engineering students to acquire and apply the language of engineering graphics to visibly communicate engineering intent that follow good engineering conventions and practices. In this course, CAD software will be introduced to create 2-D and 3-D engineering drawings which including sketching techniques, multiview projections, isometric view, sectional and auxiliary view representation and dimensioning techniques. The use of solid modeling software to capture design object and generate engineering drawings gives the opportunity to apply this knowledge for engineering design projects.

Course Outcomes:

1. Ability to interpret technical drawings as a communication tool and understanding concepts of drafting in mechanical engineering discipline.
2. Ability to produce engineering drawings using computer aided software.

MMJ12202 BAHAN KEJURUTERAAN [ENGINEERING MATERIALS]

No of Credits: 2

Course Synopsis:

This course provides concept that relates basic understanding of engineering materials, their structure and the influence of structure on material behaviour. The course topics involve investigating the relationships that exist between the structures and properties of materials. Upon completion of this course, student will be able to analyse characteristic properties of engineering materials and relate the properties for various engineering applications.

Course Outcomes:

1. Ability to analyse engineering materials including materials behavior and atomic structure
2. Ability to evaluate mechanical properties of metals and processing of metals.

MMJ12302 BENGKEL MEKANIKAL [MECHANICAL WORKSHOP]

No of Credits: 2

Course Synopsis:

The objective of this course is to introduce and provide the students with theoretical and practical skills required in normal engineering workshop practices involving the selection and operation of some commonly used workshop tools and machines. At the end of this course the students will be able to appreciate various skills and technology to fabricate some simple engineering workpieces/parts, by operating ordinary workshop machine tools and practices such as manufacturing metrology, lathe, milling and drilling machine, welding, and CNC machining.

Course Outcomes:

1. Ability to identify and choose the proper measurement tools
2. Ability to safely operate equipment and tools in metal working and distinguish between their applications.

MMJ12403 PROSES-PROSES PEMBUATAN [MANUFACTURING PROCESSES]

No of Credits: 3

Course Synopsis:

This course provides a basic knowledge of the manufacturing processes as to serve diverse demands and to get a feel for cutting-edge technologies and manufacturing. It starts with a general view of the importance of manufacturing to humankind, followed by the interaction of design and manufacturing up to process choice. It is expected that student will be able to decide suitable manufacturing processes in fabrication of products.

Course Outcomes:

1. Ability to analyze information of the right raw materials for a manufacturing process
2. Ability to analyze an appropriate process or process sequence to the products to be produced.
3. Ability to optimize the design through the use of a desirable manufacturing process.

MMJ12503 PENGATURCARAAN KOMPUTER [COMPUTER PROGRAMMING]

No of Credits: 3

Course Synopsis:

This course introduces to Computers and Computing Fundamentals, Program Structure, Printing, Comments, Variables, Arithmetic Operations, Math Functions, Input/ Output, Control Structure, Looping, Functions, Numeric Arrays and their application on solving engineering problems. C programming language is utilized in this course.

Course Outcomes:

1. Ability to construct C programs with the desired input/ output.
2. Ability to construct C programs with control structure and looping.
3. Ability to construct C programs with functions and numeric arrays.

MMJ12603 LITAR DAN MESIN ELEKTRIK [ELECTRICAL CIRCUIT & MACHINE]

No of Credits: 3

Course Synopsis:

This course covers the fundamental concepts of electrical circuits including DC, AC, and electromagnetics. The students will also be exposed to the basics of the three-phase systems and their applications as well as the electrical machines. At the end of this course, the students should be able to evaluate an electrical circuit in order to solve engineering problems. In addition, the students should be able to select and characterize the electrical machines for specific applications.

Course Outcomes:

1. Ability to analyse the electrical circuit to solve engineering problems.
2. Ability to evaluate the electrical circuit and electrical machine in engineering applications.

MMJ20103 MEKANIK BENDALIR I [FLUID MECHANICS I]

No of Credits: 3

Course Synopsis:

This course aims to develop the basic knowledge on the principles of fluid mechanics and the application of these principles to practical applied problems. Emphasis is on fluid properties, fluid statics, fluid kinematics, conservation of mass,

and Bernoulli's equation. Momentum analysis, modelling, and concepts of internal flow. At the end of this course, students will be able to solve, analyse and evaluate the problems dealing with fluid mechanics.

Course Outcomes:

1. Ability to apply the various properties of fluids in evaluating problems related to fluids statics.
2. Ability to evaluate fluid dynamics and kinematics problems.
3. Ability to analyse and evaluate problems related to flow in pipe.
4. Ability to perform experiments related to fluid mechanics and measure concern parameters/ variables during the experiment.

MMJ22103 MEKANIK PEPEJAL II [SOLID MECHANICS II]

No of Credits: 3

Course Synopsis:

The topics is extended and emphasized on combined loadings related to axial load, torsion, bending and shear occur in beam, shaft and member. It is also covered an introduction on deflection, buckling, and energy method theory. At the end of this course, students will be able to solve related engineering problems applied by various loadings.

Course Outcomes:

1. Ability to analyze the stress in a member subjected to several loadings
2. Ability to design a prismatic beam for engineering application
3. Ability to evaluate engineering problems involving deflection and buckling behaviour

MMJ22203 BAHAN DALAM REKA BENTUK [MATERIALS IN DESIGN]

No of Credits: 3

Course Synopsis:

This course provides a comprehensive treatment of the selection of materials in mechanical design. Selection of materials will be performed on the basis of their properties (i.e. performance requirements), constraints imposed by the design and how the part will be manufactured for a particular end-use/application. At the end of this course, students should be able to demonstrate a sound knowledge of materials selection method, and how these must be taken into account during the design process.

Course Outcomes:

1. Ability to analyse the requirement on material selection process in solving mechanical design problems.
2. Ability to evaluate critically the mechanical design using engineering criteria, design tools and computer-based techniques.
3. Ability to propose suitable materials in mechanical design.

MMJ22303 REKA BENTUK KOMPONEN [COMPONENT DESIGN]

No of Credits: 3

Course Synopsis:

This course introduces the concepts and principles of design consideration for mechanical components. Design and analysis of mechanical components that consists of screws and fasteners, springs, bearings, gears, clutches, brakes, belts and chains in mechanical systems will be studied. Theories and criteria of material failures under static and variable loadings will also be discussed. Design parameters that could contribute to the failure of those components will be considered. At the end of the course, the students are expected to be able to perform the stress analysis on mechanical components for design judgement.

Course Outcomes:

1. Ability to analyze the design parameters of components in mechanical systems.
2. Ability to analyze failure prediction under static and variable loadings for mechanical components.
3. Ability to propose solution for components design in mechanical system problems.

MMJ22403 TERMODINAMIK II [THERMODYNAMICS II]

No of Credits: 3

Course Synopsis:

This course provides the advanced analysis of the thermodynamics cycles for engineering applications. Emphasis will be given to the gas power cycles, vapour power cycles, refrigeration cycles, gas vapour mixtures, airconditioning, chemical reactions and phase equilibrium. These cycles are classified as power and refrigeration cycles. Complex engineering problem solving will be focused for industry and everyday life applications.

Course Outcomes:

1. Ability to create solution for the problems in gas, vapor and combined power cycles, each in their applications.
2. Ability to create solution for the problems in refrigeration and air conditioning cycles.
3. Ability to analyze the problem in chemical reactions, adiabatic flame temperature and phase equilibrium.

MMJ22503 MEKANIK BENDALIR II [FLUID MECHANICS II]

No of Credits: 3

Course Synopsis:

This course is offered to enhance the basic knowledge that has been developed in Fluid Mechanics I. It introduces the analysis of real/ideal fluid with and without compressibility effect in a flow system. It also emphasizes on the differential analysis of fluid flow, boundary layer, potential flow theory, compressible flow, shock waves and expansion waves in practical engineering applications. At the end of the course, students should be able to demonstrate and apply the theory to solve problems related to fluid flow.

Course Outcomes:

1. Ability to analyze the differential analysis of fluid flow and boundary layer problems on flows past a flat plate.
2. Ability to analyze the differential analysis of fluid flow and boundary layer problems on flows past a flat plate
3. Ability to evaluate the consequences of compressibility in gas flow with and without the effects of friction and heat transfer.

MMJ22603 INSTRUMENTASI DAN PENGUKURAN [INSTRUMENTATION & MEASUREMENT]

No of Credits: 3

Course Synopsis:

This course provides the knowledge of measurement and instrumentation with various transducers and techniques involving physical phenomena. This includes on overview of general measurement system, errors and signal characteristics, followed by diverse type of sensors and their application in measuring electronics signal, temperatures, humidity, displacement as well as velocity and acceleration, force, torques strain and stress and also the flow rate measurement. The use of software for simulating or solving instrumentation and measurement applications is also covered in this course.

Course Outcomes:

1. Ability to explain and analyze basic concepts of transducers, sensors and measurement techniques and errors in measurement.
2. Ability to apply and analyze interfacing concept between transducers, computer and signals obtained from measurement techniques.
3. Ability to design and evaluate measurement system using suitable sensors and transducers.
4. Ability to use software to solve instrumentation and measurement problems.

MMJ30103 PENGURUSAN UNTUK JURUTERA [MANAGEMENT FOR ENGINEERS]

No of Credits: 3

Course Synopsis:

This course aims to teach students how to apply project management skills when undertaking projects. This course is also designed to provide basic tools of the engineering economy to enable the students to carry out professional-quality economic evaluations. At the end of the course, students will be able to identify and discuss issues and challenges faced by engineers relating to project management in the current economic scenarios

Course Outcomes:

1. Ability to develop and evaluate project requirements and integrate the processes of project management like work plans, scheduling, cost estimation and perform project evaluation.
2. Ability to integrate and evaluate economic scenarios and integrate decision making process to engineering project and business ventures

MMJ32103 MEKANISMA DAN MESIN [MECHANISM & MACHINE]

No of Credits: 3

Course Synopsis:

This course is intended as an advanced knowledge of mechanism and machine to design and evaluate machine elements and machinery in mechanical engineering for undergraduate level. The course will emphasize on analytical and graphical techniques to evaluate the machine elements and machinery in mechanical engineering applications to achieve effective design.

Course Outcomes:

1. Ability to determine the kinematic characteristics of mechanisms in a mechanical system.
2. Ability to derive the kinematic characteristics of displacement, velocity and acceleration in a mechanical system.
3. Ability to revise the machinery dynamics of a mechanical system.

MMJ32203 ANALISIS UNSUR TERHINGGA [FINITE ELEMENT ANALYSIS]

No of Credits: 3

Course Synopsis:

The objective of this course is to introduce the students with theoretical knowledge that are required in solving engineering problems using finite element methods (FEM). The students will also be exposed to the commercial software for Finite Element Analysis (FEA) in solving engineering problems. At the end of this course, the students will be able to apply various approaches in solving engineering problems especially for structural problems and utilize the FEA software for solving complex engineering problems.

Course Outcomes:

1. Ability to determine the stiffness matrices and identify boundary conditions for various engineering problems.
2. Ability to evaluate engineering problems using various approaches in finite element methods.
3. Ability to solve engineering problems using computational tools.

MMJ32303 PEMODELAN DAN ANALISA PARAMETRIK [PARAMETRIC MODELLING & ANALYSIS]

No of Credits: 3

Course Synopsis:

This course will develop skills and knowledge in using CAED tools for mechanical engineering design. The outcome of the course will impart knowledge related to principles, methods and techniques to create and manipulate parametric models, engineering communication, analysis and optimization using CAED software. Students will undertake practical works for design, analysis, simulation, evaluation and optimization of mass properties, static-stresses, thermal deformations by applying CAD and CAE software tools to design of simple parts, assemblies, mechanisms and structures.

Course Outcomes:

1. Ability to apply solid parametric modelling and use 3D CAD software tools in the correct manner for making geometric part models, assemblies and automated drawings of mechanical components and assemblies.
2. Ability to use CAD software tools for assembly of mechanism from schematic or component drawing and conduct position/ path/ kinematic / dynamic analysis of a mechanism in motion.
3. Ability to analyse part design and to evaluate and optimize parts using commercial CAD, CAE software for mechanical application that required mass properties/ stress, deflection / temperature distribution under realistic loading and constraining conditions.

MMJ32402 PROJEK REKA BENTUK BERSEPADU I [INTEGRATED DESIGN PROJECT I]

No of Credits: 3

Course Synopsis:

Integrated design project integrates mathematics, engineering, basic sciences and complementary studies in developing elements, systems, and processes to meet specific needs. This course aims to develop an understanding to strategically and systematically observe, develop, analyze, and compare existing products during the design process. Student will use appropriate engineering approaches and methods to formulate and compare alternative solutions systematically at different stages of the design process to refine and evaluate alternative solutions. This course covers a set of product development methods that brings together the marketing, design, and manufacturing functions. It is a creative, iterative, and often open-ended process subjected to constraints which

may be governed by standards, or legislation to varying degrees within mechanical engineering discipline. This course will require students to work in a group environment and collaborate with other members of group to arrive at good design decisions and then to provide proper reports on these decisions upon completion.

Course Outcomes:

1. Ability to develop design requirements in defining and solving complex mechanical engineering problems.
2. Ability to propose design concepts that meets customer and functional requirements based on constraints and concerns using engineering design methods.
3. Ability to assist in a team for the successful delivery of design project.

MMJ32503 PROSES REKA BENTUK KEJURUTERAAN [ENGINEERING DESIGN PROCESS]

No of Credits: 3

Course Synopsis:

This course will provide the foundation in formulating and devising appropriate solutions and plans to open engineering design problems using systematic design methods that promote innovation. This course aims to develop an understanding to strategically and systematically observe, develops, analyze, and compare existing products during the design process. Student will use appropriate engineering approaches and methods to formulate and compare alternative solutions systematically at different stages of the design process to refine and evaluate alternative solutions. This course covers a set of product development methods that bringing together the marketing, design, and manufacturing functions. This course introduce analysis of user needs and customer's needs and product marketability through the chapter of "Customers/User Centered Design".

Course Outcomes:

1. Ability to determine design requirements and produce clear design information and ideas.
2. Ability to integrate fundamentals engineering design theory in the selection creation of components and mechanism for solving structured and unstructured design problems.
3. Ability to develop critically the design of mechanical system using engineering criteria and design tools.

MMJ32603 PEMINDAHAN HABA [HEAT TRANSFER]

No of Credits: 3

Course Synopsis:

The objective of this course is to introduce fundamental concepts and applications of heat transfer to the students of mechanical engineering. Emphasis will be given in solving and evaluating engineering problems through comprehensive analysis of conduction, convection, and radiation heat transfer, as well as on the evaluation of common type of heat exchangers and other heat transfer equipment.

Course Outcomes:

1. Ability to apply principles of heat transfer mechanisms in solving engineering problems.
2. Ability to evaluate engineering problems involving heat exchangers and other heat transfer equipment.

MMJ32703 JENTERA BENDALIR [FLUID MACHINERY]

No of Credits: 3

Course Synopsis:

This course introduces the operating principles of different types of fluid machines; pumps, compressors, hydraulic turbines, steam turbines and gas turbines. It covered the fundamentals of fluid mechanics, analytical and empirical relationships, and work principle used in fluid machine. It also includes the analysis of flow, selection of fluid machine, and preliminary estimation of performance characteristics. Upon completion of this course, students will be able to select the fluid machines for specific applications and solve related fluid machinery problems.

Course Outcomes:

1. Ability to analyze the performance of different pumps, fans, and compressors and select them properly for specific applications.
2. Ability to evaluate the performance of different hydraulic turbines and select them properly for specific applications.
3. Ability to explain the operating principles of thermal turbines (steam/gas turbines) and formulate their performance.

MMJ32803 ELEKTRONIK & MIKROPEMROSES [ELECTRONICS & MICROPROCESSORS]

No of Credits: 3

Course Synopsis:

This course introduces the basic concepts of electronics and microprocessors for application in Mechanical Engineering. The first part of the course focuses on analog and digital electronics, which covers the fundamentals of semiconductors, electronic components, electronic circuits, digital electronics and signal conversion. The second part of the course introduces students to the architecture, hardware and software of microprocessor. Upon completion of the course, the students will be able to develop application through the combination of electronic circuit and microprocessor.

Course Outcomes:

1. Ability to analyze and apply electronic components and circuit.
2. Ability to analyze and apply microprocessor functions.
3. Ability to develop simple microprocessor-based application with electronic circuit.

MMJ32903 KEJURUTERAAN KAWALAN [CONTROL ENGINEERING]

No of Credits: 3

Course Synopsis:

This is an introductory control engineering course. Students will learn how to apply transfer functions to mathematically represent the mechanical, electrical, and electro-mechanical systems, as well as how to evaluate system performance in the time and frequency domain to establish system stability. The curriculum will also incorporate the Internet of Things (IoT) and the open-source programming tool for deeper control system design and system's response analysis.

Course Outcomes:

1. The ability to analyze the mathematical model for systems
2. The ability to analyze and evaluate the time- and frequency-domain of the system with response to test inputs. The analysis includes the determination of the system stability.
3. The ability to design and evaluate P, PI, PD, PID, lead, lag controllers based on the response of the system in time- and frequency-domain and integrating the use of the Internet of Things (IoT) in the system.

MMJ39905 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]

No of Credits: 5

Course Synopsis:

The course will expose students to technical and practical application as well as other aspects such as the company's operation, work culture, safety procedure, project management, communication, technical skills, and presentation in achieve appreciation and/or capability of carrying out complex engineering activities. Students are required to submit their logbook and written report at the end of the industrial training.

Course Outcomes:

1. Ability to demonstrate technical knowledge and practical skills.
2. Ability to adapt to health, safety, legal and cultural requirements in working environment.
3. Ability to perform tasks with professional ethics and responsibilities.
4. Ability to work independently, interact with co-workers and work in a team.
5. Ability to report and communicate verbally and in written form.

MMJ40102 JURUTERA PROFESIONAL [PROFESSIONAL ENGINEER]

No of Credits: 2

Course Synopsis:

This course exposes students to the concepts of engineering ethics, sustainability, risk management, occupational safety and health, and basic of law in the engineering context. The materials will enable students to understand their future role as professional engineers to the society. Students will be confronted by issues and dilemma faced by engineers with constraints related to engineering ethics, environmental & sustainability, safety and regulatory acts. At the end of the course, students will be able to propose solutions with respect to engineering ethics, environmental & sustainability, safety and health as well as can interpret legal related to engineers.

Course Outcomes:

1. Ability to propose solutions in resolving moral responsibilities related to conditions of dilemma in engineering ethics.
2. Ability to suggest course of action to meet desired needs within realistic constraints of environmental and sustainability.
3. Ability to engender issues regarding hazards, risk management, occupational safety & health (OSHA) and procedures of legal on engineering issues.

MMJ40202 PROJEK TAHUN AKHIR I [FINAL YEAR PROJECT I]

No of Credits: 2

Course Synopsis:

This course is designed to expose students with an investigative research-based project to solve engineering issue(s)/problem(s). Students are required to identify problems, develop techniques for information gathering, conduct literature review and select appropriate methodology. Students are assessed by a written and oral presentation at the end of the semester.

Course Outcomes:

1. Ability to integrate comprehensively the needs and the insights of research works conducted.
2. Ability to investigate and conduct research literature of complex engineering problems with selected knowledge in the research literature of the discipline.
3. Ability to propose and develop design solutions or methodology for complex engineering problems that meet specified needs with appropriate consideration including design of experiments, modeling or simulation.
4. Ability to perform effective presentation on complex engineering activities undertaken.
5. Ability to demonstrate and apply engineering management principles by managing research project.

MMJ40304 PROJEK TAHUN AKHIR II [FINAL YEAR PROJECT II]

No of Credits: 4

Course Synopsis:

This course is designed to expose students with an investigative research-based project to solve engineering issue(s)/problem(s). Students are required to identify problems, develop techniques for information gathering, conduct literature review and select appropriate methodology. In addition, students are required to deliver individual analysis and judgement, utilize appropriate modern technology/tools in conducting the research and assessed independently. At the end of the semester, students will prepare a final report and deliver both written and oral.

Course Outcomes:

1. Ability to integrate comprehensively the needs and the insights of research works conducted.
2. Ability to investigate and conduct research literature of complex engineering problems with selected knowledge in the research literature of the discipline.
3. Ability to propose and develop design solutions or methodology for complex engineering problems that meet specified needs with appropriate consideration including design of experiments, modeling or simulation.
4. Ability to synthesize complex engineering problems using first principles of mathematics, natural sciences or engineering sciences in order to evaluate and interpret data to provide results and conclusions with recommendations.
5. Ability to perform effective presentation on complex engineering activities undertaken.
6. Ability to demonstrate and apply engineering management principles by managing research project.

MMJ42103 MEKANIK GETARAN [VIBRATION MECHANICS]

No of Credits: 3

Course Synopsis:

This course provides the skills and knowledge in vibrations disciplines. The syllabus covers the fundamental of vibration and oscillation motion, free vibration, force vibration, transient vibration, two degree of freedom systems and multiple degree of freedom systems. The students will be exposed towards industrial application elements such as vibration control, vibration measurement and signal analysis methods.

Course Outcomes:

1. Ability to evaluate and analyse the various response to various inputs of vibratory motion.
2. Ability to construct a control system for a vibration motion.
3. Ability to measure and analyse vibration signals.

MMJ42203 MEKANIK PATAH [FRACTURE MECHANICS]

No of Credits: 3

Course Synopsis:

This course contains the theory of principles and application of fracture mechanics. The fundamental of fracture mechanics covers the linear elastic fracture mechanics and elastic plastic fracture mechanics principles. It presents the problem solving of fracture parameter solution for wide range of failure cases from engineering design applications, including the analysis of fracture mechanism and experimental testing for metallic and non-metallic material. Computational fracture mechanics approach is employed for selected fracture mechanism cases in engineering design and structures.

Course Outcomes:

1. Ability to analyse the concepts of fracture mechanics in engineering materials and structures
2. Ability to formulate and propose the fracture mechanics solution for engineering design failures.
3. Ability to construct and manipulate the computational fracture mechanics program for a specific fracture mechanic problem solving

MMJ42303 MEKANIK BAHAN KOMPOSIT [MECHANICS OF COMPOSITE MATERIALS]

No of Credits: 3

Course Synopsis:

The basic concepts of composite materials are introduced. The elastic behaviour of unidirectional lamina and multidirectional laminates are presented. Students are to develop strong understanding of the role of constituent materials in overall response of composite lamina and how would the orientations and stacking sequence would affect the overall performance. Several failure criteria of laminates are introduced. Experimental methods used to characterise composite materials are presented.

Course Outcomes:

1. Ability to point out the role of constituents in overall response of composite lamina (micromechanics) and its effect on the laminate properties (macromechanics)
2. Ability to formulate elastic and strength properties, and elastic response, of orthotropic and anisotropic materials having both continuous and discontinuous reinforcements
3. Ability to analyse and discuss the basic experimental methods to characterise composite materials

MMJ42403 AKUSTIK & KAWALAN HINGAR [ACOUSTIC & NOISE CONTROL]

No of Credits: 3

Course Synopsis:

The aim of this course is to enable students to understand fundamental principles of engineering acoustics. Several acoustics criterias, measurements and noise control guidances that are required for design and construction of those features related to noise, are also to be introduced in the course. After completing this course, students should be able to use the basic concepts of acoustic measurements and application of acoustic signal analysis for particular applications in noise control.

Course Outcomes:

1. Ability to analyse the conceptual and fundamental of engineering acoustics.
2. Ability to explain and analyse the principles and techniques of noise and their applications in controlling noise.
3. Ability to propose and evaluate the various methods for controlling exposure to noise.

MMJ42503 PROJEK REKA BENTUK BERSEPADU II [INTEGRATED DESIGN PROJECT II]

No of Credits: 3

Course Synopsis:

This course is intended as an advanced knowledge in mechanical system design for undergraduate level. Bringing together the fundamentals theories and techniques from previous courses to accomplish the design of a complete machine or mechanical system. The course covers the principle of engineering design process continuing from conceptual design process in the prerequisite course. This course focuses from embodiment design to developing functional prototype. Students are expected to work in a group and collaborate with other members to arrive at good design decisions on selected theme. Students are required to design a project with current issues related to safety, cultural, societal, environmental as well as the economic considerations. It is a creative, iterative, and often open-ended process subject to constraints which may be governed by standards, or legislation to varying degrees within mechanical engineering discipline. This course will utilize Computer Aided Engineering (CAE) software as tool in analysing and solving mechanical system design problems as part of a capstone project.

Course Outcomes:

1. Ability to propose design solutions to solve complex mechanical engineering problem to meet customer and functional needs with consideration for safety, cultural, societal, environmental and sustainability concerns.
2. Ability to fabricate design solutions by selecting and applying the appropriate modern engineering tools.
3. Ability to develop and communicate the design solutions effectively with regards to project management and finance principles.
4. Ability to function in a team for the successful delivery of design project.

MMJ42602 PENGELUARAN & OPERASI [PRODUCTION & OPERATIONS]

No of Credits: 2

Course Synopsis:

This course offers comprehensive contents about production and operation in goods producing and services providing industries. It is a process of managing people and resources in order to create product or service. This course introduces students to linear programming, inventory management, aggregate planning, transportation models, material requirements planning (MRP) as well as short-term scheduling

Course Outcomes:

1. Ability to develop solutions for a production operation.
2. Ability to detect optimum solution to production operations based on operation research.

MMJ42703 PENGOPTIMUMAN REKA BENTUK [DESIGN OPTIMIZATION]

No of Credits: 3

Course Synopsis:

This course introduces the theory and use of numerical design optimization methods. Problem formulation, practical application, and result analysis. Design optimization concepts, necessary and sufficient optimality conditions and solution techniques. Unconstrained nonlinear problems, constrained linear and nonlinear problems, and multiobjective optimization. Use of basic knowledge of numerical optimization algorithms to apply them appropriately in engineering design.

Course Outcomes:

1. Ability to formulate optimum solution in practical engineering design problems.
2. Ability to analyze optimum solution based on mathematical constructs and theoretical tools of linear and non-linear design problems.
3. Ability to analyze optimum solution based on mathematical constructs and theoretical tools of linear and non-linear design problems.

MMJ42803 PEMBUATAN PENAMBAHAN [ADDITIVE MANUFACTURING]

No of Credits: 3

Course Synopsis:

This course covers the principles and applications of reverse engineering and additive manufacturing as related to design and manufacturing. It will detail the synchronized approach consideration of functional design, analysis and manufacturing that support the integration of reverse engineering and additive manufacturing. The course will discuss the importance of additive manufacturing in manufacturing and other industries. The course will address additive manufacturing principles, variety and their concept; and scope of additive manufacturing with application areas. Upon completion, students will have the ability to select the proper additive manufacturing techniques for product design and manufacturing. The course will address the defining and applying criterion for selecting appropriate additive manufacturing process and, investigate application domain of additive manufacturing and learning the important process parameters.

Course Outcomes:

1. Ability to describe and analyze possibilities and needs of application of direct digital manufacturing in modern development, design and production.
2. Ability to describe and evaluate reverse engineering and additive manufacturing processes in the design and manufacturing of finished product.
3. Ability to evaluate and design product based on suitable additive manufacturing techniques in terms of hardware and software technologies.

MMJ42903 PENYEJUKAN DAN PENYAMANAN UDARA [REFRIGERATION & AIR CONDITIONING]

No of Credits: 3

Course Synopsis:

In this course, students will acquire advanced knowledge of refrigeration and air conditioning system. The course content includes recapitulation of thermodynamics, advancement of refrigeration, vapour compression cycle, P-h Diagram, actual vapour compression cycle, refrigerants, indoor and outdoor design conditions, and refrigeration system components. Advancement of Air-conditioning, properties of moist air, psychrometric chart, psychrometric processes, cooling load, air distribution system, thermal comfort, and indoor environmental health.

Course Outcomes:

1. Ability to analyse the total energy required for one confined space to achieve comfort zone.
2. Ability to demonstrate and propose methods to control temperature, humidity, air circulation and air purity in one confined space.
3. Ability to design and improve the COP of an air conditioning system while maintaining comfort.

MMJ43103 TENAGA DIPERBAHARUI [RENEWABLE ENERGY]

No of Credits: 3

Course Synopsis:

The goal of the course is to explore concepts and applications of Renewable Energy while approaching the practical limitations of some of the most additive energy sources. This course will encourage students to examine the facts about our energy needs, wants, and supplies, as well as the environmental and human impacts of energy production and use.

Course Outcomes:

1. Ability to examine the concepts and principles of renewable energy technologies and energy resources available today for sustainable development.
2. Ability to justify the conversion of alternative energies into thermal/mechanical/electrical energy
3. Ability to construct the interrelationships of renewable energy in the field, and its environmental impact

MMJ43203 ENJIN PEMBAKARAN DALAM [INTERNAL COMBUSTION ENGINE]

No of Credits: 3

Course Synopsis:

The objective of the course is to provide a basic understanding of the operation of internal combustion engines in terms of their performance, operation, fuel requirements, and environmental impact. Topics include flow, thermodynamics, combustion, heat transfer, and fuel properties, with reference to engine performance, efficiency, as well as emissions.

Course Outcomes:

1. Ability to analyse the operating characteristics of modern internal combustion engines.
2. Ability to evaluate the interrelationships of the internal combustion process as it relates to thermodynamics, combustion, and other factors affecting engine performance, efficiency, and emissions.
3. Ability to construct analytical techniques to the engineering problems and performance analysis of internal combustion engines.

MMJ43303 PERKOMPUTERAN DINAMIK BENDALIR [COMPUTATIONAL FLUID DYNAMICS]

No of Credits: 3

Course Synopsis:

This course offers an in-depth introductory foundational and technical knowledge in solving thermo-fluids problem via computational method. In particular, students will have hands-on experience in using computational fluid dynamics to solve engineering problems. Governing equations, discretisation schemes, numerical methods, turbulence modelling, mesh quality and independence test, numerical errors, and boundary conditions will be introduced in the course.

Course Outcomes:

1. Ability to analyze and apply basic fluid dynamics related partial differential equations.
2. Ability to analyse and apply basic discretization schemes for fluid dynamics related partial differential equations.
3. Ability to assess and solve fluid dynamics related problems by using appropriate numerical procedures.
4. Ability to solve fluid dynamics related problems by using computational tools.

MMJ16103 BAHAN [MATERIALS]

No of Credits: 3

Course Synopsis:

This course introduces students to the engineering materials fundamentals including the engineering materials application, atomic bonding, crystal structure, mechanical and physical properties, corrosion mechanism, microstructural analysis, phase diagram, ferrous and non-ferrous alloys, polymer and advance materials.

Course Outcomes:

1. Ability to ANALYSE transformation, microstructure and behaviors of engineering materials - ferrous, non-ferrous and polymer.
2. Ability to EVALUATE mechanical and corrosion properties of engineering materials.
3. Ability to JUSTIFY advanced materials and sustainable materials.

MMJ15103 TEKNOLOGI ELEKTRIK [ELECTRICAL TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course is intended to provide students with clear understanding the concepts and principles of the Direct Current (DC) and Alternating Current (AC) circuits, basic principles of three phase AC circuits, and electromagnetism. The students will also gain an understanding of the basic operating principles of a transformer; calculate induced e.m.f, equivalent resistance, reactance and impedance, losses and transformer efficiency. At the end of the subject, the students will understand the principles of DC and AC Electrical Machines.

Course Outcomes:

1. Ability to apply the electrical laws and theorems to solve direct current (dc) circuits to determine the voltage, current, resistance and power.
2. Ability to analyse and solve single phase and three phase alternating current (ac) circuits for its impedance, voltage, current, power and power factors.
3. Ability to analyse the concept of magnetic fields and the principle operation of a transformer.
4. Ability to apply the concept and principles used in electrical machines and their applications

MMJ17102 PROSES PEMBUATAN I [MANUFACTURING PROCESS I]

No of Credits: 2

Course Synopsis:

This course provides students to explore the manufacturing processes used in industries in converting raw material into finished products. This course is divided into five main processes which are solidification processes, particulate processing, deformation processes, material removal processes and joining processes. The students are expected to be able to analyze the manufacturing processes in producing good quality finished products.

Course Outcomes:

1. Ability to analyze solidification processes, particulate processing, material removal processes, deformation processes and joining processes.
2. Ability to assess the suitable manufacturing processes on a product using research based knowledge (research literature).

MMJ17302 BENGKEL KEJURUTERAAN [ENGINEERING WORKSHOP]

No of Credits: 2

Course Synopsis:

This course explores the manufacturing processes with practical methods that used in industry to convert raw material into finished product. This course will be divided into five workshops; first workshop: solidification process will be introduced including sand casting and plastic injection molding process. Second workshop: conventional machining processes including turning, milling and drilling. Third workshop: particulate processing of metal, forming and sheet metalworking. Fourth workshop: various joining and assembly processes such as welding and mechanical fastening processes, and the last workshop: students need to do fabrication and presentation of mini projects that are given by lecturers.

Course Outcomes:

1. Ability to describe, report and communicate on metal processing and polymer processing
2. Ability to demonstrate application of safety in the activities relevant to engineering practice
3. Ability to operate equipment/machine used for metal processing and polymer processing

MMJ17502 LUKISAN KEJURUTERAAN [ENGINEERING DRAWING]

No of Credits: 2

Course Synopsis:

The objective of this course is to provide exposure and skills to students in basic engineering drawing, Computer-Aided D (CAD) and its engineering application. This course covers manual drafting using drawing equipment and using software (Catia). Also, this course covers Geometric Dimensioning and Tolerance (GDT), which enhance students' ability to interpret and analyse engineering data from drawing.

Course Outcomes:

1. Ability to produce technical drawing and drafting using manual technique.
2. Ability to produce technical drawing using Catia software.
3. Ability to practice Geometric Dimensioning and Tolerance (GDT) on technical drawing.

MMJ15203 ELEKTRONIK [ELECTRONICS]

No of Credits: 3

Course Synopsis:

This course main purpose is to give introduction and exposure to student about electronic devices which includes analog and digital devices. The analog devices topic includes the introduction to Semiconductor, PN junction, Diodes, Zener diodes, Bipolar Junction Transistor (BJT), Operational Amplifier and active filters. The digital device topic includes the introduction to binary number system, Boolean Algebra, logic gates, logic circuits, Boolean function, and combinational logic circuits. Students will be exposed to the electronic basic, operation concept, analysis method including the usage of electronic device used in industry and introduction to microprocessor. Laboratory experiment will also be done to clarify the topics learned in the class.

Course Outcomes:

1. Ability to analyse the rectifier and voltage regulator circuits.
2. Ability to analyse the applications of transistor for signal amplification and switching circuits.
3. Ability to analyse the operation and applications of operational amplifier and active filters.
4. Ability to analyse the operation of digital circuit using the digital theorem.

MMJ15402 PENGATURCARAAN KOMPUTER [COMPUTER PROGRAMMING]

No of Credits: 2

Course Synopsis:

This course introduces to Computers and Computing Fundamentals, Program Structure, Printing, Comments, Variables, Arithmetic Operations, Math Functions, Input/ Output, Control Structure, Looping, Functions, Numeric Arrays and their application on solving engineering problems. An open source software of the C programming language is utilized in this course. Students will gain understanding and ability to identify problems and come up with the most efficient ways to solve them via programming. Students are expected to complete several programming assignments and programming tests.

Course Outcomes:

1. Ability to construct C programs with the most suitable variables: perform correct arithmetic operations, math functions and desired input/ output.
2. Ability to construct C programs with control structure and looping.
3. Ability to construct C programs with functions and numeric arrays

MMJ17203 PROSES PEMBUATAN II [MANUFACTURING PROCESS II]

No of Credits: 3

Course Synopsis:

This course covers a wide range of fundamental machining operations, including machining techniques, machine tools, cutting instruments, cutting fluid, and surface treatment technology. Machine parameters, computation speed and feed rate, handling machines, CNC programming, abrasive machining and surface technology are covered. Students will be able to undertake machining processes based on traditional machining knowledge and build rudimentary CNC programming to carry out machining processes to produce items at the conclusion of the course. In addition, they will also be furnished with knowledges on the surface technology and abrasive machining.

Course Outcomes:

1. Ability to analyze the mechanics of cutting process and CNC process.
2. Ability to design machining programs for CNC turning, milling and drilling procedures using complex cutting paths and tool setting.
3. Ability to analyse processes for abrasive machining and surface treatment method.

MMJ16202 REKA BENTUK KEJURUTERAAN [ENGINEERING DESIGN]

No of Credits: 2

Course Synopsis:

The course introduces the concepts and principles of engineering design approach to solve engineering problems. Engineering design is the systematic integration of scientific principles, technical information and aesthetics in the definition of a product, process or system to perform pre-specified functions with maximum economy and efficiency. Therefore, the course introduces the phases of the engineering design process.

Course Outcomes:

1. Ability to generate product design specifications from customer needs and market analysis, and design requirements and constraints.
2. Ability to generate design concepts based on specifications and apply design screening technique to select the best concept.
3. Ability to communicate effectively design ideas and information.
4. Ability to evaluate designs based on engineering criteria.

MMJ25102 INSTRUMENTASI [INSTRUMENTATION]

No of Credits: 2

Course Synopsis:

Instrumentation is a collective term for measuring instruments that are used for indicating, measuring and recording physical quantities. Today, this system has been used in a wide range of manufacturing and industrial processes to measure variables such as pressure, flow, temperature, displacement, and etc. These variables are consistently measured and monitored to ensure the output of a specific process are within a desired acceptable range and at the same time protect the safety of equipment in the system. Essential knowledge on the principle and operation of measuring instruments will help the engineer to understand the automated system used in manufacturing technology.

Course Outcomes:

1. Ability to understand the terminology used in instrumentation systems and signal conditioning methods for measurement systems.
2. Ability to analyze the characteristic performances for displacement, motion and strain measurements.
3. Ability to analyze the characteristic performances for pressure, flow and temperature measurements.

MMJ27102 PEMBUATAN BERBANTU KOMPUTER [COMPUTER-AIDED MANUFACTURING]

No of Credits: 2

Course Synopsis:

This course introduces the principles and applications of the CAM system, which is used in the field of manufacturing engineering. It enables students to comprehend theories, concepts, and applications of CAM as they apply to manufacturing processes in the industry. Students will illustrate and design components/parts in a three-dimensional (3D) model using CAD/CAM software. The students will then be exposed how to use CAM software to simulate the 3-dimensional (3D) machining process in order to generate numerical control (NC) codes that will be transferred and operated on a computer numerical control (CNC) machine.

Course Outcomes:

1. Ability to construct 3D solid modelling for CAM simulation using CAD/CAM software.
2. Ability to simulate 3D solid part and generate Computer Numerical Control (CNC) program for basic and advanced milling and turning processes in CAM software.

MMJ25203 SISTEM KAWALAN [CONTROL SYSTEMS]

No of Credits: 3

Course Synopsis:

The course shall cover the essential and basic theory of control systems. The students will be exposed to mathematical modeling for electrical and mechanical systems using block diagrams and transfer functions. In addition, they will be able to determine and analyze the characteristic, stability and performance of the feedback control system in time and frequency domain. The students will also learn how to design a feedback control system.

Course Outcomes:

1. The ability to perform a system's time-domain analysis with response to test inputs. Analysis includes the determination of the system stability and steady-state errors.
2. Ability to design and analyze the controller's performance using root locus technique.
3. The ability to perform system's frequency-domain analysis with response to test inputs. Analysis includes the determination of the system stability.

MMJ26103 REKA BENTUK UNTUK PEMBUATAN [DESIGN FOR MANUFACTURE]

No of Credits: 3

Course Synopsis:

This course introduces students on the design approach that focuses on ease of manufacture and efficiency of assembly. Student will learn the guidelines and rules in designing each part/component of the product as well as the assembly analysis to determine Assembly Efficiency (AE). In term of Design for Manufacture (DFM), student will learn on how to select the appropriate material and manufacturing process of each part/component of the product. At the end, student will be able to analyze an existing product design and subsequently propose a better design with appropriate manufacturing process and material selection for ease of manufacture and assembly.

Course Outcomes:

1. Ability to apply knowledge in the selection of appropriate material and process selection.
2. Ability to improve design efficiency of products using Design for Assembly (DFA) Methodology.
3. Ability to develop parts design, with consideration of manufacturability.
4. Ability to contribute effectively as a team member in project execution.

MMJ26203 REKA BENTUK KOMPONEN MESIN [MACHINE COMPONENTS DESIGN]

No of Credits: 3

Course Synopsis:

This course presents the concepts and methods essential to mechanical engineering design, analysis, and application. In-depth coverage of major topics, including free body diagrams, force and strength analysis to design the element of machine components. This course also focused on how to identify the critical design parameters that transform, transmit or use energy, load or motion for a specific purpose. Critical thinking and problem-solving skills are strengthened through an appropriate procedure and framework, enabling the effective identification of problems and clear presentation of solutions.

Course Outcomes:

1. Ability to analyze and synthesize engineering data to design the element of machine components such as Gears, Shafts, Bearings, Screw and Fasteners, Belt, Chain Drives, Keys, Coupling, seals and Springs.
2. Ability to comprehend and write effective report writings or design documentations.

MMJ27203 KEJURUTERAAN KUALITI [QUALITY ENGINEERING]

No of Credits: 3

Course Synopsis:

This course gives an understanding about the concepts and techniques in total quality management and the relationship between these fields of knowledge. Students will be exposed to the technique of reliability system, accepted sampling and process capability to enhance the quality in engineering application. In addition, students learn about quality control tools, FMEA and management quality tools of engineering systems. Practical work will help student's gain effective understanding in quality and product liability.

Course Outcomes:

1. Ability to EVALUATE the quality problems using seven quality control (QC) tools, FMEA, management and planning tools in engineering application.
2. Ability to DEVELOP the reliability system, accepted sampling and process capability to enhance the quality in engineering application
3. Ability to ANALYZE the quality cost, product liability and problems in troubleshooting issues related to quality.

MMJ27403 KEJURUTERAAN INDUSTRI [INDUSTRIAL ENGINEERING]

No of Credits: 3

Course Synopsis:

This course introduces the fundamentals of Industrial Engineering. It covers elements of industrial engineering, the installation of people, materials, equipment, information and economics for improvement and increase productivity. The main objectives of this course is to develop students into competent analysts who are capable of designing facilities and layouts that optimize material flow and productivity, minimize waste and performing necessary evaluation in work study for manufacturing operations.

Course Outcomes:

1. Ability to explain and analyze the fundamental concepts of industrial engineering and manufacturing productivity
2. Ability to analyze work study in manufacturing operations
3. Ability to analyze the facilities planning through its location and design components
4. Ability to propose block layout from layout procedures and algorithms.

MMJ36102 PEMINDAHAN HABA [HEAT TRANSFER]

No of Credits: 2

Course Synopsis:

The main objective of this course is to enable students to understand the concepts of conduction, convection and radiation which form the basics of heat transfer. In order to ensure students achieve the outcomes of this course, they will perform theoretical calculations such as thermal conductivity, heat loss, and other important theories.

Course Synopsis:

1. Ability to distinguish fundamental knowledge of heat transfer mechanisms.
2. Ability to evaluate thermal engineering problems in conduction, convection and radiation.
3. Ability to evaluate thermal engineering problems in heat exchanger systems.

MMJ36303 GETARAN DAN MEKANIK MESIN [VIBRATION AND MECHANICS OF MACHINES]

No of Credits: 3

Course Synopsis:

The course aims at strengthening the knowledge of the machines and mechanisms with particular attention to the power transmission, balancing, flywheel, gyroscope and vibration. A method of analysis and synthesis of mechanics of machine will complement the basic concepts developed at the bachelor level. This subject also will introduce fundamentals of vibration, free and forced, undamped and damped vibration, vibration of single Degree of Freedom (DoF) system, 2-DoF and multi-DoF systems. At the end of the course students have a deep understanding of all the elements of mechanics that are fundamental for industrial automation, mastering design and construction principles that play a role in modern automatic machines.

Course Outcomes:

1. Ability to apply knowledge of mathematics, statics and dynamics to support analysis of mechanical power transmission mechanism.
2. Ability to apply knowledge of mathematics, statics and dynamics to support analysis of the velocity control mechanism in a cycle and the balancing mechanism on a machine.
3. Ability to synthesise knowledge of mathematics, statics and dynamics into a new whole or propose alternative solutions for gyroscopic motions and their

- effects on a rotational body
4. Ability to apply knowledge of mathematics, statics, solid mechanics and dynamics to support analysis of vibrations and in solving problems and calculate the system vibrating due to some externally force and its application in solving problems.

MMJ37103 PERANCANGAN DAN KAWALAN PENGELUARAN [PRODUCTION PLANNING AND CONTROL]

No of Credits: 3

Course Synopsis:

This course will provide the students with knowledge of production planning and control. It is designed to highlight the practical and applied techniques, which can improve the organization's quality and productivity. The designing, planning, organizing, and controlling of operating systems is the main focus of this course including analytical techniques, tools and concepts applicable to planning operations. Such concepts include Aggregate Planning and Forecasting, Capacity Planning, Materials Requirement Planning, Inventory management, Production Scheduling and Supply Chain Design and Logistic Networks. On completion of the course, students will be able to understand the strategic role of production planning and control in manufacturing plant operations.

Course Outcomes:

1. Ability to identify and apply operational methodologies to assess and improve the production performance.
2. Ability to develop a systematic approach to the solution of planning problems for a wide variety of manufacturing operations.
3. Ability to employ different strategies in manufacturing industries to plan production and control inventory.

MMJ37303 TEKNOLOGI PEMBUATAN TERMAJU [ADVANCED MANUFACTURING TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course deals with Advanced Manufacturing Technology (AMT). In general, AMT uses innovative technologies to produce/improve products and/or processes, while also incorporates new business/management methodologies. In this course, the focus is on material removal processes that use various medium for cutting including mechanical, lasers, electrical and chemical. Besides, micromachining, additive manufacturing and electronic manufacturing are also included. In addition, issues related to research and sustainability with respect to Advanced Machining will be also discussed.

Course Outcomes:

1. Ability to investigate and evaluate advanced manufacturing technologies.
2. Ability to identify and propose suitable advanced machining process where required.
3. Ability to design and develop research/problem solving related to advanced manufacturing technology to enhance the manufacturing efficiency, capability, and sustainability.

MMJ37503 SISTEM PNEUMATIK DAN HIDRAULIK [PNEUMATIC AND HYDRAULIC SYSTEM]

No of Credits: 3

Course Synopsis:

This course will be exposed to students about the fundamental basics of theory and concept to Fluid Power which include Pneumatic and Hydraulic Systems that are being practiced in Industry today. This course will be focusing on basic introduction which covers symbols, components, and circuits used in Pneumatic and Hydraulic Systems as well as its application in industry. To increase knowledge of students in this course, a practical approach will be done using the Pneumatic and Hydraulic equipment aided by computer software to construct the related circuits application. At the end of this course, the Pneumatic System application will be combined with Electro-Pneumatic System which uses electric power, relay, sensor and limit switch to operate the components and actuator in the Pneumatic System.

Course Outcomes:

1. Ability to apply and evaluate theory and concepts of Pneumatic and

Hydraulic Systems.

2. Ability to compare and differentiate the components and symbols of Pneumatic and Hydraulic Systems.
3. Ability to develop and evaluate applications on single and multiple circuits of Pneumatic and Hydraulic Systems.

MMJ36203 KEJURUTERAAN BERBANTU KOMPUTER [COMPUTER-AIDED ENGINEERING]

No of Credits: 3

Course Synopsis:

This is an introductory course to the theory and practice of Computer-Aided Engineering (CAE) which covers the fields of Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD) including thermal analysis. It will cover the fundamental theories, modelling and simulation approaches of FEA and CFD to practical engineering problems. This course aims to provide knowledge and understanding of engineering simulation to aid in engineering design and analysis.

Course Synopsis:

1. Ability to formulate and apply concept and principles of finite element and finite volume methods in solving engineering problems.
2. Ability to model and perform engineering analysis using CAE softwares.
3. Ability to evaluate physical problems using CAE software.

MMJ37203 ERGONOMIK INDUSTRI [INDUSTRIAL ERGONOMICS]

No of Credits: 3

Course Synopsis:

Ergonomics is an essential and integral element of occupational safety and health practice. It encompasses the physical, cognitive, psycho-social and organizational aspects of work. This course is an application of knowledge about human capabilities and limitations to the design of workplaces, equipment, work processes and environments that can optimize worker safety, health and wellbeing. Topics include ergonomics principles, Work-related Musculoskeletal Disorders, biomechanics, human information processing, anthropometry, principles of workplace design, ergonomics risk assessment and evaluation methods and ergonomics problem solving technique. This course provides students with basic skill of analysing the relationship between people and their working environment, and the skill to decide suitable ergonomic principles and method(s) to use to solve practical problems. At the end of the course, students should be able to conduct activity/work analysis and solve problem related to ergonomic, health and safety issues.

Course Outcomes:

1. Ability to apply knowledge of basic concepts and principles of ergonomics and body mechanics.
2. Ability to analyze and perform suitable anthropometric study in workplace design.
3. Ability to use suitable assessment tools in the design and evaluation of work tasks.
4. Ability to solve and design a workplace to ensure worker safety, health and wellbeing.

MMJ37403 PEMBUATAN LEAN [LEAN MANUFACTURING]

No of Credits: 3

Course Synopsis:

This course provides the student with Lean Manufacturing describing the background behind its development and how evaluations and assessments of production systems are performed. The course focuses on gaining an understanding of Lean thinking and practices from both a technical standpoint and the people perspective needed to bring the change and sustain the improvement. Examples of Lean applications in manufacturing systems and processes will be presented. At the end of the semester, the students should have

a basic understanding of the application, design, operation, control, and sustain of lean manufacturing systems and will be able to use Lean thinking and tools to model, analyze, and optimize the manufacturing systems.

Course Outcomes:

1. Ability to CONDUCT suitable Lean tools and techniques in manufacturing problems solving and continuous improvement.
2. Ability to DEVELOP the value stream mapping of a process and significant improvement with pull system concept and suitable lean tools.
3. Ability to DEVELOP the Lean culture towards sustaining Lean in manufacturing system

MMJ37603 AUTOMASI INDUSTRI [INDUSTRIAL AUTOMATION]

No of Credits: 3

Course Synopsis:

This course is to enhance the knowledge and understanding on automation and robotics which have been used in the industries today. It covers topics regarding Manufacturing Automated application including Automated Assembly Line, Flexible Manufacturing system (FMS), Automated Storage/Retrieval System (ASRS), Automated Material Handling System and Computer Integrated Manufacturing (CIM). This course also covers an explanation of autonomous robotics, classification of robot systems, end-of-arm tooling, robot safety and application of robots toward industrial revolution 4.0.

Course Outcomes:

1. Ability to EVALUATE concepts of manufacturing system and automation system in industries application.
2. Ability to DIFFERENTIATE hardware components for automation including actuators, sensors, and industrial control technology.
3. Ability to EVALUATE and DESIGN solving methods using Industrial Automation Systems approach including material, transport, and storage system.
4. Ability to EVALUATE robot anatomy and related attributes in industry application.

MMJ47003 PROJEK REKA BENTUK BERSEPADU PEMBUATAN [MANUFACTURING INTEGRATED DESIGN PROJECT]

No of Credits: 3

Course Synopsis:

Manufacturing Integrated Design Project (MIDP) is a multi-disciplinary subject in which small groups of three to five students work together to complete a major project. Each project will require students to unravel manufacturing/industry/design problems that are being confronted by any organization in the community. The course emphasizes related manufacturing engineering knowledge ranging from concept till production of a product solving specific engineering problems. This solution may include engineering specification projects schedule/planning, costing analysis, sustainability issues and design solution as well as manufacturing drawings (eg: assembly drawing).

Course Outcomes:

1. Ability to CREATE appropriate design solutions on manufacturing engineering either involving process, system, or component, which may include production management, with the aim of producing a good quality product that meets customer requirements/needs.
2. Ability to evaluate aspect of sustainability development impact in economy, sustainability, health and safety, and environment in solving complex manufacturing engineering problems.
3. Ability to EFFECTIVELY function as a team member in carrying out project assignments.
4. Ability to CONVINCINGLY present on engineering activities undertaken either verbally or in writings.
5. Ability to DEMONSTRATE understanding of engineering project management principles and engineering economics by applying them in decision making processes.
6. Ability to FORMULATE research needs from various resources.

MMJ47202 PENYELIDIKAN OPERASI [OPERATIONAL RESEARCH]

No of Credits: 2

Course Synopsis:

In science, engineering, economics, and industry, operational research (OR) has a wide range of uses. OR assists with decision-making in a variety of environments. This course will put a strong emphasis on mathematical modelling, teaching students how to create, evaluate, and resolve models that represent actual

issues. The topics addressed in this course include linear programming, duality theory and sensitivity analysis, network optimisation, transportation and assignment problems, and integer programming. The students will learn how to make decisions using scientific methods to create and run a system as efficiently as possible. By the end of the course, students will be able to develop new formulations, critically assess the effects of model assumptions, and select the best solution method for a particular problem.

Course Outcomes:

1. Ability to EVALUATE problems related to linear programming, duality theory and sensitivity analysis, integer linear programming, transportation problem and network optimization models.
2. Ability to INTEGRATE comprehensively the technological knowledge and changes in engaging continuous determination for the aim of problem solving as a life-long learning practice.

MMJ46202 REKA BENTUK ACUAN SUNTIKAN [INJECTION MOLD DESIGN]

No of Credits: 2

Course Synopsis:

The Injection Mould Design course offers a comprehensive understanding of the principles, techniques, and best practices involved in designing injection moulds for plastic components as practiced in industries. The course not only focuses on mould design but also covers essential topics such as plastic part design guidelines, material flow analysis into injection moulds using commercial analysis software, and the optimization of processing parameters in the moulding process using Response Surface Methodology (RSM). Students will gain a solid foundation in injection mould design and acquire the skills needed to design plastic products, efficient moulds, analyse material flow, and optimize injection moulding processes for enhanced productivity and quality. The knowledge obtained from this course will provide an advantage for students who want to pursue careers as Research and Development (R&D) Engineers, Manufacturing Engineers, or Production Engineers.

Course Outcomes:

1. Ability to DESIGN new plastic products, including injection moulds, as practiced in industries.
2. Ability to SUGGEST optimal processing parameters for injection moulding processes as practiced in industries.

MMJ47402 KEJURUTERAAN DAN PENGURUSAN PENYELENGGARAAN [MAINTENANCE ENGINEERING AND MANAGEMENT]

No of Credits: 2

Course Synopsis:

Maintenance engineering and management are the two knowledge disciplines that focus on technical and managerial aspects to support asset maintenance operations. The objective of this course is to enhance knowledge and understanding in the area of maintenance engineering and management. The examples of industry cases and current research findings will be used and supported in teaching and learning processes. This directly exposes the students to a balance of knowledge domains in both theoretical and practical perspectives.

Therefore, this course is designed to equip students with a precise and concise understanding of maintenance engineering and management topics in term of its requirements, concepts, problems and solutions. The course will expose students to the fundamental of maintenance and the evolution of maintenance methods/techniques/strategies towards analyzing and solving maintenance problems in the context of technical and management. Hence, encourage them to create new ways or better solutions based on analytical and managerial approaches.

Course Outcomes:

1. Ability to ANALYZE and EVALUATE maintenance problems using various methods of maintenance engineering and management from the perspective of manufacturing applications.
2. Ability to INTEGRATE comprehensively the related technologies and knowledge in engaging continuous determination to solve various maintenance problems towards life-long learning practice.

MMJ46102 REKA BENTUK UNTUK KELESTARIAN [DESIGN FOR SUSTAINABILITY]

No of Credits: 2

Course Synopsis:

Sustainability in design and manufacturing vision is about rethinking manufacturing activities based on the three pillars of sustainability: environmental, social and economic. To foster sustainability in the manufacturing industry, one has to start at the source; that is design. Around 80% of the environmental impact of a product is defined at the early (design) stages of the product development

process. By making thoughtful design choices, seizing opportunities to reduce material and maximizing usable life spans, product teams can do their part to make manufacturing cleaner and greener.

Sustainable design is a systems approach for the creation of products through economically sound processes. This can be achieved by incorporating design strategies to reduce negative environmental impacts, and use of energy and natural resources across the entire life cycle of products and services in order to conserve resources and promote a more sustainable future.

The course explores implementation of design strategies at the intersection of sustainability, design and manufacturing as it relates social, environment, and economic drivers during product development. Key metrics that influence sustainability and trade-off decisions during the early phases of design and selection (materials and manufacturing) that guide reuse and recycle will be explored. All types of waste that result from product development will be considered and the suitable actions to avoid, reduce, reuse or recycle existing waste will be presented. Case studies will be used to illustrate topics during in class discussions

Course Outcomes:

1. Ability to evaluate the environmental impact of a product throughout its entire life cycle, including raw material extraction, production, use, and disposal.
2. Ability to propose a design strategy for the redesign of products to incorporate sustainable practices.

MMJ46302 REKA BENTUK ACUAN DAN PERKAKASAN [TOOL AND DIE DESIGN]

No of Credits: 2

Course Synopsis:

Tool and Die Design is a discipline closely related to the stamping process, which is employed to manufacture products using metal materials. The primary objective of this course is to enhance students' knowledge and comprehension of Manufacturing Process and Product Design Development, particularly focusing on the design of Tool and Die for stamping processes. Throughout the course, students will be introduced to essential analyses necessary for creating efficient tool and die designs that function effectively in the stamping process. They will also gain a comprehensive understanding of all components within the tool and die structure and grasp the fundamental requirements for parts or product drawings essential to develop/design a complete set of tools and dies for stamping process applications.

Course Outcomes:

1. Ability to ANALYSE the concepts and principles of tool and die design for stamping process application.
2. Ability to CONSTRUCT the complete tools and die set design to engage in independent and life-long learning in the broadest context of technological change.

MMJ47502 PENGURUSAN RANTAIAN BEKALAN [SUPPLY CHAIN MANAGEMENT]

No of Credits: 2

Course Synopsis:

Supply Chain Management is concerned with the management of material, information, and financial movements in multi-stage production-distribution networks. With global competitiveness rising, supply chain management is both a difficulty and an opportunity for businesses. Hence the capacity to suggest changes and a solid understanding of supply chain management ideas are crucial. This course aims to give students with an understanding of the ideas, concepts, and applications of global supply chain management and logistics in the corporate context. It also provides students with the knowledge and skills needed to analyse supply chain performance and provide suggestions to improve supply chain competitiveness. The topics include building a strategic framework to analyze supply chains, sourcing and procurement, pricing and revenue management, customer relationship management, supply chain and transportation network, warehousing, and supply chain risk and sustainability.

Course Outcomes:

1. Ability to solve problems in supply chain operation across a wide range of business domains.
2. Ability to integrate technological knowledge and changes thoroughly for advancement of personal and professional capabilities.

MMJ14102 SAINS FIZIKAL [PHYSICAL SCIENCE]

No of Credits: 3

Course Synopsis:

The course is designed to provide students with a comprehensive understanding of the fundamental principles and concepts that underpin engineering. This includes an in-depth exploration of key units of measurement such as length, time, mass, force, temperature, electric current, energy, and power. Through a combination of lectures, demonstrations, and practical exercises, students will gain a solid grounding in how these concepts are used in engineering design and analysis. In addition, students will learn about the various tools and techniques used in engineering, as well as the ethical and social considerations involved in the field. By the end of the course, students will have the knowledge and skills needed to tackle a wide range of engineering challenges.

Course Outcomes:

1. Ability to analyze problems related to units of measurement, scalar and vector quantities, and apply appropriate mathematical and analytical tools to solve them.
2. Ability to analyze the motion of particles and apply appropriate mathematical and analytical tools to calculate position, force, velocity, and acceleration.

MMJ14203 KEJURUTERAAN GEOMATIK [GEOMATIC ENGINEERING]

No of Credits: 3

Course Synopsis:

This course covers land surveying, remote sensing, and geographical information systems (GIS), with emphases on basic surveying, the fundamentals of remote sensing and its applications, and principles and applications of GIS in the agricultural field and precision agriculture. The students are exposed to fieldwork to develop skills in using surveying equipment. The main topics discussed are traversing, tachometry, mapping, calculation of areas and volumes, GIS, GPS, and remote sensing.

Course Outcomes:

1. Ability to relate the knowledge of geomatics engineering principles on various types of geomatics surveying and remote sensing to agriculture applications
2. Ability to evaluate the data from various types of geomatics surveying and geospatial data interpretation using geographical information systems (GIS)
3. Ability to perform the surveying task using surveying equipment
4. Ability to engage in independent and life-long learning in geomatics engineering field works and precision agriculture

MMJ14303 SISTEM PENGELUARAN PERTANIAN [AGRICULTURAL PRODUCTION SYSTEMS]

No of Credits: 3

Course Synopsis:

The course elaborates the major topics in agriculture which include the crop production system, farm and livestock practices and management systems in relation to current engineering technologies. The course also exposes students to the economics and ethics in agricultural production systems, outlines current farm management and recent trends in agricultural production.

Course Outcomes:

1. Ability to describe the issues, challenges and major problems related to agricultural production.
2. Ability to analyse the diversified sustainable agricultural production systems in relation to engineering aspects
3. Ability to apply the viable current technologies and ethical principles in agricultural production systems in relation to engineering aspects.

MMJ24003 TERMODINAMIK [THERMODYNAMICS]

No of Credits: 3

Course Synopsis:

Thermodynamics is a very important branch of both physics and chemistry. The course covers fundamental aspects of engineering thermodynamics, principles of energy, the conversion of energy between different forms, and the ability of energy to do work. This course emphasis fundamental mathematical equations by exposing the students to realistic problems encountered in engineering practices particularly in agricultural engineering applications.

Course Outcomes:

1. Ability to analyse the properties of pure substances and apply the fundamental knowledge of basic thermodynamic properties.
2. Ability to analyse the engineering problems relate to energy in closed system and apply second law of thermodynamics in refrigeration cycle.
3. Ability to predict the P-V-T behavior of gas mixture and analyze the gas vapor pressure and chemical reaction using knowledge of thermodynamics properties for process of innovation.

MMJ24103 TEKNOLOGI ELEKTRIK DAN ELEKTRONIK [ELECTRICAL AND ELECTRONIC TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course covers the principle of Ohm's Law and Kirchhoff's law in the complex series-parallel DC and AC circuit. This course discusses the basic concept of magnetism and electromagnetism in complex magnetic circuit, transformer, AC and DC machines systems. This course also introduces basic electronic engineering covering type of electronic filter, semiconductor, rectifier, and amplifier. This course elaborates logic circuit system using Boolean function and Karnaugh maps, combinational and sequential circuit.

Course Outcomes:

1. Ability to apply knowledge of electrical laws and theorem in the complex series-parallel Direct Current (DC) and Alternating Current (AC) circuit.
2. Ability to analyse the concept of magnetism and electromagnetism in magnetic circuit, transformer, Direct Current (DC) and Alternating Current (AC) machine systems.

4. Ability to analyse the type of active filters, n-type and p-type semiconductor and diodes in rectifiers and operational amplifier circuit.
5. Ability to design complex digital logic circuit using Boolean algebra and Karnaugh maps for combinational and sequential logic circuits.

MMJ24203 KEJURUTERAAN HIDROLOGI DAN SUMBER AIR [HYDROLOGY AND WATER RESOURCES ENGINEERING]

No of Credits: 3

Course Synopsis:

This course introduces principles of surface water hydrology and their applications in water resources engineering. These include descriptive and quantitative applications of the hydrologic cycle, weather system, precipitation, evaporation, transpiration, surface and subsurface waters, stream flow hydrographs and flood routing. The course also covers applications of hydrologic and frequency analysis with respect to basic water management design procedures with emphases on earth embankments, reservoirs and flood design. Water quality management of water resources are also introduced in this course.

Course Outcomes:

1. Ability to analyse the components of hydrologic cycle and concept of watershed in agricultural engineering.
2. Ability to assess hydrological data to solve problems in water budget and hydrological gain and loss.
3. Ability to evaluate the engineering management principles of flood routing and structural measures for floodplain management.
4. Ability to use the hydrologic analysis techniques in hydrological components measurement.

MMJ24303 PEMINDAHAN HABA DAN JISIM [HEAT AND MASS TRANSFER]

No of Credits: 3

Course Synopsis:

This course introduces mechanisms by which heat is transferred from one body to another. The course covers steady state and transient heat conduction, convection and radiation, also mass transfer with special address on agricultural systems. Emphases are placed on formulation and application of respective mathematical models of heat and mass transfer across both physical and biological bodies, as well as design of heat exchangers for application to

agricultural systems.

Course Outcomes:

1. Ability to analyse problems related to various heat and mass transfer mechanisms.
2. Ability to evaluate heat transfer for complex engineering problems related to agricultural systems.
3. Ability to design heat exchanger for application to agricultural related problems.

MMJ24503 SIFAT KEJURUTERAAN BAHAN BIOLOGI [ENGINEERING PROPERTIES OF BIOLOGICAL MATERIALS]

No of Credits: 3

Course Synopsis:

This course introduces principles and methods for determination and analysis of physical as well as thermal and electromagnetic properties of biological materials. The course also covers aspect of moisture determination and management of biological materials. These properties are essentials for engineers in designing process and equipment related to materials and food processing.

Course Outcomes:

1. Ability to apply knowledge of mathematics, natural sciences and engineering fundamentals related to the physical and rheological attributes and properties of biological materials
2. Ability to analyze engineering problems related to thermal and electromagnetic properties of biological materials.
3. Ability to evaluate solutions for engineering problems related to water activity and moisture management of biological materials.
4. Ability to analyze data from investigation or experimentation related to engineering properties of biological materials.

MMJ34003 KEJURUTERAAN TANAH [SOIL ENGINEERING]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental concept of soil engineering properties in relation to agricultural irrigation and crop water requirement; and soil mechanics that provide the knowledge on soil mechanical properties in relation to soil foundation for infrastructures and machinery. It also introduces the fundamental theories involve in in various methods of soil dynamics in relation to agricultural machinery.

Course Outcomes:

1. Ability to analyze the soil textural classification and physical characteristics in relation to irrigation/drainage and foundation design.
2. Ability to evaluate mechanical properties of soil in relation to soil foundation design under the static condition (building) and dynamic condition (machine) using the standard.
3. Ability to synthesis the soil dynamics behavior in relation to soil-machine-traction design for agricultural production.

MMJ34103 REKA BENTUK STRUKTUR LADANG [FARM STRUCTURAL DESIGN]

No of Credits: 3

Course Synopsis:

This course covers the planning of farm layout, and engineering structural analysis, structural design together with a materials cost estimation of farm structures including greenhouses, structures for livestock husbandry, and other related agricultural structures. This course also covers in-depth analysis of structural analysis by structural elements for shear forces, bending moments, and deflection of beams, columns, slabs, and foundations. The structural design used Eurocodes for reinforced concrete, stainless steel, and timber by considering safety, ethics, environmental and sustainability aspects of the design.

Course Outcomes:

1. Ability to distinguish the main functional components in instrumentation and their working principle of various measurement devices.
2. Ability to differentiate roles and features of appropriate instruments for various measurements in agriculture engineering applications.
3. Ability to evaluate control engineering application to solve problems in agricultural system.

4. Ability to analyse complex engineering problems related to application of instrumentation in various agricultural engineering applications, write effective reports and deliver effective presentations.

MMJ34203 PERALATAN, PENGUKURAN DAN KAWALAN [INSTRUMENTATION, MEASUREMENT AND CONTROL]

No of Credits: 3

Course Synopsis:

This course introduces the basic principle of instrumentation and measurement which covers various of measuring devices and its process of manipulation, transmission and recording of data. It also includes the roles of instruments in various industries especially in agricultural engineering applications. Different methods in measuring and problem solving to various use in agricultural engineering will be addressed where applicable. This course also covers control engineering applications, which is an essential feature of any measurement programme.

Course Outcomes:

1. Ability to distinguish the main functional components in instrumentation and their working principle of various measurement devices.
2. Ability to differentiate roles and features of appropriate instruments for various measurements in agriculture engineering applications.
3. Ability to evaluate control engineering application to solve problems in agricultural system.
4. Ability to analyse complex engineering problems related to application of instrumentation in various agricultural engineering applications, write effective reports and deliver effective presentations.

MMJ34303 TENAGA DAN KUASA [ENERGY AND POWER]

No of Credits: 3

Course Synopsis:

Energy and Power is the course that lays in four important thematic under the agricultural engineering field. One most important rationale on the offering this course which students will be exposed to the theoretical of renewable and non-renewable energy power productions. Those knowledge would lead the students to appreciate the use of renewable energy in a way of life deeper and exercising the minimization act on the use of non-renewable energy in a daily life. This lifelong learning aspect would prepare the students awareness on the globally environmental issues as a result from excessive use of non-renewable energy power production.

Course Outcomes:

1. Ability to evaluate the role of engineer to the society on the application of renewable energy and power generations.
2. Ability to analyze the working principles and performance of the internal combustion engines.
3. Ability to analyze the performance and efficiency of different types of engines.
4. Ability to synthesis the lifelong-learning component on the production of energy and power harvest from solar panels, also the processing of biofuels, biodiesel and biogas from biological materials.

MMJ34403 REKA BENTUK MESIN [MACHINE DESIGN]

No of Credits: 3

Course Synopsis:

The course encompasses on the concepts of energy and power generation from mechanical devices including engine, pump, compressor, fan and blower. The recent technology, production processes and engineering renewable energy development for sustainability from various sources such as wind, solar, hydro power, ocean and bioenergy are also discussed.

Course Outcomes:

1. Ability to evaluate the role of engineer to the society on the application of renewable energy and power generations.
2. Ability to analyze the working principles and performance of the internal combustion engines.

3. Ability to analyze the performance and efficiency of different types of engines
4. Ability to synthesis the lifelong-learning on the production of energy and power harvest from solar panels, also the processing of biofuels, biodiesel and biogas from biological materials.

MMJ34503 JENTERA LADANG [FARM MACHINERY]

No of Credits: 3

Course Synopsis:

This course intends to give students fair knowledge of farm machineries and off-road vehicles, their working principles, selection and management for use in agricultural operations. The topics includes tractorization, tillage, machineries for chemical applications, irrigation, planting and also harvesting. The topics also include application of agricultural machinery for optimal selection, operation and performance, and management of farm machinery such as tractors, tillage, seeding, chemical application, biomass and grain/fruit harvesting.

Course Outcomes:

1. Ability to evaluate specialized components and mechanized systems for production, handling and processing of biological materials.
2. Ability to compare machine components in agricultural operations and management of machineries.
3. Ability to assess safety & health of farm operator and machinery & systems for appropriate solutions as professional engineer's responsibilities

MMJ34602 REKA BENTUK KEJURUTERAAN PERTANIAN I [AGRICULTURAL INTEGRATED DESIGN PROJECT I]

No of Credits: 2

Course Synopsis:

Agricultural Engineering Design I is a part course covering aspects of engineering design related to open-ended design projects at professional level engineering design tasks in the agricultural engineering field. The design project is a team-based approach to provide capstone design experience emphasising the application of sciences, mathematics and engineering science acquired in earlier coursework in the design of projects. The scope of the course covers the knowledge of the elements in project formulation, planning/scheduling, management and communication, engineering economics including cost benefits analysis and budgeting, critical thinking, ethics and safety in engineering design, fundamental in engineering design methodology (the process and tools) and systems engineering.

Course Outcomes:

1. Ability to compose engineering problems and alternative solutions and formulate a sound proposal in agricultural engineering project using the systematic design process.
2. Ability to assess the impact of sustainable design and engineering solutions on society and the environment.
3. Ability to differentiate between ethical and legal issues and relate these
4. issues to design projects in the agricultural engineering field.
5. Ability to demonstrate teamwork through weekly group meetings and class presentations.
6. Ability to evaluate economic feasibility study and project planning and management of a design project in the agricultural engineering field.

MMJ34703 OPERASI UNIT [UNIT OPERATION]

No of Credits: 3

Course Synopsis:

This course intends to give students fair knowledge of unit operations in food and agro-based processing industries. The topics in this course includes basic knowledge of engineering in material and energy balances for selected unit operations in the industries. The other topics cover on drying, evaporation, raw material preparation, size reduction, mixing and separations.

Course Outcomes:

1. Ability to apply a basic principle of material, energy balances and drying in agro-based industries
2. Ability to assess separation operations and equipment in food and agro-based industries
3. Ability to design size reduction and mixing operation for food and agro-based industries
4. Ability to evaluate a basic design for single, multiple effects evaporators and drying equipment.

MMJ34803 REKA BENTUK SISTEM AUTOMASI [DESIGN OF AUTOMATION SYSTEMS]

No of Credits: 3

Course Synopsis:

This course covers the principles of automation and sensor technology applied in agricultural fields. It also includes the components of automation systems such as sensors, controllers, actuators and drive systems. Students will also be introduced to design of automation system using microprocessor programming to control sensors and actuators to create solutions for the complex engineering problems..

Course Outcomes:

1. Ability to analyze complex engineering problems of the sensors, actuators and drive systems in agricultural automation technology
2. Ability to design solution for automation systems in agricultural engineering
3. using actuator and drive systems controlled by microcontroller programming
4. Ability to organize work effectively as an individual, and as a member or leader in diverse teams to create solution for complex engineering problems.
5. Ability to defend the proposed design on automation system in agricultural engineering through effective oral and written communication skills.

MMJ34902 MODELLING AND SIMULATION [PEMODELAN DAN SIMULASI]

No of Credits: 2

Course Synopsis:

The course advances students on concepts of systems analysis, modeling, and computer simulation of agricultural and biological systems. The primary focus is on developing knowledge and skills to construct static as well as dynamic models and perform sensitivity analysis, parameter estimation, and model evaluation. Review and analysis of models in agricultural and biological systems emphasizing crops and the environment are also covered. Laboratory work using Python enhances student's ability to simulate biological systems. A group project culminates the course.

Course Outcomes:

1. Ability to formulate mathematical models governing biological and physical behaviors of agricultural/biological systems.
2. Ability to construct computer programming to model and/or simulate agricultural or biological systems behaviors and responses.
3. Ability to demonstrate working effectively in teams in solving complex engineering problems related to agricultural/biological systems.
4. Ability to prepare a modelling or simulation report on agricultural/biological systems problems using various information and lifelong learning strategies.

MMJ44003 REKA BENTUK KEJURUTERAAN PERTANIAN II [AGRICULTURAL INTEGRATED DESIGN PROJECT II]

No of Credits: 3

Course Synopsis:

This course covers topics on design aspects within related agricultural engineering thematic areas, including (but not limited to) automation and emerging technologies, machine systems, postharvest technology, structures and environment, soil and water, information technology, sustainable agriculture, and cutting across several important food and industrial crops. The scope of the course is to design components, equipment, processes, and systems to meet desired project needs within realistic constraints and to comprehend diverse and fast-changing technology and open-ended design problems in agricultural engineering and technology fields. The use of modern engineering design practices, tools, product/solution development process, troubleshooting methodology, learning and utilising a realistic simulation of the real-world design process, engineering analysis, and synthesis through their projects. Knowledge

integration from other courses is required to identify, solve, and design solutions for complex engineering problems.

Course Outcomes:

1. Ability to apply knowledge of engineering fundamentals to solve complex engineering problems.
2. Ability to formulate solutions that properly address critical issues and assumptions that are conceptually and contextually valid and meet client expectations.
3. Ability to use modern engineering tools and software to design components, equipment, processes, and systems in agricultural engineering.
4. Ability to communicate on engineering design with written report and presentation.
5. Ability to prepare design report through the utilisation of diverse information sources and life-long learning strategies.
6. Ability to apply clear reasoning for adopting relevant design considerations associated with professional engineering practice.

MMJ44103 PERTANIAN PERSIS [PRECISION AGRICULTURE]

No of Credits: 3

Course Synopsis:

This course focuses on the concepts of precision agriculture. This course discusses on the Global Positioning System (GPS), Geographic Information System (GIS) and remote sensing technologies as the backbone of the precision agriculture. This course elaborates on the sensing technology specific for sensing natural soil properties for effective variable rate fertilizing, crop properties for nutrients intake and uptake, site specific weed control, and yield recording. Using various information from the sensing technologies, map overlay and management zone is derived for site specific precision agriculture using available GIS software.

Course Outcomes:

1. Ability to analyse the concept of precision agriculture, GIS, GPS, and remote sensing for sustainable agricultural production.
2. Ability to assess the importance of the management zone in precision agriculture from the sensing elements including soil, crop, yield, weed and disease in the context of safety, health and cultural issues
3. Ability to propose solutions by investigating and analysing data using precision agriculture software/hardware technologies.

MMJ44403 PEMBUATAN BIOPRODUK [BIOPRODUCT MANUFACTURING]

No of Credits: 3

Course Synopsis:

This course offers a comprehensive understanding of the components, facilities, and processes necessary for manufacturing biological products in the food and agriculture sectors. It also covers process development and the practical use of pilot plant facilities. Furthermore, it highlights the importance of adhering to stringent standards and ethical practices in bioproduct manufacturing. By the course's conclusion, students will be capable of designing and proposing manufacturing processes while recognizing the ethical and regulatory considerations essential for maintaining high standards in their work.

Course Outcomes:

1. Ability to select the process of innovation and the need for sustainable development for the production and manufacturing of bio-based and agricultural products.
2. Ability to design the process related to the manufacturing production of food and agricultural products.
3. Ability to evaluate the importance of standards in bioproduct manufacturing in accordance with good practices and ethics.

MMJ44503 CONTROLLED ENVIRONMENT ENGINEERING [KEJURUTERAAN PERSEKITARAN TERKAWAL]

No of Credits: 3

Course Synopsis:

The course covers thermal and environmental engineering design and analyses appropriate for controlled environment agricultural related production facilities for plants, animals and aquaculture. Major topics include psychrometric, heat and mass transfer, ventilation, cooling and heating, air distribution within controlled environment buildings.

Course Outcomes:

1. Ability to analyze knowledge of heat and mass transfer in plant, animal, and aquaculture structures.
2. Ability to design natural and force ventilation, cooling and/or heating systems for plants, animals, and aquaculture structures.
3. Ability to appraise and value the existing design and operations of controlled environment agricultural production systems with respect to engineering,

economics, as well as management by means of a groupwork project.

MMJ44703 KEJURUTERAAN LEPAS TUAI [POSTHARVEST ENGINEERING]

No of Credits: 3

Course Synopsis:

This course focuses on the postharvest management and processes involved after harvesting highly perishable agricultural produces as well as grains. The course discusses the types and causes of spoilage in storage, conditions for storage such as functional requirements of storage with emphasis on highly perishable agricultural produce as well as cereal grains, control of temperature and relative humidity inside storage, and calculation of refrigeration load, designing conditioning of environment inside storage through natural, mechanical ventilation and cooling. This course covers the importance of moisture content in agricultural products, principle of drying, method and mechanisms of drying and the drying curve. The course also elaborates on different types of dryers, their performances, energy utilization and efficiency in relation to drying and dehydration of agricultural products. Finally the course discusses on the transportation method based on the cold chain network of the refrigerated agricultural produce for fresh and longer shelf life products.

Course Outcomes:

1. Ability to analyse the postharvest treatments and spoilage mechanism for safe handlings of highly perishable agricultural produce.
2. Ability to evaluate the refrigeration capacity in maintaining the quality of agricultural produce for transportation.
3. Ability to propose the appropriate conditioning based on the drying principles for highly perishable agricultural produce.

UR6521002

Bachelor of Mechanical Engineering Technology (Machining) With Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Engineering technology graduates engaged in the field of mechanical engineering technology as demonstrated through career advancement.

PEO 2

Engineering technology graduates who are members and contribute to professional society.

PEO 3

Engineering technology graduates embracing in life-long learning or pursuing continuing education opportunities.

PEO 4

Engineering technology graduates who are technopreneurs.



PROGRAMME OUTCOMES (PO)

PO1

Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals and an engineering specialization to defined and applied engineering procedures, processes, systems or methodologies.

PO2

Problem Analysis: Identify, formulate, research literature and analyse broadly-defined engineering problems reaching substantiated conclusions using analytical tools appropriate to their discipline or area of specialisation with considerations for sustainable development.

PO3

Design/Development of solutions: Design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet identified

PO4

Investigation: Conduct investigations of broadly-defined engineering problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions.

PO5

Tool Usage: Select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to broadly-defined engineering problems.

PO6

The Engineering Technologist and the World: Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving broadly-defined engineering problems.

PO7

Ethics: Understand and commit to professional ethics and norms of engineering technology practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings.

PO9

Communications: Communicate effectively and inclusively on broadly-defined engineering activities with the engineering community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making to one's own work, as a member and leader in a team and to manage projects in multidisciplinary environments.

PO11

Lifelong Learning: Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of new specialist technologies.

PO12

Personal and Entrepreneurial Skills: Demonstrate ability to engage effectively in self-improvement initiatives for career, professional or educational goals and engage in entrepreneurial activities.

CURRICULUM STRUCTURE								
UR6521002 MECHANICAL ENGINEERING TECHNOLOGY (MACHINING) WITH HONOURS INTAKE 2025/2026								
YEAR	FIRST		SECOND		THIRD		FOURTH	
SEMESTER	1	2	3	4	5	6	7	8
DISCIPLINE CORE & ELECTIVE COURSES (108 CREDITS)	MMK10103 Material Science	MMK11203 Fluid Mechanics	MMK20103 Thermodynamics	MMK21203 Heat Transfer	MMK32403 Jigs and Fixtures Design	MMK31204 Final Year Project I	MMK41206 Final Year Project II	MMK49912 Industrial Training
	MMK10203 Statics and Dynamic	MMK11103 Quality Control	MMK20203 Strength of Materials	MMK11302 Computer Programming	MMK38103 Process Control	Elective I	Elective II	
	MMK10403 Engineering Graphics	MMK11603 Computer Aided Design	MMK32303 Geometric, Dimensioning dan Tolerance	MMK21103 Computer Aided Engineering	MMK32603 Computer Aided Manufacturing	MMK3XXX2 Artificial Intelligence in Machining	Elective III	
	MMK10502 Workshop Technology	MMK11502 Manufacturing Technology	MMK22104 Conventional Machining	MMK22203 CNC Technology	MMK32502 Sustainable Machining	MMK32703 Advanced Machining Technology	MMK4XXX2 Machining Technology Entrepreneurship	
		MMK10303 Basic Electrical and Electronic	MMK12103 Theory in Machining	MMK24103 Pneumatic and Hydraulic Systems		MMK33104 Machining Project		
COMMON CORE COURSES (16 CREDITS)	IMQ11103 Mathematics for Engineering Technology 1	IMQ11203 Mathematics for Engineering Technology 2	IMQ21303 Mathematics for Engineering Technology 3		MMK30103 Engineering Technology Management	MMK3XXX2 Safety and Health	MMK3XXX2 Engineering Technology and the World	
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMB41002 University Malay Language ^[2]	SMB20102 English for General Communication ^[4]		SMB31202 English for Technical Communication	SMU12102 Integrity and Anti- Corruption ^[3]			
	SMU13002 Philosophy and Current Issues	SMZXXX01 Co-Curriculum 2		SMU22402 Engineering Entrepreneurship	SMU13102 Appreciation of Ethics and Civilizations			
	SMZXXX01 Co-curriculum 1							
TOTAL CREDITS (140 CREDITS)	19	19	19	19	18	18	16	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]							

Elective I : MMK33103 Alloy & Metal Composite, MMK33203 Plastic Injection Moulding Simulation, MMK33303 Computational Fluid Dynamics.

Elective II : MMK43403 Modern Grinding Technology, MMK43503 Non-Destructive Testing, MMK43603 Noise and Vibration.

Elective III : MMK43703 Cutting Tool Technology, MMK43803 Advanced Characterization Process, MMK 4XXX3 Injection Mould Design

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).
SMB10102 Preparatory English is an Audit course.

[2] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[3] International students should register SMU13202 Malaysian Studies.

[4] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

UR6521003
Bachelor of Mechanical Engineering Technology (Agricultural Systems)
with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Engineering technology graduates engaged in the field of mechanical engineering technology as demonstrated through career advancement.

PEO 2

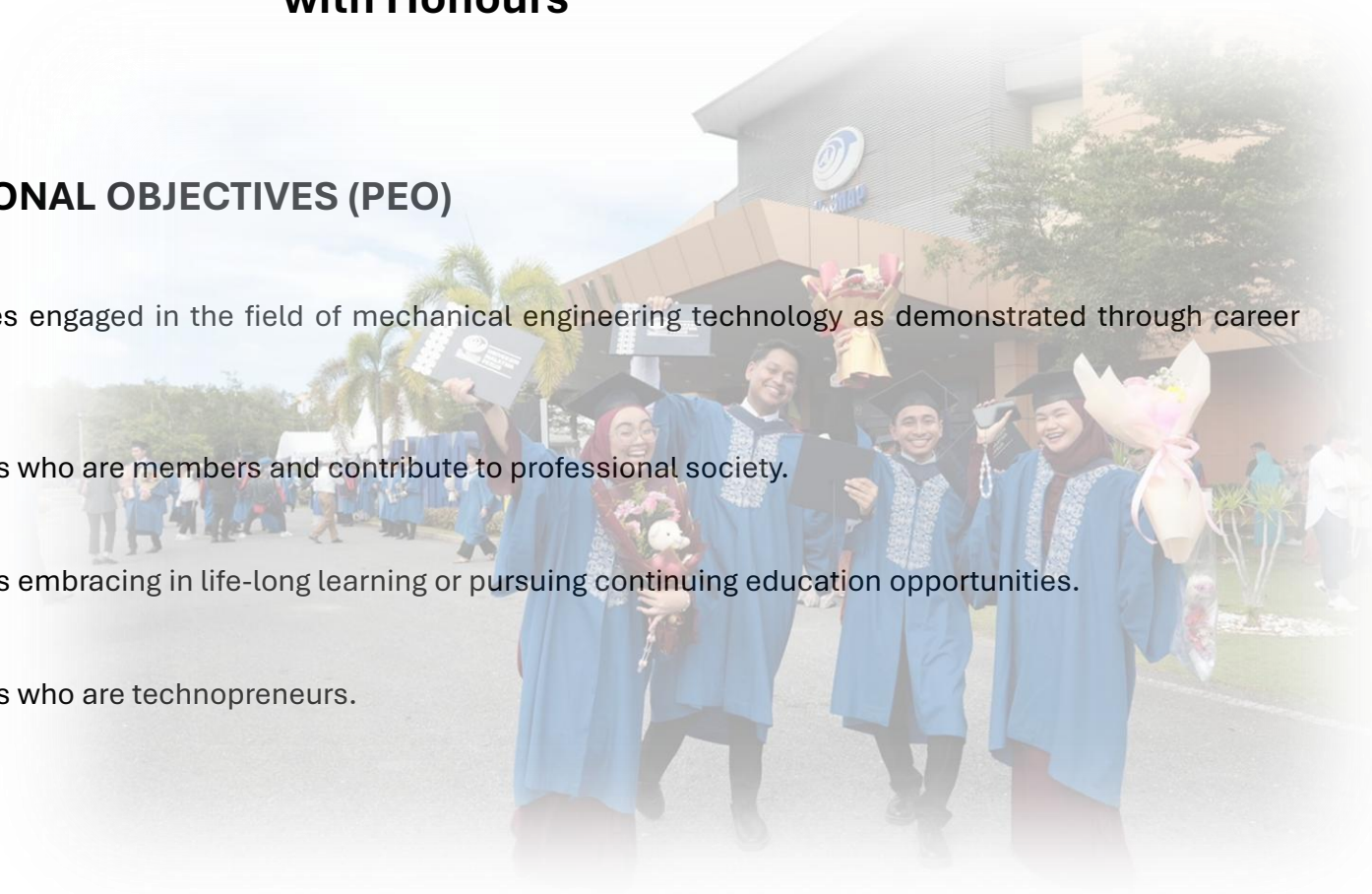
Engineering technology graduates who are members and contribute to professional society.

PEO 3

Engineering technology graduates embracing in life-long learning or pursuing continuing education opportunities.

PEO 4

Engineering technology graduates who are technopreneurs.



PROGRAMME OUTCOMES (PO)

PO1

Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals and an engineering specialization to defined and applied engineering procedures, processes, systems or methodologies.

PO2

Problem Analysis: Identify, formulate, research literature and analyse broadly-defined engineering problems reaching substantiated conclusions using analytical tools appropriate to their discipline or area of specialisation with considerations for sustainable development.

PO3

Design/Development of solutions: Design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO4

Investigation: Conduct investigations of broadly-defined engineering problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions.

PO5

Tool Usage: Select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to broadly-defined engineering problems.

PO6

The Engineering Technologist and the World: Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving broadly-defined engineering problems.

PO7

Ethics: Understand and commit to professional ethics and norms of engineering technology practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings.

PO9

Communications: Communicate effectively and inclusively on broadly-defined engineering activities with the engineering community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making to one's own work, as a member and leader in a team and to manage projects in multidisciplinary environments.

PO11

Lifelong Learning: Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of new specialist technologies.

PO12

Personal and Entrepreneurial Skills: Demonstrate ability to engage effectively in self-improvement initiatives for career, professional or educational goals and engage in entrepreneurial activities.

CURRICULUM STRUCTURE								
UR6521003 BACHELOR OF MECHANICAL ENGINEERING TECHNOLOGY (AGRICULTURAL SYSTEMS) WITH HONOURS INTAKE 2025/2026								
YEAR	FIRST		SECOND		THIRD		FOURTH	
SEMESTER	1	2	3	4	5	6	7	8
DISCIPLINE CORE & ELECTIVE COURSES (108 CREDITS)	MMK10103 Material Science	MMK10303 Basic Electrical and Electronic	MMK20103 Thermodynamics	MMK21203 Heat Transfer	MMK34103 Automations in Agricultural Systems	MMK31204 Final Year Project 1	MMK41206 Final Year Project 2	MMK49912 Industrial Training
	MMK10203 Static and Dynamic	MMK11203 Fluid Mechanics	MMK20203 Strength of Materials	MMK24103 Pneumatic and Hydraulic Systems	MMK38103 Process Control	MMK34203 Agricultural Design project	MMK44103 Farm Power and Machinery	
	MMK10403 Engineering Graphics	MMK11603 Computer Aided Design	MMK21103 Computer Aided Engineering	MMK24203 Instrumentation and Control	MMK11103 Quality Control	MMK2XXX3 Industrial Ergonomics	MMK4XXX3 Waste Management Technology	
	MMK10502 Workshop Technology	MMK11502 Manufacturing Technology	MMK11302 Computer Programming	MMK25202 Soil Engineering	MMK35103 Post-Harvest Technology	MMK3XXX2 Artificial Intelligence in Agricultural Systems	MMK4XXX2 Remote Sensing and GIS Technology	
	MMK15102 Applied Biology	MMK15202 Introduction to Agriculture	MMK25102 Plantation Crop Production Technology	MMK25302 Livestock and Aquaculture Production Technology		Elective I/2	Elective II/2	
				MMK25402 Food Crop Production Technology				
COMMON CORE COURSES (16 CREDITS)	IMQ11103 Mathematics for Engineering Technology 1	IMQ11203 Mathematics for Engineering Technology 2	IMQ21303 Mathematics for Engineering Technology 3		MMK30103 Engineering Technology Management	MMK3XXX2 Safety & Health		
					MMK3XXX2 Engineering Technologist and The World			
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMB41002 University Malay Language ^[4]	SMB20102 English for General Communication ^[2]	SMB31202 English for Technical Communication	SMU12102 Integrity and Anti- Corruption ^[3]	SMU13102 Appreciation of Ethics and Civilizations	SMU13002 Philosophy and Current Issues		
	SMZXXX01 Co-curriculum 1	SMZXXX01 Co-Curriculum 2		SMU22402 Engineering Entrepreneurship				
TOTAL CREDITS (140 CREDITS)	19	19	18	19	19	18	16	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]							

Elective I : MMK3XXX2 Urban Farming Technology [Teknologi Pertanian Bandar] or MMK3XXX2 Food Product Manufacturing [Pembuatan Produk Makanan]

Elective II : MMK4XXX2 Renewable Energy [Tenaga Diperbaharui] or MMK4XXX2 Unmanned Aerial Vehicle Technology [Teknologi Pesawat Udara Tanpa Pemandu]

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).
SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students should register SMU13202 Malaysian Studies.

[4] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

UR6521004

Bachelor of Mechanical Engineering Technology (Product Design) with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Engineering technology graduates engaged in the field of mechanical engineering technology as demonstrated through career advancement.

PEO 2

Engineering technology graduates who are members and contribute to professional society.

PEO 3

Engineering technology graduates embracing in life-long learning or pursuing continuing education opportunities.

PEO 4

Engineering technology graduates who are technopreneurs.

PROGRAMME OUTCOMES (PO)

PO1

Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals and an engineering specialization to defined and applied engineering procedures, processes, systems or methodologies.

PO2

Problem Analysis: Identify, formulate, research literature and analyse broadly-defined engineering problems reaching substantiated conclusions using analytical tools appropriate to their discipline or area of specialisation with considerations for sustainable development.

PO3

Design/Development of solutions: Design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO4

Investigation: Conduct investigations of broadly-defined engineering problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions.

PO5

Tool Usage: Select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to broadly-defined engineering problems.

PO6

The Engineering Technologist and the World: Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving broadly-defined engineering problems.

PO7

Ethics: Understand and commit to professional ethics and norms of engineering technology practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings.

PO9

Communications: Communicate effectively and inclusively on broadly-defined engineering activities with the engineering community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making to one's own work, as a member and leader in a team and to manage projects in multidisciplinary environments.

PO11

Lifelong Learning: Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of new specialist technologies.

PO12

Personal and Entrepreneurial Skills: Demonstrate ability to engage effectively in self-improvement initiatives for career, professional or educational goals and engage in entrepreneurial activities.

CURRICULUM STRUCTURE								
UR6521004 BACHELOR OF MECHANICAL ENGINEERING TECHNOLOGY (PRODUCT DESIGN) WITH HONOURS INTAKE 2025/2026								
YEAR	FIRST		SECOND		THIRD		FOURTH	
SEMESTER	1	2	3	4	5	6	7	8
DISCIPLINE CORE & ELECTIVE COURSES (108 CREDITS)	MMK10203 Static and Dynamic	MMK10103 Material Science	MMK20203 Strength of Materials	MMK21203 Heat Transfer	MMK36003 Computer Aided Engineering 2 (CAE 2)	MMK31204 Final Year Project 1	MMK41206 Final Year Project 2	MMK49912 Industrial Training
	MMK10403 Engineering Graphics	MMK10303 Basic Electrical and Electronic	MMK21103 Computer Aided Engineering	MMK2XX03 Industrial Ergonomics	MMK36403 Design Studio 2	MMK38103 Process Control	MMK47703 Design for Manufacture and Assembly	
	MMK10502 Workshop Technology	MMK11203 Fluid Mechanics	MMK20103 Thermodynamics	MMK27203 Design Integration	MMK3XX03 Artificial Intelligence in Product Design	Elective I	Elective II	
	MMK11502 Manufacturing Technology	MMK17102 Design Visualization	MMK26203 Prototyping and Modelmaking	MMK26103 Reverse Engineering and Additive Manufacturing	MMK24103 Pneumatic and Hydraulic Systems			
	MMK11603 Computer Aided Design	MMK1XX03 Computer Aided Surfacing	MMK27303 Design Studio I		MMK11103 Quality Control			
	MMK16103 Design Conceptualization	MMK11302 Computer Programming						
COMMON CORE COURSES (16 CREDITS)	IMQ11103 Mathematics for Engineering Technology 1	IMQ11203 Mathematics for Engineering Technology 2	IMQ21303 Mathematics for Engineering Technology 3		MMK3XX02 Safety and Health	MMK30103 Engineering Technology Management	MMK3XX02 Engineering Technologist and The World	
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMZXXX01 Co-curriculum I	SMZXXX01 Co-Curriculum II	SMB20102 English for General Communication ^[4]	SMU22402 Engineering Entrepreneurship	SMB31202 English for Technical Communication	SMU13002 Philosophy and Current Issues		
				SMU12102 Integrity and Anti- Corruption ^[3]		SMU13102 Appreciation of Ethics and Civilizations		
				SMB41002 University Malay Language ^[2]				
TOTAL CREDITS (140 CREDITS)	20	20	20	18	19	17	14	12
AUDIT COURSES		SMB10102 Preparatory English ^[1]						

Elective I : MMK37503 Production Management for Designers / MMK37603 Product Study and Professional Practice

Elective II : MMK37703 Design Visualization 2 / MMK37803 Design for Medical Device

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).
SMB10102 Preparatory English is an Audit course.

[2] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[3] International students should register SMU13202 Malaysian Studies.

[4] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

UR6543001

Bachelor of Mechanical Engineering Technology (Material Processing) with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Engineering technology graduates engaged in the field of mechanical engineering technology as demonstrated through career advancement.

PEO 2

Engineering technology graduates who are members and contribute to professional society.

PEO 3

Engineering technology graduates embracing in life-long learning or pursuing continuing education opportunities.

PEO 4

Engineering technology graduates who are technopreneurs.

PROGRAMME OUTCOMES (PO)

PO1

Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals and an engineering specialization to defined and applied engineering procedures, processes, systems or methodologies.

PO2

Problem Analysis: Identify, formulate, research literature and analyse broadly-defined engineering problems reaching substantiated conclusions using analytical tools appropriate to their discipline or area of specialisation with considerations for sustainable development.

PO3

Design/Development of solutions: Design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO4

Investigation: Conduct investigations of broadly-defined engineering problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions.

PO5

Tool Usage: Select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to broadly-defined engineering problems.

PO6

The Engineering Technologist and the World: Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving broadly-defined engineering problems.

PO7

Ethics: Understand and commit to professional ethics and norms of engineering technology practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings.

PO9

Communications: Communicate effectively and inclusively on broadly-defined engineering activities with the engineering community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making to one's own work, as a member and leader in a team and to manage projects in multidisciplinary environments.

PO11

Lifelong Learning: Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of new specialist technologies.

PO12

Personal and Entrepreneurial Skills: Demonstrate ability to engage effectively in self-improvement initiatives for career, professional or educational goals and engage in entrepreneurial activities

CURRICULUM STRUCTURE UR6543001 BACHELOR OF MECHANICAL ENGINEERING TECHNOLOGY (MATERIAL PROCESSING) WITH HONOURS INTAKE 2025/2026								
YEAR	FIRST		SECOND		THIRD		FOURTH	
SEMESTER	1	2	3	4	5	6	7	8
DISCIPLINE CORE & ELECTIVE COURSES (108 CREDITS)	MMK10103 Material Science	MMK11203 Fluid Mechanics	MMK20203 Strength of Materials	MMK21103 Computer Aided Engineering	MMK38103 Process Control	MMK31204 Final Year Project 1	MMK41206 Final Year Project 2	MMK49912 Industrial Training
	MMK10203 Static and Dynamic	MMK11502 Manufacturing Technology	MMK24103 Pneumatic and Hydraulic Systems	MMK21203 Heat Transfer	MMK38303 Metal Fabrication Technology	MMK3XXX3 Materials Selection and Design for Innovators	MMK4XXX3 Material Sustainability and Green Processing	
	MMK10403 Engineering Graphics	MMK11103 Quality Control	MMK20103 Thermodynamics	MMK2XXX3 Advanced Ceramic Materials and Processing	MMK33203 Plastic Injection Molding Simulation	MMK3XXX2 Artificial Intelligence in Materials Processing and Manufacturing	MMK3XXX3 Elective III	
	MMK10502 Workshop Technology	MMK11603 Computer Aided Design	MMK28103 Materials Testing	MMK28403 Metal Extraction Technology	MMK38403 Composite Materials Processing	MMK3XXX3 Elective II		
	MMK10303 Basic Electrical and Electronic	MMK11302 Computer Programming	MMK28203 Materials Characterization	MMK28503 Plastic Processing	MMK3XXX3 Elective I			
COMMON CORE COURSES (16 CREDITS)	IMQ11103 Mathematics for Engineering Technology 1	IMQ11203 Mathematics for Engineering Technology 2	IMQ21303 Mathematics for Engineering Technology 3			MMK30103 Engineering Technology Management	MMK3XXX2 Engineering Technologist and The World	
						MMK3XXX2 Safety and Health		
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMU13002 Philosophy and Current Issues	SMU12102 Integrity and Anti- Corruption [3]	SMB20102 English for General Communication[4]	SMU22402 Engineering Entrepreneurship	SMB41002 University Malay Language[2]			
	SMZXXX01 Co-curriculum 1	SMZXXX01 Co-Curriculum 2		SMU13102 Appreciation of Ethics and Civilizations	SMB31202 English for Technical Communication			
TOTAL CREDITS (140 CREDITS)	20	17	20	19	17	20	15	12
AUDIT COURSES	SMB10102 Preparatory English[1]							

Elective I : MMK39103 Polymer Adhesive and Coatings [Perekat dan Pengilut Polimer] , MMK3XXX3 Advanced Rubber and Latex Processing [Pemrosesan Getah dan Lateks Termaju].

Elective II : MMK39303 Advanced Metallurgy [Metalurgi Termaju], MMK39403 Geopolymer Materials Technology [Teknologi Bahan Geopolimer].

Elective III : MMK4XXX3 Material Failure Analysis [Analisis Kegagalan Bahan], MMK49203 Glass Technology [Teknologi Kaca].

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).
SMB10102 Preparatory English is an Audit course.

[2] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[3] International students should register SMU13202 Malaysian Studies.

[4] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
MMK10103	Sains Bahan [Materials Science]	SDG 07
MMK10203	Statik dan Dinamik [Statics and Dynamics]	SDG 09
MMK10303	Asas Elektrikal dan Elektronik [Basic Electrical and Electronics]	-
MMK10403	Grafik Kejuruteraan [Engineering Graphics]	SDG 09
MMK10502	Teknologi Bengkel [Workshop Technology]	SDG 09
MMK11103	Kawalan Kualiti [Quality Control]	SDG 09
MMK11203	Mekanik Bendalir [Fluid Mechanics]	-
MMK11302	Pengaturcaraan Komputer [Computer Programming]	SDG 09
MMK11502	Teknologi Pembuatan Manufacturing Technology]	SDG 09
MMK11603	Rekabentuk Berbantu Komputer [Computer Aided Design]	SDG 09
MMK12103	Teori Dalam Pemesinan [Theory in Machining]	-
MMK20103	Termodinamik [Thermodynamics]	-
MMK20203	Kekuatan Bahan [Strength of Materials]	-
MMK21103	Kejuruteraan Berbantu Komputer [Computer Aided Engineering]	-
MMK21203	Pemindahan Haba [Heat Transfer]	-
MMK22104	Pemesinan Kovensional [Coventional Machining]	-
MMK22203	Teknologi CNC [CNC Technology]	-
MMK24103	Sistem Pneumatik Dan Hidraulik [Pneumatic and Hydraulic System]	-

COURSE CODE	COURSE NAME	SDG
MMK30103	Pengurusan Teknologi Kejuruteraan [Engineering Technology Management]	-
MMK31204	Projek Tahun Akhir I [Final Year Project I]	SDG 07
MMK32303	Geometri, Pendimensian dan Toleransi [Geometric, Dimensioning and Tolerancing]	-
MMK32403	Rekabentuk Jig dan Lekapan [Jig and Fixture Design]	-
MMK32502	Pemesinan Mapan [Sustainable Machining]	-
MMK32603	Pembuatan Berbantu Komputer [Computer Aided Manufacturing]	-
MMK32703	Teknologi Pemesinan Termaju [Advanced Machining Technology]	-
MMK33103	Aloi dan Komposit Logam [Alloy & Metal Composite]	-
MMK33104	Projek Pemesinan [Machining Project]	-
MMK33203	Simulasi Suntikan Acuan Plastik [Plastic Injection Moulding Simulation]	-
MMK33303	Pengkomputeran Dinamik Bendalir [Computational Fluid Dynamics]	-
MMK38103	Kawalan Proses [Process Control]	-
MMK41206	Projek Tahun Akhir II [Final Year Project II]	-
MMK43403	Teknologi Pengisaran Moden [Modern Grinding Technology]	-
MMK43503	Ujian Tak Musnah [Non-Destructive Testing]	-
MMK43603	Hingar & Getaran [Noise and Vibration]	-
MMK43703	Teknologi Mata Alat Pemotong [Cutting Tool Technology]	-
MMK43803	Proses Pencirian Termaju [Advanced Characterization Process]	-
MMK4XXX3	Rekabentuk Suntikan Acuan [Injection Mould Design]	-

COURSE CODE	COURSE NAME	SDG
MMK4XXX2	Keusahawanan Teknologi Pemesinan [Machining Technology Entrepreneurship]	-
MMK3XXX2	Teknologi Kejuruteraan Dan Dunia [Engineering Technology and The World]	-
MMK3XXX2	Kecerdasan Buatan dalam Pemesinan [Artificial Intelligence in Machining]	-
MMK3XXX2	Keselamatan dan Kesihatan [Safety and Health]	-
MMK49912	Latihan Industri [Industrial Training]	SDG3
MMK15102	Biologi Gunaan [Applied Biology]	SDG 15
MMK15202	Pengenalan kepada Pertanian [Introduction to Agriculture]	SDG 2
MMK2XXX3	Ergonomik Industri [Industrial Ergonomics]	-
MMK24203	Kawalan dan Instrumentasi [Instrumentation and Control]	-
MMK25102	Teknologi Pengeluaran Tanaman Ladang [Plantation Crop Production Technology]	SDG 2
MMK25202	Kejuruteraan Tanah [Soil Engineering]	-
MMK25303	Teknologi Pengeluaran Penternakan dan Akuakultur [Livestock and Aquaculture Production Technology]	-
MMK25402	Teknologi Pengeluaran Tanaman Makanan [Food Crop Production Technology]	SDG 02
MMK3XXX2	Kecerdasan Buatan dalam Sistem Pertanian [Artificial Intelligence in Agricultural Systems]	-
MMK34103	Automasi dalam Sistem Pertanian [Automations in Agricultural Systems]	SDG 09
MMK35103	Teknologi Lepas Tuai [Post-Harvest Technology]	SDG 12
MMK34203	Projek Reka Bentuk dalam Pertanian [Agricultural Design Project]	-
MMK3XXX2	Teknologis Kejuruteraan dan dunia [Engineering Technologist and The World]	-
MMK3XXX2	Kesihatan dan Keselamatan [Safety & Health]	-

COURSE CODE	COURSE NAME	SDG
MMK3XXX2	Teknologi Pertanian Bandar [Urban Farming Technology]	SDG 11
MMK3XXX2	Pembuatan Produk Makanan [Food Product Manufacturing]	SDG 02
MMK4XXX2	Teknologi Pesawat Udara Tanpa Pemandu [Unmanned Aerial Vehicle Technology]	SDG 09
MMK4XXX2	Tenaga Diperbaharui [Renewable Energy]	SDG 7
MMK44103	Kuasa Ladang dan Mesin [Farm Power and Machinery]	SDG 02
MMK4XXX3	Teknologi Pengurusan Sisa [Waste Management Technology]	SDG 12
MMK4XXX2	Teknologi GIS dan Penderiaan Jauh [Remote Sensing and GIS Technology]	SDG 09
MMK16103	Design Conceptualization	-
MMK17102	Design Visualization	-
MMK1XX03	Computer Aided Surfacing	-
MMK26103	Reverse Engineering and Additive Manufacturing	-
MMK26203	Prototyping and Modelmaking	SDG 04, SDG 09
MMK27203	Design Integration	-
MMK27303	Design Studio I	SDG 09
MMK36003	Computer Aided Engineering 2 (CAE 2)	-
MMK36403	Design Studio 2	SDG 09
MMK37503	Production Management for Designers	SDG 08, SDG 09
MMK37603	Product Study and Professional Practice	-
MMK37703	Design Visualization 2	-

COURSE CODE	COURSE NAME	SDG
MMK37803	Design for Medical Device	-
MMK3XX03	Artificial Intelligence in Product Design	-
MMK47703	Design for Manufacture and Assembly	SDG 09
MMK28103	Materials Testing [Pengujian Bahan]	SDG 9
MMK28203	Materials Characterization [Perincian Bahan]	SDG 9
MMK2XXX3	Advanced Ceramic Materials and Processing [Bahan dan Pemprosesan Seramik Termaju]	-
MMK28403	Metal Extraction Technology [Teknologi Pengekstrakan Logam]	SDG 12
MMK28503	Plastic Processing [Pemprosesan Plastik]	SDG 12
MMK38303	Metal Fabrication Technology [Teknologi Fabrikasi Logam]	SDG 9
MMK38403	Composite Materials Processing [Pemprosesan Bahan Komposit]	SDG 9
MMK3XXX3	Materials Selection and Design for Innovators [Pemilihan Bahan dan Reka Bentuk untuk Inovator]	-
MMK4XXX3	Material Sustainability and Green Processing [Bahan Kemampanan dan Pemprosesan Hijau]	SDG-7
MMK39103	Polymer Adhesive and Coatings [Perekat dan Penglitup Polimer]	SDG 9
MMK3XXX3	Advanced Rubber and Latex Processing [Pemprosesan Getah dan Lateks Termaju]	SDG 9
MMK39303	Advanced Metallurgy [Metalurgi Termaju]	SDG 9
MMK39403	Geopolymer Materials Technology [Teknologi Bahan Geopolimer]	SDG 13
MMK4XXX3	Material Failure Analysis [Analisis Kegagalan Bahan]	SDG 9
MMK49203	Glass Technology [Teknologi Kaca]	SDG 9
MMK3XXX2	Artificial Intelligence In Materials Processing And Manufacturing [Kecerdasan Buatan dalam Pemprosesan Bahan dan Pembuatan]	-

MMK10103 SAINS BAHAN [MATERIALS SCIENCE]

No Of Credits: 3

Course Synopsis:

This course introduces students to the historical perspective of materials science and engineering fundamentals characteristics begin from understanding the atomic structures, atomic bonding in solids, crystal structures, mechanical and physical properties of materials. Students will then apply the understanding of the properties of materials through phase diagrams, transformations, and heat treatment processing on ferrous and non-ferrous alloys, polymer and advanced materials.

Course Outcome:

1. Ability to ANALYZE the classification and properties of materials, atomic structure, interatomic bonding, crystalline structure, solid imperfections and their influence on engineering material.
2. Ability to DETERMINE the properties of materials using testing standards through laboratory-based material testing and characterization.
3. Ability to EVALUATE the mechanical properties, as well as the phase diagram, phase transformation, ceramic, polymer and sustainability by solving material-related challenges.

MMK10203 STATIK DAN DINAMIK [STATICS AND DYNAMICS]

No Of Credits: 3

Course Synopsis:

This course is mainly divided into two parts; statics and dynamics. In statics, student will be exposed to the basic concepts of engineering mechanics such as forces, moments and friction. They will apply this basic knowledge to analyze the equilibrium of rigid bodies, as well as the stability of a structure. The subject of dynamics will be dealt in two parts: kinematics, which treats only the geometric aspects of the motion, and kinetics, which is the analysis of the forces causing the motion. Analysis regarding kinetic problems will be solved by using acceleration method, principle of work and energy, and principle of impulse and momentum.

Course Outcome:

1. Ability to apply the basic principles of physics related to static such as force, moment, Newton's First, second and Third Law, trusses, frame and machine.
2. Ability to analyse the structures and frameworks problems by constructing, sketching and/or drawing free body diagram in ensuring static equilibrium.
3. Ability to apply the kinematics and kinetics for particles and systems of

particles.

4. Ability to analyse the planar kinematics and kinetics of a rigid body.

MMK10303 ASAS ELEKTRIKAL DAN ELEKTRONIK [BASIC ELECTRICAL AND ELECTRONICS]

No Of Credits: 3

Course Synopsis:

This course intends provide basic knowledge of solving AC electrical circuits. It also covers the fundamentals of electrical machines. The electronics section includes basic semiconductor diodes and transistors as well as the fundamentals of digital systems. At the end of the semester students will be able to understand, analyze and apply basic electrical and electronics concepts and principles.

Course Outcome:

1. Ability to demonstrate knowledge of fundamental in basic electrical circuits,
2. Ability to evaluate and relate the knowledge in single phase and three phase AC circuits.
3. Ability to operate equipment in basic electric and electronic circuits.

MMK10403 GRAFIK KEJURTERAAN [ENGINEERING GRAPHICS]

No Of Credits: 3

Course Synopsis:

This course provides the skills to students the basics of Engineering Drawing, Computer Aided Drafting (CAD) and their engineering applications. The course covers the detail of Engineering Drawing for beginners followed with projection systems, oblique and isometric sketches. The course also introduced the Computer Aided Drafting using dedicated software, AUTOCAD, which focuses on product design in 2D and 3D environment. Fundamental knowledge in dimensioning and geometrical tolerance (GDT) enhances student's ability in interpreting and assessing information from basic raw data of an engineering drawing.

Course Outcome:

1. Ability to demonstrate the basic drafting, sketching engineering components, geometric, dimensioning and tolerancing (GDT) and common term used in engineering drawing.
2. Ability to demonstrate orthographic, auxiliary view, cross section and isometric in engineering drawing.
3. Ability to construct detail and assembly drawing in engineering drawing.

MMK10502 TEKNOLOGI BENGKEL [WORKSHOP TECHNOLOGY]

No Of Credits: 2

Course Synopsis:

This course aims to familiarize students with basic workshop technology, practices, and skills. Techniques such as cutting, drilling, filling, joining, fastening, punching, folding, shearing and finishing are among many concepts that will be familiarized. Practical work will help the students to gain effective understanding in the workshop technology course. At the end of this course, students are expected to be able to use modern tools and apply appropriately.

Course Outcome:

1. Ability to describe tools and its usage in workshops.
2. Ability to reproduce work practices using specified tools based on given instructions.
3. Ability to apply various workshop tools to produce work specimens with various processes.

MMK11103 KAWALAN KUALITI [QUALITY CONTROL]

No Of Credits: 3

Course Synopsis:

This course covers the principles of quality control that can be applied in related fields of chemical engineering. The course covers related process and standard commonly used in industry. The course also discusses on the statistical method and acceptance sampling as tools and techniques that broadly implemented in quality assurance and quality control.

Course Outcome:

1. Ability to examine and apply the principles for quality assurance, quality control and management improvement.
2. Ability to formulate the processes in quality assurance and quality control with statistical method.
3. Ability to evaluate the suitable sampling and testing procedure in quality assurance and quality control.

MMK11203 MEKANIK BENDALIR [FLUID MECHANICS]

No Of Credits: 3

Course Synopsis:

This course introduces the basic concepts of fluid mechanics, with emphasis on the properties of fluid, pressure and fluid statics, mass, Bernoulli and energy equations, momentum analysis of flow system, internal flows and external flows. These concepts will be applied in experiments for a better real-world understanding of fluid mechanics.

Course Outcome:

1. Ability to analyse the properties of fluids, fluid static and fluid flow principle.
2. Ability to analyse internal and external flows.
3. Ability to demonstrate fluid mechanics principles through experiments, modelling of- simulations

MMK11302 PENGATURCARAAN KOMPUTER [COMPUTER PROGRAMMING]

No Of Credits: 2

Course Synopsis:

This course introduces basic programming using high level language (C language). The main objective of this course is to prepare the students with the ability of problem solving with programming tools such as organization chart, IPO chart, flowchart and pseudo code and then implement them by developing C program.

Course Outcome:

1. Ability to analyze and construct simple and straightforward manner in C Programs.
2. Ability to create and construct C programs with variables, to perform mathematics functions and to configure with desired input/ output.
3. Ability to create and design C Programs with control structure, looping functions and numeric arrays.

MMK11502 TEKNOLOGI PEMBUATAN [MANUFACTURING TECHNOLOGY]

No Of Credits: 2

Course Synopsis:

This course explores the manufacturing processes and technologies, which are used in the Industry to convert raw material into finished products. This course is divided into four sections, which are the solidification and shaping process, forming process, the joining and assembly process, and special processing and assembly technologies. The solidification and shaping process covers the metal casting and shaping process for plastics. For forming process, the topics cover metal forming and sheet metalworking technologies including rolling, forging, extrusion, cutting, bending, deep drawing, etc. In joining and assembly, the topics cover are welding, soldering, brazing, adhesive bonding, and mechanical fastening. The last part is special processing and assembly technologies, which covers rapid prototyping, micro and nanofabrication technology.

Course Outcome:

1. Ability to interpret the concept and principle for solidification and shaping process.
2. Ability to analyze the related problems of metal forming and sheet metalworking process and technology.
3. Ability to analyze the related problems of joining and assembly process and technology.
4. Ability to interpret the concept and principle for special processing and assembly technologies.

MMK11603 REKABENTUK BERBANTU KOMPUTER [COMPUTER AIDED DESIGN]

No Of Credits: 3

Course Synopsis:

This course focuses on giving exposure and skill to students about the basics of 3D and geometry modelling and its application in the engineering field by using 3D Modelling software. This course includes details on 3D modelling followed by producing 2D drawing, from 2D drawing into 3D modelling, assembly drawing, exploded drawing, and rendering. All this skill will help students to produce technical drawing and virtual prototype or model which suit manufacturing processes. This skill is very demanding in industry.

Course Outcome:

1. Ability to identify the principles and tools to develop 2D and 3D data.
2. Ability to construct 2D and 3D data by using tools effectively.
3. Ability to organize 2D and 3D data output formally

MMK12103 TEORI DALAM PEMESINAN [THEORY IN MACHINING]

No Of Credits: 3

Course Synopsis:

In this course, the students learn the fundamentals and principles of metal cutting/machining processes common to current industrial practices. This includes single-point orthogonal and turning operations, multi-point cutting operations, i.e., milling, drilling; and abrasive processes/grinding operations. Key technological principles and mechanisms of chip formations are initially explained. This is followed by discussions and evaluations of various conventional machining operations for different part shape requirements. Basic tooling for machining operations are introduced along with the machine tool structures to perform the cutting operations. Material removal rate, machining time, and machining economics are analyzed as part of machinability analyses.

Course Outcome:

1. Ability to discuss the principles of metal cutting and chip formation processes.
2. Ability to analyses Merchant force equation for machining force relationships.
3. Ability to evaluate the concepts machine tools and machining operations for various engineering shapes.
4. Ability to formulate the machinability of various metallic materials based on technical and economic factors.

MMK20103 TERMODINAMIK [THERMODYNAMICS]

No Of Credits: 3

Course Synopsis:

This course covers the basic concepts in thermodynamic laws such as the properties of substances, energy principles, first and second law of thermodynamics which applicable in engineering applications. The course emphasizes the study of energy sources and conservation through its concept and principles.

Course Outcome:

1. Ability to analyze the properties of pure substance.
2. Ability to analyze and respond the first law of thermodynamics.
3. Ability to analyze and respond the second law of thermodynamics and entropy changes of the substances.

MMK20203 KEKUATAN BAHAN [STRENGTH OF MATERIALS]

No Of Credits: 3

Course Synopsis:

This course is intended to provide the students with clear understanding of theory and application of the principles of mechanics of materials. The important concepts of statics, deformation, stresses, and strain that exist in a solid body when subjected to external loads are discussed. Students are taught to solve problems of loading on solid bodies under axial, torsion and bending loading conditions. Besides, the state of stress caused by combination of several loadings are presented. Discussion on the stability, support types, and design of column are also covered at the end of the course.

Course Outcome:

1. Ability to analyze the basic principles of deformation, stress, and strain in load-bearing structures.
2. Ability to analyze the structures subjected to axial and torsional loading.
3. Ability to evaluate the case of bending in beams and state of stress caused by combined loadings.
4. Ability to evaluate buckling structure supporting axial compressive load.

MMK21103 KEJURUTERAAN BERBANTU KOMPUTER [COMPUTER AIDED ENGINEERING]

No Of Credits: 3

Course Synopsis:

This course provides the students with an understanding of the structural analysis through Finite Element Analysis (FEA). It will also deliver a proper background for the intelligent and appropriate use of commercial FEA software. The course initially covers the introduction of FEA, matrix algebra, and solution of linear equation (SLE). The solutions for one-, two-, and three-dimensional problems are reviewed in theoretical basis and through the application of available FEA software. At the end of the course, the students are expected to be able to solve real-life engineering problems related to structural domains.

Course Outcome:

1. Ability to analyse engineering problems using basic concept and knowledge infinite element analysis.
2. Ability to demonstrate engineering problems using computational tools.
3. Ability to explain the processes and findings of finite element analysis in a form of oral and/or written presentation.

MMK21203 PEMINDAHAN HABA [HEAT TRANSFER]

No Of Credits: 3

Course Synopsis:

This course is designed to enhance and extend student's ability to apply the principles of heat transfer, especially its three major modes: conduction, convection, and radiation. In addition to the three modes of heat transfer, students will learn the application of the principles of heat transfer and discusses the design of equipment to accomplish a certain requirement.

Course Outcome:

1. Ability to apply fundamental knowledge of heat transfer mechanism.
2. Ability to evaluate and operate thermal engineering problems in conduction, convection and radiation.
3. Ability to evaluate thermal engineering problems in heat exchanger systems.

MMK22104 PEMESINAN KONVENSIONAL [CONVENTIONAL MACHINING]

No Of Credits: 4

Course Synopsis:

This course is a practical exposure to conventional machining processes used in the industry to transform raw materials into final products that involve selecting of machining operation, cutting tools and cutting conditions to get good surface finish. Conventional machining operations involved include turning, milling, drilling, and grinding.

Course Outcome:

1. Ability to perform turning process by using appropriate machining operations, cutting tools and machining conditions.
2. Ability to perform milling process by using appropriate machining operations, cutting tools and machining conditions.
3. Ability to perform drilling and grinding process by using appropriate machining operations, cutting tools and machining conditions.

MMK22203 TEKNOLOGI CNC [CNC TECHNOLOGY]

No Of Credits: 4

Course Synopsis:

This course studies on the principles and concepts of computer numerical control (CNC) used in the modern manufacturing facilities. The student will develop an increased understanding of CNC machine set-up, machine operation, tooling, and programming principles. G & M code programming language will be utilized to write part programs. Although there is a variety of machines and CNC controllers, this course focuses on the G & M codes that remain common from one machine to another. Students will also be exposed with Programmable Logic Controller (PLC).

Course Outcome:

1. Ability to APPLY the concept of NC machining operation such as workpiece zero setting and tool setting.
2. Ability to ANALYZE machining requirements for appropriate G and M code programs and documentation for CNC operations.
3. Ability to UNDERSTAND automation systems in CNC machines.
4. Ability to OPERATE basic CNC milling and turning operations through guided practice.

MMK24103 SISTEM HIDRAULIK DAN PNEUMATIK [PNEUMATIC AND HYDRAULIC SYSTEMS]

No Of Credits: 3

Course Synopsis:

This course exposes students to the fundamentals of theory and concepts in pneumatic and hydraulic systems. This course focuses on the introduction of symbols, components, and circuits used in pneumatic and hydraulic systems, as well as their application in industry. To improve the learning experience, a practical approach was used using pneumatic and hydraulic equipment in the laboratory to construct the related circuits. At the end of this course, the pneumatic system application is combined with the electro-pneumatic system, which uses electric power, a relay, a sensor, and a limit switch to control the pneumatic components.

Course Outcome:

1. Ability to apply fundamental knowledge of pneumatic and hydraulic systems.

2. Ability to evaluate design circuit operations in relation to the performance of the individual components themselves
3. Ability to respond to assigned circuit operations in pneumatic and hydraulic systems

MMK30103 PENGURUSAN TEKNOLOGI KEJURUTERAAN [ENGINEERING TECHNOLOGY MANAGEMENT]

No Of Credits: 3

Course Synopsis:

This course aims to teach students on how to apply the projects management skills and economic techniques in evaluating the design. The role of economics is to assess the appropriateness of a given project, estimate its value, and justify it from an engineering technology standpoint. At the end of the course, students will be able to identify and discuss issues and challenges faced by engineering technologist relating to project management in the current economic scenarios.

Course Outcome:

1. Ability to evaluate the process of project management, develop work plans, do cost estimation and perform project evaluation.
2. Ability to evaluate economic scenarios and apply decision-making process to engineering project and business venture.

MMK31204 PROJEK TAHUN AKHIR I [FINAL YEAR PROJECT I]

No Of Credits: 4

Course Synopsis:

This course consists of lectures and independent study on the technique of conducting literature review, identification of problem statements, project objectives and research methodology. The students are guided on the proper techniques and format of thesis writing, submit the project proposal and present the final year project to the internal examiners.

Course Outcome:

1. Ability to integrate knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to solve engineering problems related to the research area.
2. Ability to ANALYSE related research literature in order to understand and construct the research comprehensively.
3. Ability to DEVELOP methodology or design solutions involving systems, components or processes to meet identified needs in solving broadly-defined engineering technology problems.
4. Ability to INTEGRATE public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental factors in research methodology or design solutions.
5. Ability to PERFORM effective presentation and write effective reports and design documentation for the undertaken research.
6. Ability to PERFORM effective presentation and write effective reports and design documentation for the undertaken research.
7. Ability to JUSTIFY the need to engage in independent and lifelong learning in specialized technologies to complete the research project.

MMK32303 GEOMETRI, PENDIMENSIONAN DAN TOLERANSI [GEOMETRIC, DIMENSIONING AND TOLERANCING]

No Of Credits: 3

Course Synopsis:

This course focuses on the theory of Geometric Dimensioning and Tolerancing (G, D & T) as a graphic language in practical applications in engineering. This course is designed in a way to build a basic understanding of the core concepts of engineering drawing. The concept, rules, and language of GD&T from a functional viewpoint to a real example application will be delivered.

Course Outcome:

1. Ability to apply knowledge on theories and concepts of Geometric Dimensioning and Tolerancing using symbols, terms, and rules.
2. Ability to investigate datums, position, concentricity and symmetry applied to the type of forms, orientation, profile, and runout of Geometric Dimensioning and Tolerancing.
3. Ability to evaluate the concept of tolerance and fits and strategize.
4. Ability to measure geometries using metrology tools

MMK32403 REKABENTUK JIG DAN LEKAPAN [JIG AND FIXTURE DESIGN]

No Of Credits: 3

Course Synopsis:

This course introduces students to fundamental of Jig and Fixture Design in machining applications. It starts with types and functions of Jig and Fixture. In addition, students will be exposed to knowledge about classification of jig and fixture for selected operation on sample parts that apply in machining process. In this course, the tool drawing is important to students to design the jig and fixture according specifies methods and rule of metric dimensioning. This course also will introduce student to identify the principles and economic analysis of a tool design in jig and fixture application. One project will be given (in group) to evaluate the knowledge of students in this course.

Course Outcome:

1. Ability to apply knowledge and comprehension of fundamental jig and fixture design in machining application.
2. Ability to apply the knowledge in order to select and use the tool material in jig and fixture design.
3. Ability to evaluate the principles of design economy in jig and fixture design.
4. Ability to propose the importance of new innovations in jig and fixture design concepts

MMK32502 PEMESINAN MAPAN [SUSTAINABLE MACHINING]

No Of Credits: 3

Course Synopsis:

This course covers the recent techniques and requirements in green and sustainable machining practices. It includes about the definition of green manufacturing, machining with minimum metalworking fluid, dry machining, gas-cooled machining, recent literature studies unsustainable machining, offline and online optimization of machining processes, economics of environmentally friendly machining, and epilogue: looking at the future.

Course Outcome:

1. Able to analyse the concept of green manufacturing and sustainability machining practices and relates with the economical and future issues in sustainable machining.
2. Able to evaluate the principles and sustainability using minimum cutting fluid, dry machining and gas-cooled in various machining operations.
3. Able to evaluate the practices of optimisation in machining operations and the advanced material used in machining operations.

MMK32603 PEMBUATAN BERBANTU KOMPUTER [COMPUTER AIDED MANUFACTURING]

No Of Credits: 3

Course Synopsis:

This course enhances the students with skills of using Computer Aided Manufacturing (CAM) software for generating NC part programming in machining processes. It also enables students to understand the theory, concept, and application of CAM in machining that applied in industries. It covers five sections in CAM application which are 2-Axis Machining in Milling operation, 3-Axis Machining in Milling operation, 4 or 5-Axis Machining in Milling operation, CAM on Turning operation and CAM on Turn and Mill operation.

Course Outcome:

- CO1 Ability to PERFORM the NC part programming for 2-axis, 3-Axis and multi-axis machining of milling process using CAM software.
CO2 Ability to PERFORM the NC part programming for turning operation using CAM software.
CO3 Ability to DEMONSTRATE the CNC 3-Axis milling and CNC turning machine.

MMK32703 TEKNOLOGI PEMESINAN TERMAJU [ADVANCED MACHINING TECHNOLOGY]

No Of Credits: 3

Course Synopsis:

This course exposes the students about various non-traditional manufacturing technologies which are used in industries nowadays. It covers four classifications of techniques in non-traditional machining technologies which are Mechanical, Electrical, Thermal and Chemical. The topics are Electrical Discharge Machining (EDM) technology, Chemical Machining, Electrochemical Machining, Ultrasonic Machining, Water Jet Machining, Laser-Beam machining, Electron Beam Machining and Additive Manufacturing (3D printing). It also covers the criteria for process selections and economics of the advanced machining processes. It gives students the basic skills in analysing advanced manufacturing technology and the necessary knowledge to operate and manufacture a particular product.

Course Outcome:

1. Ability to evaluate the concept and methodology of Electrical and Wire Electrical Discharge Machining (EDM and WEDM) processes.
2. Ability to evaluate the concept and methodology of Chemical and Electrochemical Machining (CHM and ECM) processes.
3. Ability to evaluate the concept and methodology of Ultrasonic and Water Jet Machining (USM and WJM) processes.
4. Ability to evaluate the concept and methodology of Laser Beam and Electron Beam Machining (LBM and EBM) processes.
5. Ability to evaluate the concept and methodology of additive manufacturing particularly for 3D printing.

MMK33103 ALOI DAN KOMPOSIT LOGAM [ALLOY AND METAL COMPOSITE]

No Of Credits: 3

Course Synopsis:

Most of the advanced manufacturing and machining industries involved metals either as their main products or equipments and tools used during the processing. This course consists of complete review on metal and their alloys and has been designed to suit with mechanical (machining) students. The course started with the introduction of fundamental knowledge of metal-alloys regarding their types, properties, classifications, fabrications, and applications. The important physical and mechanical properties of metal were discussed including the common mechanical failures occurred in metals. The basic knowledge in metal phase diagram and common practiced heat treatments were also discussed. Apart from that, metal composites area was also overviewed in this course including their classification, fabrications, and applications. During this course, students need to complete a mini project which covering the element of design, fabrication, machining, and heat treatment intended for specific application. This course will impose an extra added value for mechanical (machining) students before they are entering into the real industrial sector.

Course Outcome:

1. Ability to apply fundamental knowledge of science and engineering for describing basic process, properties and applications of metals, alloys and composites.
2. Ability to analyse information and technical data for assessing problems and provide conclusions in metals, alloys and composites.
3. Ability to design specific process or composition to meet specified needs in metals, alloys and composites.
4. Ability to reproduce investigation effectively on a given task using appropriate techniques.

MMK33104 PROJEK PEMESINAN [MACHINING PROJECT]

No Of Credits: 4

Course Synopsis:

Machining project is a multi-disciplinary integrated subject in which small groups of three or four students work together to complete a major project. Each project will require students to solve problems related to the machining practices in term of design, process, or industry. The project can be titled either based on product design, product fabrication, experimental analysis, case study or investigation of

problems in industry.

COURSE OUTCOME:

1. Ability to generate problem solution based on knowledge and comprehension of concept, methodologies & project management principles.
2. Ability to demonstrate solution by using techniques, skills and modern engineering tools to solve and evaluate the machining practices.
3. Ability to organise in group and communicates effectively using the project management principles.

MMK33203 SIMULASI SUNTIKAN ACUAN PLASTIK [PLASTIC INJECTION MOULDING SIMULATION]

No Of Credits: 3

Course Synopsis:

This course introduces students to basic knowledge of plastic injection mould technology and plastic materials used in the injection moulding process. This module focuses more on analyzing and evaluating the finite element mesh technology introduced in Moldflow and how these mesh quality influence the quality of the mesh. This module also introduces the concept of gate placement as well as the design concept of gates, runners and cooling system. Emphasis also be given on conducting several analysis in evaluating the part and mould design via gate location analysis, molding window analysis, fast fill analysis and cool+flow+pack+warp analysis in eliminating the causes of defects that might be occurred in the plastic part produced.

Course Outcome:

1. Ability to evaluate the basic terminology in plastic injection moulding, process, mould types and components, plastic materials for injection moulding.
2. Ability to create good and satisfactory simulation models that fulfil meshing requirements.
3. Ability to evaluate gate location and moulding window simulation and interpret the results.
4. Ability to design feed system for fast fill simulation and evaluate the results
5. Ability to create cooling system, setting the injection processing parameters in cool+flow+pack+warp simulation and evaluate the results

MMK33303 PENGKOMPUTERAN DINAMIK BENDALIR [COMPUTATIONAL FLUID DYNAMICS]

No Of Credits: 3

Course Synopsis:

This course exposes the techniques for obtaining solution of fluid flow problems numerically. The aim of this course is to introduce the fundamental application of simulation of fluid dynamics and heat transfer phenomenon and solving thermo-fluids problem via computational method. Holistic approaches of commercial software are essential towards solving, analyzing and evaluating the results of thermo-fluid problems. The course focuses on solving of two- and three-dimensional fluid flow and heat transfer problems utilize commercial software. The course starts by introducing the history and applications of Computational Fluid Dynamics (CFD). Then it revises the behavior of fluids in motion and derivation of the governing flow equations before detail discussion of various discretization techniques. Moreover, the course discusses the practical guidelines for CFD and simulation of thermo-fluid problems using commercial software.

Course Outcome:

1. Ability to APPLY the basic concept and knowledge of computational fluid dynamics.
2. Ability to INVESTIGATE the thermofluids problems using the computational tools.
3. Ability to EXPLAIN the findings of computational fluid dynamics analysis in a form of oral /or written presentation.
4. Ability to ANALYZE the thermofluids problems in pre- processing, solving and post-processing stage of computational fluid dynamics.

MMK38103 KAWALAN PROSES [PROCESS CONTROL]

No Of Credits: 3

Course Synopsis:

This course introduces basic knowledge of process control such as application of process control in daily life and in industry, principle of process control and the importance of learning this course. Students will learn to solve control system problem through simplification of block diagram, laplace transformation and stability. Lab session using Matlab enhanced the students understanding of this course.

Course Outcome:

1. Ability to determine types and essential features of process control, simplify block diagrams and solve differential equations.
2. Ability to evaluate the dynamic behavior of a process and formulate appropriate control strategies by assessing system stability and responses in a control system.
3. Ability to apply engineering tools in process control.

MMK41206 PROJEK TAHUN AKHIR II [FINAL YEAR PROJECT II]

No Of Credits: 6

Course Synopsis:

In this course, students will apply the knowledge they have learned throughout this program to complete the ongoing research project (Final Year Project I) under the supervision of a supervisor. The supervisor is responsible for guiding students on the techniques and overall implementation of the research. For the Final Year Project II, students will be focused on the fabrication of the product (if applicable), data analysis and interpretation, and conclusion. The documentation of the whole project will be written in the Final Year Project II report. Students will present their works and finding on the research project during the viva session.

Course Outcome:

1. Ability to interpret related research literature in constructing a comprehensive scope of the FYP Project and develop specific solutions for the objectives set.
2. Ability to conduct investigations based on experiment and/or prototype, in order to evaluate, interpret and analyze the outcome of the FYP project.
3. Ability to analyze knowledge of mathematics, science, engineering fundamentals, and engineering and engineering specialization in order to solve problems of the FYP project and give conclusions.
4. Ability to combine appropriate techniques and modern engineering tools to solve the problems of the FYP project.
5. Ability to exhibit effective presentation and write effective reports and documentation for the FYP project.
6. Ability to conduct effective management principles in a multidisciplinary environment to manage the FYP project.

MMK43403 TEKNOLOGI PENGISARAN MODEN [MODERN GRINDING TECHNOLOGY]

No Of Credits: 3

Course Synopsis:

In this course, students will be exposed to the basic concepts of modern grinding technology and its role in manufacturing. This is followed by explanation on related theories such as the grinding system elements, material removal and grinding wheel specifications (which includes grinding wheel contacts, dressing, tools and wear) and grinding process control. The trends and technologies in centerless grinding and high-speed grinding will be discussed as well. At the end of the course, students will be exposed to problem solving on grinding process.

Course Outcome:

1. Ability to evaluate the concept of grinding process and grinding wheel composition, properties, geometry and kinematics.
2. Ability to evaluate the concept of dressing, truing and analyze the wheel contact and wear effects.
3. Ability to evaluate the concept of grinding machine and operation including centerless, high speed grinding as well as deflections and problems related to grinding operation.

MMK43503 UJIAN TAK MUSNAH [NON-DESTRUCTIVE TESTING]

No Of Credits: 3

Course Synopsis:

Non-destructive testing (NDT) is a comprehensive way to find, size, and locate surface and subsurface flaws and defects that could have an adverse impact on safety, reliability, and the environment. Testing implies for finding defective area does not damage or ruined the tested part. Identifying defects and flaws in material which could not be seen using our naked eyes is absolutely important in determining the structural life span and the material performance. The effective method of NDT is also depending on the knowledge and skill of the person incharge. Because of that reason, this course offered several topics which is covering basic NDT methods that are normally used in engineering field such as visual testing, liquid penetrant, magnetic particle, eddy current, ultrasonic, and radiography technique. This course also briefly reviews other NDT techniques such as optical inspection probes, neutron radiography, laser-induced ultrasonics, acoustic emission inspection gauges and thermography. Students can have further professional level training offered at several agencies in Malaysia after graduating and become certified NDT inspector.

Course Outcome:

1. Ability to discuss the concept and principle for different type of NDT inspection method.
2. Ability to compare the advantages and limitations of different type of NDT inspection method.
3. Ability to recommend suitable NDT inspection method for assessing flaws and defects conditions based on the equipment capabilities and the specimen characteristics.
4. Ability to evaluate data, results or literatures to solve problem and provide valid conclusion in NDT inspection.

MMK43603 HINGAR & GETARAN [NOISE & VIBRATION]

No Of Credits: 3

Course Synopsis:

This course introduces the student with the skills and knowledge in vibrations and noise disciplines. The syllabus covers the fundamental of vibration and oscillation motion, free vibration, force vibration, two degree of freedom systems, multiple degree of freedom systems the effects of noise and how to control the problems. The student will be well-prepared towards industrial application elements such as vibration control, vibration measurement, and noise control.

Course Outcome:

1. Ability to analyse free and force vibration for single and two degree of freedom.
2. Ability to evaluate the response of various systems (multi degrees of freedom) and noise measurement.
3. Ability to analyse vibrations and noise using appropriate vibration and noise measurement apparatus.

MMK43703 TEKNOLOGI MATA ALAT PEMOTONG [CUTTING TOOL TECHNOLOGY]

No Of Credits: 3

Course Synopsis:

This course covers the fundamental and recent technologies related to cutting tools for machining processes. It includes topics such as trends and development of cutting tool materials, heat, forces and stresses on cutting tools, single point turning tools and chip breaking techniques, multi-point tools. In addition to that, this course reviews the fundamental issues on tool wear and tool life, tool condition monitoring and special topics on machining advanced materials.

Course Outcome:

1. Able to apply the knowledge of science and engineering related with cutting tools technology for different machining processes.
2. Able to analyze different type of cutting tools based on their materials, geometries, fabrications and applications.
3. Able to assess technical data from database or literature to provide valid conclusion related with cutting tools and technology.
4. Able to describe the impact of cutting tools technology on societal and environmental issue.

MMK43803 PROSES PENCIRIAN TERMAJU [ADVANCE CHARACTERIZATION PROCESS]

No Of Credits: 3

Course Synopsis:

This course covers a fundamental of the advanced characterization processes, divided into three categorize; physical, mechanical, and thermal analysis. This includes spectroscopic characterization such as Fourier Transform Infrared Spectroscopy (FTIR) and Spark or Arc Atomic Emission Spectroscopy (AAEM); electron microscopy techniques such as Transmission Electron Microscopy (TEM), Scanning Electron Microscopy (SEM) and, Field Emission Scanning Electron Microscope (FeSEM) and, its sample preparation processing. X-Ray Diffraction (XRD) and Xray Fluorescence (XRF); Thermal Analysis such as Thermal Gravimetric Analysis (TGA) and Differential Scanning Calorimetry, (DSC), surface roughness and follow by mechanical analysis; Impact, bending and flexural analytical test.

Course Outcome:

1. Ability to IDENTIFY a comprehensive understanding of the fundamental concepts and classification of engineering materials including ceramics, composites, metals, and polymers by identifying their key characteristics

- through appropriate testing and advanced characterization techniques.
2. Ability to ANALYZE experimental data generated from various material characterization tools to determine the correlation between microstructure, processing history, and material properties.
3. Ability to INVESTIGATE the experimental results to the behavior and properties of materials under investigation
4. Ability to EVALUATE appropriate testing and characterization methods to address material-related issues, with a focus on cost-effective processing and environmental sustainability.

MMK4XXX3 REKABENTUK SUNTIKAN ACUAN [INJECTION MOULD DESIGN]

No Of Credits: 2

Course Synopsis:

This course introduces the concepts and practices in designing injection moulds used in plastic part production. Students will learn about various types of moulds, material selection, parting lines, runners and gating systems, mould bases, cooling systems, and ejection mechanisms. Emphasis will be given to design consideration, DFM (Design for Manufacturability), and quality production principles.

Course Outcome:

1. Ability to APPLY knowledge and comprehension of injection mould design guidelines as practiced in industries.
2. Ability to DESIGN 3D CAD models of core and cavity inserts and produce 2D drawings for injection moulds, as practiced in industries.
3. Ability to INTEGRATE DFM principles and mouldability considerations to improve plastic product and tooling design.

MMK4XX2 KEUSAHAWANAN TEKNOLOGI PEMESINAN [MACHINING TECHNOLOGY ENTREPRENEURSHIP]

No Of Credits: 2

Course Synopsis:

This course introduces students to the fundamentals of machining processes and the principles of entrepreneurship in the engineering technology context. It focuses on how machining technologies such as turning, milling, drilling, and CNC can be transformed into viable business ventures through innovation, cost analysis, and sustainable planning. Students will explore the components of business model development, market identification, feasibility studies, and strategic planning including pricing, marketing, and funding options. The course also emphasizes the integration of sustainability and innovation into business practices. Through project-based learning, students will develop and pitch a machining-based business idea, preparing them for real-world entrepreneurial roles in the engineering industry.

Course Outcome:

1. Ability to EXPLAIN fundamental machining processes and their relevance in engineering entrepreneurship.
2. Ability to ANALYSE cost structures and evaluate business feasibility for machining-based ventures.
3. Ability to PERFORM effective presentation and write effective reports of basic machining-based business model integrating sustainability and innovation.

MMK3XX2 TEKNOLOGI KEJURUTERAAN DAN DUNIA [ENGINEERING TECHNOLOGY AND THE WORLD]

No Of Credits: 2

Course Synopsis:

This course aims to explain the main concepts in engineering and technology ethics, risk management and occupational safety and health as well as to expose the students to basic of law in the engineering and technology context. The course presents an introductory nature to enable technologists to appreciate factors that have to be taken into account in decision-making. Examine and assess issues and challenges faced by technologists relating to engineering and technology ethics, risk management and to understand the legal requirements related engineering and technology field.

Course Outcome:

1. Ability to explain hazards, the function of risk management and occupational safety and health (OSHA).
2. Ability to analyse the aspects and procedures of legal on engineering and technology issues.
3. Ability to integrate and cooperate the issues and challenges of engineering and technology ethics in the community.

MMK3XX2 KECERDASAN BUATAN DALAM PEMESINAN [ARTIFICIAL INTELLIGENCE IN MACHINING]

No Of Credits: 2

Course Synopsis:

The course advances students on artificial intelligence (AI) and its component technologies to identify, solve problems and make decisions on machining management, operations and planning. The primary focus is on developing knowledge and skills to collect, manage, structure and finally make a decision from the analysed data using AI technology. A review of the advances of AI applications, such for cutting tool wear prediction, CNC machine tool maintenance, monitoring of machining operations, and machining process optimisation, are also covered in this course.

Course Outcome:

1. Ability to explain the concept of artificial intelligence and its components.
2. Ability to apply appropriate artificial intelligence methods to solve defined problems in machining processes.
3. Ability to discuss the implications of AI adoption in machining field.

MMK49912 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]

No Of Credits: 12

Course Synopsis:

This practical-based course exposes students to a company technical functions and organizational structure and operation such as departmental function, work procedure, safety procedure, communication, technical skills and project management in achieve appreciation and/or capability of carrying out complex engineering activities. During this course, the students will apply knowledge acquired at the university and increase their related skills in their future profession.

Course Outcome:

1. Ability to demonstrate technical knowledge and practical skills.
2. Ability to practice the health, safety, legal and cultural issues in a working environment.
3. Ability to apply societal environmental and sustainable development in engineering problems.
4. Ability to demonstrate good work performance, work ethics during training period.
5. Ability to perform as individual a member or leader in diverse technical teams.
6. Ability to communicate and operate assigned task given by host company.
7. Ability to engage in independent and life- long learning in specialist technologies.

MMK15102 BIOLOGI GUNAAN [APPLIED BIOLOGY]

No Of Credits: 2

Course Synopsis:

This course introduces general concepts of biology which are related to the agricultural technology and system. The general concepts include the molecular and cellular aspects of living things, structure and function of plants and animals, plant and animal diversity, physiological requirements and response of plant and animal towards internal and external stimuli. At the end of this course, the students are expected to apply the knowledge of biological science in agroecosystem and agrotechnology.

Course Outcome:

1. Ability to illustrate biological phenomena at various levels, from cellular to ecological systems

2. Ability to analyze various groups of organisms according to morphological, anatomical, reproductive and physiological parameters
3. Ability to evaluate organism responses to internal and external stimuli

MMK15202 PENGENALAN KEPADA PERTANIAN [INTRODUCTION TO AGRICULTURE]

No Of Credits: 2

Course Synopsis:

This course explores the manufacturing processes and technologies, which are used in the Industry to convert raw material into finished products. This course is divided into four sections, which are the solidification and shaping process, forming process, the joining and assembly process, and special processing and assembly technologies. The solidification and shaping process covers the metal casting and shaping process for plastics. For forming process, the topics cover metal forming and sheet metalworking technologies including rolling, forging, extrusion, cutting, bending, deep drawing, etc. In joining and assembly, the topics cover are welding, soldering, brazing, adhesive bonding, and mechanical fastening. The last part is special processing and assembly technologies, which covers rapid prototyping, micro and nanofabrication technology.

Course Outcome:

1. Ability to interpret the concept and principle for solidification and shaping process.
2. Ability to analyze the related problems of metal forming and sheet metalworking process and technology.
3. Ability to analyze the related problems of joining and assembly process and technology.
4. Ability to interpret the concept and principle for special processing and assembly technologies.

MMK24203 KAWALAN DAN INSTRUMENTASI [INSTRUMENTATION AND CONTROL]

No Of Credits: 3

Course Synopsis:

This course introduces students to fundamental knowledge about instrumentation and control system technology. Students will be exposed to basic instrumentation and measurement concepts including the general measurement system, transducers, working principle of various sensors and signal conditioning. Students will also be exposed to the basic knowledge of control system technology, including control system models, transfer functions, system response and process controllers.

Course Outcome:

1. Ability to analyse concepts of instrumentation system including sensors, transducers and signal processing.
2. Ability to analyse basic concepts of control system technology.
3. Ability to demonstrate instrumentation and control principles through experiments, modelling and simulations.

MMK25202 KEJURUTERAAN TANAH [SOIL ENGINEERING]

No Of Credits: 2

Course Synopsis:

This course introduces the basic concepts of soil engineering and soil mechanics. It covers the fundamental multi-phase nature of soils, provides an understanding of soil description and classification, the soil effective shear-strength-stress concept and the soil properties that is associated with soil tillage.

Course Outcome:

1. Ability to analyse soils including soil and water weight-volume relationships.
2. Ability to evaluate the state of stress and shear strength of a soil mass.
3. Ability to relate soil properties to soil tillage.
4. Ability to perform soil analysis as demonstrated during laboratory

MMK25303 TEKNOLOGI PENGELUARAN AKUAKULTUR DAN PENTERNAKAN [LIVESTOCK AND AQUACULTURE PRODUCTION TECHNOLOGY]

No Of Credits: 3

Course Synopsis:

This course covers terminology, basic biological aspects of animal and fish, production management technology, nutrition and feed, disease management, meat, dairy and aquaculture product management and marketing. The students are able to use innovative technology and products which enhance the growth of animal protein production in Malaysia and allow entrepreneurs to learn new methods to improve their efficiency. The relevance of livestock industry in Malaysia and global, including production and market aspects will also be taught.

Course Outcome:

1. Ability to compare the processes involved in livestock and aquaculture production
2. Ability to recommend modern livestock and aquaculture production technologies and management practices with consideration of public health and environment safety.
3. Ability to show the management practices of ruminant, non-ruminant livestock and aquaculture production systems
4. Ability to explain good agricultural practices in livestock and aquaculture production systems

MMK25402 TEKNOLOGI PENGELUARAN TANAMAN MAKANAN [FOOD CROP PRODUCTION TECHNOLOGY]

No Of Credits: 2

Course Synopsis:

This course covers principles of agronomy, soil and plant relationships, farm management, and enterprise management in the agricultural sector for sustaining agricultural growth and slowing down environmental degradation. Students are able to use innovative science and technology which enhance the growth of food crop production in Malaysia and allow them to learn new methods to improve their efficiency. The relevance of crop industry in Malaysia and global, including production and market aspects will also be taught.

Course Outcome:

1. Ability to discuss the principles and processes involved in food crop production.
2. Ability to display the appropriate food crop production technology.
3. Ability to apply good agricultural practices in food crop production with consideration of public health and environment safety.

MMK34103 AUTOMASI DALAM SISTEM PERTANIAN [AUTOMATIONS IN AGRICULTURAL SYSTEMS]

No Of Credits: 3

Course Synopsis:

This course covers the use of automation in the agricultural system. Various automation elements such as sensors, controllers, actuators, regulators, servos and others that are used in farm vehicles will be studied in this course. In addition, automation technologies in field crops and orchard productions such as irrigation, drainage and soil conservation practices, chemical applications, post-harvest operations, animal and aquacultural productions, food processing operations and waste management.

Course Outcome:

1. Ability to apply principle of automation and sensor technology in agricultural systems
2. Ability to analyse different actuator components and applications in agricultural systems
3. Ability to design automation system for agricultural and biological production system.
4. Ability to respond to different actuator components and applications in agricultural systems

MMK35103 TEKNOLOGI LEPAS TUAI [POSTHARVEST TECHNOLOGY]

No Of Credits: 3

Course Synopsis:

This course provides the overview on postharvest handling technology of agricultural produce. The course emphasizes the basic of postharvest handling technology, pre-harvest and harvesting factors affecting the postharvest quality, postharvest operations in the packinghouse and appropriate equipment or chemicals that relates to postharvest treatments and storage of agricultural products, quality assurance and preparation of fresh-cuts, and postharvest socio-economics.

Course Outcome:

1. Ability to compare the principles and operations applied in postharvest technology
2. ability to evaluate the problem that involved during postharvest handlings and operation.

3. Ability to discover appropriate techniques/ methods/ tools in preserving the quality properties of agricultural produce
4. Ability to demonstrate professional ethics and responsibilities of postharvest technology practice for food quality assurance

MMK34203 PROJEK REKABENTUK PERTANIAN [AGRICULTURAL DESIGN PROJECT]

No Of Credits: 3

Course Synopsis:

Agricultural Design Project is a multi-disciplinary subject in which small group of three to five students work together to complete a major project. Each project will require students to unravel agricultural field of industry/product/system problems that are being confronted by any organization in community. The course emphasizes related agricultural engineering technology knowledge ranging from concept till production of a product or system in solving specific engineering technology problem. This solution may include engineering specifications, project scheduling/planning, costing analysis, sustainability issues and design/system solution in any agricultural area.

Course Outcome:

1. Ability to create appropriate design/system solution on agricultural engineering technology either involving process, system or component, which may including production management, with the aim of producing a good quality solution that meet customer requirements.
2. Ability TO investigate the appropriate methodologies for data collection in order to make learned decisions and thereby valid conclusions in solving agricultural engineering technology problems.
3. Ability to conduct appropriate engineering technology technique/method/tool and practice in solving relevant problems/tasks.
4. Ability to evaluate aspects of design sustainability and environmental impact in agricultural engineering technology problems.
5. Ability to work with team members effectively in carrying out and complete tasks assigned.
6. Ability to communicate with team members and public during gaining solution to problem and to make effective presentation to convince the solution provided.
7. Ability to demonstrate understanding of engineering technology project management principles and engineering economics by applying them in decision making process.

MMK44103 JENTERA DAN KUASA LADANG [FARM POWER AND MACHINERY]

No Of Credits: 3

Course Synopsis:

This course covers the basic of machines and the importance of mechanization for various farm operations for agricultural output, selection of appropriate machines, maintenance and the management of farm machineries.

Course Outcome:

1. Ability to analyze the basic understanding of machinery for different crops and livestock
2. Ability to justify the construction and working principle of different machineries.
3. Ability to demonstrate to appropriate machinery in farming applications
4. Ability to organise an agro machinery service centre that comprises machinery for agricultural applications based on societal, health, safety, legal and cultural issues

MMK16103 DESIGN CONCEPTUALIZATION

No Of Credits: 3

Course Synopsis:

Design Conceptualization introduces students to the fundamental theories and practices of industrial design with a focus on visual ideation and communication. This course emphasizes core design processes including digital and AI-assisted sketching and rendering techniques, perspective drawing, conceptual development, and basic model-making. Students will explore design thinking approaches, visual storytelling, and the use of digital tools to generate and communicate creative ideas effectively. Through a series of hands-on exercises, studio practices, and critiques, students will learn how to translate abstract concepts into structured design outcomes. The course is designed to build confidence in visual expression while reinforcing key principles of shape and form, proportion, aesthetical value, ergonomics, and function. It also cultivates iterative thinking, preparing students for further development in product design, user-centered innovation, and advanced digital visualization. By the end of the course, students will be able to generate innovative design concepts and present them with clarity and professionalism, preparing them for future challenges in design and related creative disciplines.

Course Outcome:

1. Ability to apply basic industrial design principles, digital sketching and rendering techniques.
2. Ability to construct basic physical mock-up models for conceptualize form and proportion.
3. Ability to present design concepts and portfolio work using visual, verbal, and written communication.

MMK17102 DESIGN VISUALIZATION

No Of Credits: 2

Course Synopsis:

This course introduces students to a hands-on, practice-based approach to communicating and visualizing design ideas through lectures, studio exercises, and the integration of emerging digital technologies. Students will explore both 2D and 3D digital visualization techniques, gaining foundational skills in visual perception, composition, ideation, and problem-solving in design communication. Through exposure to vector and raster graphics, audience-specific design strategies, and industry-standard software, students will also practice image editing, digital drawing, and graphic content creation for advertising and marketing. The course emphasizes iterative design development, where students continuously refine their work based on feedback through critiques and collaborative discussions. Students will gain knowledge of visual design perceptions and communication through the application of Artificial Intelligence (AI) generator tools to enhance the design visualization process. Students will learn how to utilize AI-assisted platforms for generating design concepts, photorealistic product images, videos generation that enabling more effective and immersive storytelling of their design ideas. Classroom activities will replicate real-world design visualization projects and workflows, encouraging students to experiment with both traditional and AI-powered tools. This hybrid approach fosters innovative design practice, preparing students to interact with evolving visual communication tools in the creative industry.

Course Outcome:

1. Ability to construct the elements of visual graphics and 2D design visualization of images editing, photo realistic modelling and rendering skills.
2. Ability to build 3D design visualization using appropriate digital technology tools and software to visualize the design communication.
3. Ability to perform video animation editing and development skills using appropriate digital technology tools and software.

MMK1XX03 COMPUTER AIDED SURFACING

No Of Credits: 3

Course Synopsis:

This course introduces students to advanced principles of computer-aided design, with a focus on surface modelling techniques and digital shape construction. Students will learn to create, refine, and evaluate complex surface geometries through wireframe integration, advanced surface generation, and surface operations in a single model and assembly. The course also introduces the use of digitized data for reverse engineering, including clean-up, tessellation, cross-section generation, and character line creation. Emphasis is placed on capturing design intent, assembly features, controlling surface continuity, including Class-A surface modelling and employing constraint-driven modelling strategies to ensure controlled curvature continuity. These practices support high-precision, aesthetically pleasing, and functional surface design. Students will apply quality evaluation tools for real-time shape diagnosis and surface validation. By the end of the course, students are expected to model, edit, and reconstruct-refine high-complexity surfaces using hybrid solid-surface methods applicable in the development of automotive, aerospace, and consumer products.

Course Outcome:

1. Ability to build 3D wireframes and surface modelling using CAD software.
2. Ability to assemble integrated surface and solid assembly models from 2D freeform designs and digitized 3D scan data using CAD software.
3. Ability to construct complete 3D surface-modelled products with high-quality surfaces using CAD software.

MMK26103 REVERSE ENGINEERING AND ADDITIVE MANUFACTURING

No Of Credits: 3

Course Synopsis:

This course provides the knowledge and skills regarding reverse engineering and additive manufacturing for product design development. Students will be exposed to emerging technologies in Additive Manufacturing such as FDM, SLA, SLS, DLP and Polyjet. Besides that, students will experience performing 3D scanning operations as one of the processes in Reverse Engineering. At the end of the courses, students can apply various methods and techniques to construct prototypes and models based on these technologies. The course outlines opportunities to value add to professional skills developed during the course.

Course Outcome:

1. Ability to analyze fundamental investigation for Reverse Engineering and Additive Manufacturing knowledge in parts fabrication process and development.
2. Ability to display parts or components design by implementing Reverse Engineering and selected Additive Manufacturing technologies.
3. Ability to integrate communication effectively into the project based on the timeline, rules and regulations with an understanding of professional ethics.
4. Ability to adapt the engineering management principles to one's own work and as a team in Reverse Engineering or Additive Manufacturing projects.

MMK26203 PROTOTYPING AND MODELMAKING

No Of Credits: 3

Course Synopsis:

This course provides the knowledge and skills regarding prototyping and model making for product design development. From this course, students enable to apply various methods and techniques in constructing prototypes and models based on a technical specification that has been given. The course outlines opportunities to value add to professional skills developed during the course.

Course Outcome:

1. Ability to integrate fundamental knowledge of prototyping and model making in product design development.
2. Ability to construct a 3-dimensional physical model or prototype based on 2-dimensional data using suitable tools, equipment, and materials.
3. Ability to organize systematic workflow and process in completing the task that has been given.

MMK27203 DESIGN INTEGRATION

No Of Credits: 3

Course Synopsis:

This course will introduce to the student about the integration of other disciplines within a product design and development at early stage from a point of view of a design engineering technologist. Students will be guided to collaborate in a team consists of appointed elements such as industrial design, mechanical, electric/electronic engineering and material/manufacturing selection process. This course will enable the student to apply the skill of industrial design within integration of other elements to a product. In the end, the student will be able to deliver a functional product with several combination aspects as well as product design and development documentation required.

Course Outcome:

1. Ability to integrate the inter-disciplinary aspect into product design and development concept.
2. Ability to analyze the sustainability engineering solution through designs that impacts environmental and society.
3. Ability to work as an individual and teamwork to organize a collaborative work.
4. Ability to explain the task solution productively by visualized in written format and presentation.

MMK27303 DESIGN STUDIO I

No Of Credits: 3

Course Synopsis:

Design Studio I aims to develop an understanding of customers and product marketability by using appropriate engineering methods to analyze user needs and formulate solutions to the design problems. Students will generate and develop ideas through sketching and required to apply 3D CAD software in detailing product specification then transform to the technical drawing and animation. Students also need to construct a model to simulate the real and future product.

Course Outcome:

1. Ability to analyze problems based on the product design and development process to meet user needs.
2. Ability to analyze product requirement to provide conclusion through

investigation.

3. Ability to develop design solutions to meet the identified needs.
4. Ability to discuss the proposal and results of the project effectively using visual, oral or written format.

MMK2XX03 INDUSTRIAL ERGONOMICS

No Of Credits: 3

Course Synopsis:

The objectives of this course are to introduce to the students the ergonomics fundamental principles, human capacity and body mechanics in product design and development process, the application of suitable ergonomics assessment tool to solve the ergonomics issues in product design and to guide the students on effective design solutions in order to enhance product intervention, usability, sustainability and safety for society benefits. The contents of this course will cover the ergonomics introduction in design, human capacity and biomechanics, ergonomics assessment and evaluation, design for usability and user centred design, design for safety and health, design of equipment and hand operated devices and finally designs for the special population. This course will be delivered by applying lectures, lab and problem based approach and continuous assessment will be conducted to assess the understanding of the students on this course. At the end of this course, student will be able to APPLY the ergonomics fundamental principles, human capacity and body mechanics in product design and development process, able to ANALYSIS the application of suitable ergonomics assessment tool to solve the ergonomics issues in product design and to able to PROPOSE effective design solutions in order to enhance product intervention, usability, sustainability and safety for society benefits.

Course Outcome:

1. Ability to apply the ergonomics fundamental and principles in complex engineering work to achieve sustainable industry, society and environment
2. Ability to relate independent and life long learning in managing multidisciplinary environment.
3. Ability to evaluate ergonomic issues using suitable assessment tools and method for society impact.
4. Ability to propose an effective design solution to enhance product intervention, usability, sustainability, and safety for society's benefits.

MMK36003 COMPUTER AIDED ENGINEERING 2 (CAE 2)

No Of Credits: 3

Course Synopsis:

This course exposes the techniques for obtaining solution of fluid flow problems numerically. The aim of this course is to introduce the fundamental application of simulation of fluid dynamics and heat transfer phenomenon and solving thermo-fluids problem via computational method. Holistic approaches of commercial software are essential towards solving, analyzing and evaluating the results of thermo-fluid problems. The course focuses on solving of two and three dimensional fluid flow and heat transfer problems utilize commercial software. The course starts by introducing the history and applications of Computational Fluid Dynamics (CFD). Then it revises the behavior of fluids in motion and derivation of the governing flow equations before detail discussion of various discretization techniques. Moreover, the course discusses the practical guidelines for CFD and simulation of thermo-fluid problems using commercial software.

Course Outcome:

1. Ability to apply the basic concept and knowledge of computational fluid dynamics.
2. Ability to operate the software tools in solving the various thermofluids problems.
3. Ability to explain the processes and findings of computational fluid dynamics analysis in a form of oral and/or written presentation.

MMK36403 DESIGN STUDIO 2

No Of Credits: 3

Course Synopsis:

The students will apply and analyse their knowledge on product design-engineering-technology activities method throughout the course. The students shall be able to analyse advanced product architecture and product design specification. User interaction in relation to the user needs, design concepts, implementing design changes in product materials, product costing, product testing, safety, and sustainability are the topics to be discussed in this course. The course will enhance student in designing skill and communication by combining product design-engineering-technology elements in the project.

Course Outcome:

1. Ability to analyze product part and function in relation to user need in

- product design-engineering-technology problems and solutions.
2. Ability to construct appropriate techniques using CAD/CAE/BIM/Design Application Tools or other related modern tools in product design-engineering-technology problems and solutions.
3. Ability to conduct investigations, and product simulation and testing to enhance product function and usability.
4. Ability to communicate effectively on broadly- defined product design engineering-technology project presentation.
5. Ability to respond to work as an individual and teamwork in multidisciplinary environment through product design-engineering-technology project.
6. Ability to organize a product design-engineering-technology project in a multidisciplinary environment and explore entrepreneurial opportunities.

MMK37503 PRODUCTION MANAGEMENT FOR DESIGNERS

No Of Credits: 3

Course Synopsis:

This course addresses the Product management is an organizational lifecycle function dealing with the planning, forecasting, and production, or marketing of a product or products at all stages of the product lifecycle. Similarly, Product Lifecycle Management (PLM) integrates people, data, processes and business systems. It provides product information for companies and their extended supply chain enterprise. Product management also involves elimination decisions. Product management often serves an inter-disciplinary role, bridging gaps within the company between teams of different expertise, most notably between engineering-oriented teams and commercially oriented teams.

Course Outcome:

1. Ability to analyze the relation between management and stakeholders in Product Lifecycle Management to evaluate the sustainable product development impact to society.
2. Ability to analyze user experience concept to recognize the market needs and market strategy in the face of technology evolution.
3. Analyze product roadmap strategy with business model and financial activities in the entrepreneur activities.

MMK37603 PRODUCT STUDY AND PROFESSIONAL PRACTICE

No Of Credits: 3

Course Synopsis:

Students will learn this course through some case studies where the product and its system development are analyzed in the aspect of design, function and usability based on design guidelines. Students also will be exposed to professional approaches practiced in industry and consulting including project organization and management. Student will learn the professional and ethical responsibilities, corporate identity, branding, and design portfolio concept.

Course Outcome:

1. To apply the corporate identity in the product design
2. Ability to analyze in the aspect of design, usability and function.
3. Ability to follow design guideline in product design
4. Ability to adapt sustainable product development to impact an engineering technology solution in societal and environmental context

MMK37703 DESIGN VISUALIZATION 2

No Of Credits: 3

Course Synopsis:

This course aims to introduce skills and knowledge related to computer graphics and work that can be implemented in the field of artificial product design. Students will be able to understand of computer hardware technology, software phenomena as well as creative field majors. This course covers personal computer construction work and the configuration, installation and implementation of software compatibility testing.

Course Outcome:

1. Ability to construct basic hardwares and softwares assembly and installation
2. Ability to build computer graphics geometry data using CSG and NURBS
3. Ability to compose still images and motions sequences output
4. Ability to compose Virtual Reality geometry codes and Augmented Reality coding

MMK37803 DESIGN FOR MEDICAL DEVICE

No Of Credits: 3

Course Synopsis:

This course addresses major concepts, research and applications based on orthopaedic and joint implants/prosthetics design and development. The theory of bone growth and fracture provides the students with a fundamental understanding of bone behaviour. The course also exposes students to understand the major joint biomechanics and kinematics. Nevertheless, the regulations and medical device standards are also covered in this course to provide a broader picture to the authority bodies

Course Outcome:

1. Ability to understand bone and major joints behaviour, biomechanics, and fracture
2. Ability to evaluate implant design problems from relevant data or literature to propose a valid design solution
3. Ability to evaluate customer needs with consideration to patents/ codes/ standards/ for a design safety/ cultural/ societal/ environmental and human

MMK3XX02 ENGINEERING TECHNOLOGY AND THE WORLD

No Of Credits: 2

Course Synopsis:

This course aims to explain the main concepts in engineering and technology ethics, risk management and occupational safety and health as well as to expose the students to basic of law in the engineering and technology context. The course presents an introductory nature to enable technologists to appreciate factors that have to be taken into account in decision-making. Examine and assess issues and challenges faced by technologists relating to engineering and technology ethics, risk management and to understand the legal requirements related engineering and technology field.

Course Outcome:

1. Ability to explain hazards, the function of risk management and occupational safety and health (OSHA).
2. Ability to analyse the aspects and procedures of legal on engineering and technology issues.
3. Ability to integrate and cooperate the issues and challenges of engineering and technology ethics in the community.

MMK47703 DESIGN FOR MANUFACTURE AND ASSEMBLY

No Of Credits: 3

Course Synopsis:

This course introduces methods and tools that are used in the design process to ease the manufacture and assembly of the part. The term Design For Manufacture (DFM) means to design for ease of manufacture of the parts or component that will form the product, and "Design For Assembly (DFA) means to design the part/component for ease of assembly. Thus, in general, Design For Manufacture and Assembly (DFMA) is the combination of DFA and DFM which directly purposed to (1) Simplify the structure of a product (2) Provide correct, good, and efficient design practices for designers, and (3) Reduce the overall product development cost. Students will learn the design guidelines and rules in DFMA to develop suitable component design according to the Boothroyd Dewhurst DFA Methodology and do the assembly analysis based on handling and insertion time to determine Assembly Efficiency (AE). Students will also learn how to select the appropriate material and manufacturing process of each part or component based on the DFMA concept. Students will have a group project to analyze existing products then propose a better design in the manufacturing and assembly aspects.

Course Outcome:

1. Ability to analyse the existing design for part reduction process based on the concepts and principles of Design For Manufacturing and Assembly (DFMA) using Boothroyd Dewhurst DFA Method.
2. Ability to recommend the suitable materials and manufacturing process based of DFMA method to optimize the process selection.
3. Ability to analyse the manufacturing processes such as casting, sheet metal working, and die casting in order to select the correct process parameters.
4. Ability to propose new design and/or simplify the existing components for products studied in the Mini Project based on the DFMA concept.

MMK28103 PENGUJIAN BAHAN [MATERIAL TESTING]

No Of Credits: 3

Course Synopsis:

This course is designed to expose students to the theory and practical aspects of material testing using destructive and non -destructive tests such as compression testing, tension testing, bending testing, ultrasonic testing, magnetic particle testing and liquid penetration testing. Students will also be introduced to the

mechanical properties of materials such as hardness, brittleness, etc.

Course Outcome:

1. Able to analyze the importance of materials testing, the types of materials testing, the basic of materials imperfection and impurities in solids.
2. Able to evaluate the destructive and non-destructive materials tests.
3. Able to construct various testing techniques such as tensile test, compression test, flexural testing, magnetic particle test and liquid penetration test.
4. Able to response the result and defects that exist on inspection materials through destructive and non-destructive testings.

MMK28203 PERINCIAN BAHAN [MATERIAL CHARACTERIZATION]

No Of Credits: 3

Course Synopsis:

This course is designed to expose students the basic principles of materials characterization. The materials characterization are divided into several sections, including Surface or Topography examination (LM,SEM,SPM), Thermal Analysis (TGA,DSC,DTA), Phase Analysis (XRD) as well as Spectroscopy Analysis (FTIR, AAS).

Course Outcome:

1. Ability to analyse the theory and knowledge of materials characterization by selecting suitable techniques.
2. Ability to analyse materials characterization problems and apply suitable concepts and methods using appropriate analytical tools
3. Ability to trace material properties using various characterization techniques to examine and understand material properties.
4. Ability to propose various characterization techniques for materials selection purposes.

MMK28403 TEKNOLOGI PENGEKSTRAKAN LOGAM [METAL EXTRACTION TECHNOLOGY]

No Of Credits: 3

Course Synopsis:

This course will introduce students to mineral processing and general principle in extracting metal from ore by using metal extraction methods; hydrometallurgy, electrometallurgy and pyrometallurgy. This course will expose students to the advantages of mineral processing and other mineral separation process, leaching technique, electro-recovery and electro-purification of the ore and ore treatment at high temperatures.

Course Outcome:

1. Ability to explain the principle and process involved in mineral processing.
2. Ability to analyse the theory in hydrometallurgy, electrometallurgy and pyrometallurgy.
3. Able to practice the principle and processes involved in mineral processing.
4. Ability to demonstrate mineral or metal extraction process from its ore using hydrometallurgy, electrometallurgy and pyrometallurgy.

MMK28503 PEMROSESAN PLASTIK [PLASTIC PROCESSING]

No Of Credits: 3

Course Synopsis:

This course is designed to provide students with a broad knowledge on the aspect of properties and physical basis of plastic processing, thermoplastic and thermoset processing methods, processing parameters, knowledge on the thermoplastic and thermoset compounding and additives. This also introduces the finishing and assembly of plastic end product and expose students to the impact of solid waste plastic to environment.

Course Outcome:

1. Able to examine the concept of plastic materials and the physical basis of plastic processing.
2. Able to prepare plastic products via different techniques parameter for thermoplastic and thermoset processing.
3. Able to propose the finishing and assembly of plastic processing end products.
4. Able to relate the environmental aspect of plastic products.

MMK2XXX3 ADVANCED CERAMICS MATERIALS TECHNOLOGY

No Of Credits: 3

Course Synopsis:

This course offers an integrated approach to ceramic materials technology by combining the fundamentals of ceramic materials. It emphasizes the selection, preparation, processing, and applications of ceramic materials. Students will gain insights into material and energy-efficient processing methods, environmentally responsible design, and green manufacturing technologies. Topics include raw material optimization, shaping and sintering innovations, glazing and finishing, nanoceramics, and ceramic composites for advanced applications such as aerospace, biomedical, electronics, and energy systems. The course also addresses industrial digitalization trends such as Industry 4.0, ceramic additive manufacturing (CAM), and waste reduction strategies. Learning is supported through lab work, case studies, and design-based mini-projects to nurture critical thinking, collaboration, and innovation.

Course Outcome:

1. Able to analyze basic knowledge of ceramic properties and processes in advanced ceramic technology.
2. Able to compare processing routes suitable for the forming of specific types of ceramic products, including selection of specific equipment used.
3. Able to justify advanced ceramics problems from existing knowledge of technology and science.
4. Able to design the solutions for complex advanced ceramics problems to meet specified needs.

MMK38303 TEKNOLOGI FABRIKASI LOGAM [METAL FABRICATION TECHNOLOGY]

No Of Credits: 3

Course Synopsis:

This course provides knowledge and practice focusing on developing and improving technical skills and knowledge student on different types of metal fabrication techniques such as welding, fitting and cutting. Through this course, advanced concepts and technical skills related to various metal fabrication techniques able to be developed through applications and comprehensive practical skills. Students will have opportunities to reinforce, apply and transfer knowledge and skills to a variety of setting and problems. This helps the student in comprehensive problem solving which related to metal fabrication technology.

Course Outcome:

1. Ability to analyse the processes, tools, and techniques involved in angular measurement, fitting, and metal forming to identify and solve broadly defined engineering problems with attention to sustainable development.
2. Ability to evaluate and contribute to the design of joining and cutting processes to address broadly defined engineering problems, considering factors such as safety, resource efficiency, environmental impact, and whole-life cost.
3. Ability to perform the fitting process in the laboratory using appropriate apparatus and equipment under guidance.
4. Ability to independently perform joining and cutting processes with proper understanding of their types, mechanisms, procedures, and applications.

MMK38403 PEMROSESAN BAHAN KOMPOSIT [COMPOSITE MATERIALS PROCESSING]

No Of Credits: 3

Course Synopsis:

This course is designed to provide the students fundamental knowledge and the important concepts in composite material classification such as metal matrix composites, ceramic matrix composites, polymer matrix composites. Besides that, processing techniques, physical and mechanical properties and limitation of each type of the composites need to be focused. Moreover, students are able to analysis and solve the problems present in the composites system by applying the formulations and calculations. The students are also able to elaborate the fabrication of each composite materials using conventional and advanced processing.

Course Outcome:

1. Ability to analyse and relate the knowledge of science and engineering specialisation to the solution of composite materials processing problems.
2. Ability to evaluate scientific and engineering technology principles to develop and justify sustainable solutions in composite materials processing.
3. Ability to apply suitable fabrication techniques to solve problems in composite material systems.
4. Ability to perform failure test of behavior and strengthening mechanism of composite materials.

MMK3XXX3 PEMILIHAN BAHAN DAN REKA BENTUK UNTUK INOVATOR [MATERIALS SELECTION AND DESIGN FOR INNOVATORS]

No Of Credits: 3

Course Synopsis:

This course builds an understanding of the inter-relationship between selection, materials processing, product design (material, design and processing) and product performance to develop a holistic approach to optimum selection of materials for engineering and industrial applications. Emphasizing innovation and entrepreneurship, the course encourages students to explore new market opportunities by integrating creative design thinking, sustainable material choices, and strategic decision-making. The course integrates vertically and horizontally concepts from all areas of engineering technology and material processing and into a practical design project designed to train the students in the design practice.

Course Outcome:

1. Able to analyze the principle of materials selection and design.
2. Able to identify new business opportunities by evaluating materials, processing, performance and their implication in materials selection and design.
3. Able to decide and provide the solution using materialselection design and analysis.
4. Ability to communicate with team members and public during gaining solution to problem and to make effective presentation to convince the solution provided.
5. Ability to work with team members effectively in carrying out and complete tasks assigned.

MMK39103 PEREKAT DAN PENGLITUP POLIMER [POLYMER ADHESIVE AND COATINGS]

No Of Credits: 3

Course Synopsis:

This course provides an introduction to basic concepts, types of adhesives, typical formulation, coating properties, and application of polymer adhesive and coatings in the polymer technology. The course covers basics principles, methods, properties and resin, surface preparation, and coating system in the polymeric material. The course gives knowledge on the formulation, resin, and applications of adhesive and coatings in the polymer industry such as advanced paint technology and automotive industries.

Course Outcome:

1. Ability to elaborate the knowledge and theory of adhesives and coatings.
2. Ability to analyse different types of adhesives and coatings in practical design solutions.
3. Ability to work collaboratively to propose appropriate coating or adhesive materials based on application needs.
4. Ability to recommend suitable coating methods or painting system according to application requirements for sustainable development.

MMK39303 METALURGI TERMAJU [ADVANCED METALLURGY]

No Of Credits: 3

Course Synopsis:

This course is to get student familiarize on three classical metal alloy classes (i.e. iron and steel, aluminium, copper and their alloys) and deepen their understanding on general characteristic of metals and alloys. Then, enlarge the field of knowledge of students in other technological important classes of Ni-base, Ti-Base and Mg-base alloys along with precious metal metallurgy and intermetallics and their modern developments. Characteristics and formation mechanisms of various microstructures of metals and alloys produced during fabrication processes such as cast/solidification, plastic deformation, and heat treatments are comprehensively introduced.

Course Outcome:

1. Ability to explain the fundamentals of thermodynamics for metallurgy.
2. Ability to evaluate on phase diagram of metals (ferrous and non-ferrous) and its alloys.
3. Ability to demonstrate the principles of phase transformation on the

microstructures and mechanical properties of metals and apply appropriate techniques in process of metal forming.

4. Ability to design a material for specific application based on characteristics of solid solution alloys and intermetallic compound.

MMK39403 TEKNOLOGI BAHAN GEOPOLIMER [GEOPOLYMER MATERIALS TECHNOLOGY]

No Of Credits: 3

Course Synopsis:

Introduction to the geopolymers materials including theory, processing, characterization, and application. The student will be exposed to the basic introduction of geopolymers technology, basic materials of geopolymers including raw materials preparation, raw materials characterization, sintering, and application. The geopolymers will cover ceramic, metal, polymer, and also composite materials. The student will be exposed to the important aspect of geopolymers materials technology including concept, principles, properties, and applications by considering environmental and sustainable development.

Course Outcome:

1. Able to analyze the basic knowledge of Geopolymers process and properties of geopolymers materials technology
2. Able to analyze the materials, processing, and mechanism of geopolymers materials technology
3. Able to evaluate the performance of geopolymers materials, testing and analysis the geopolymers samples
4. Able to design geopolymers properties and application for sustainable development

MMK3XXX3 PEMROSESAN GETAH DAN LATEKS TERMAJU [ADVANCED RUBBER AND LATEX PROCESSING]

No Of Credits: 3

Course Synopsis:

This course explores advanced and smart materials in rubber and latex technology, including nanocomposites, functional additives, and bio-based alternatives. Students will study the chemistry, processing, and performance of high-performance elastomers, focusing on the relationship between structure and behaviour. Emphasis is placed on designing materials for various applications such as in automotive, healthcare, electronics, and wearable technologies.

Course Outcome:

1. Ability to apply knowledge of molecular structure and composition to classify and differentiate advanced rubber and latex materials.
2. Ability to analyse the performance and functions of smart elastomers, including nanocomposite and self-healing systems.
3. Ability to design rubber formulations using nanomaterials, smart fillers, and sustainable additives.
4. Ability to propose material selection and processing techniques in rubber and latex product development.

MMK4XXX3 ANALISIS KEGAGALAN BAHAN [MATERIAL FAILURE ANALYSIS]

No Of Credits: 3

Course Synopsis:

This course is designed to bridge the gap between theory and practice of failure analysis in term of materials aspect. It presents very practical approach to failure analysis for materials engineering students who interested in understanding how knowledge of failure analysis can lead to better productivity, safety and/ or cost saving. A comprehensive overview of the field, this course covers four principal areas of interest, which are procedures for forensic analysis, root-caused of failure, failure mechanisms and recommendation to prevent future failure. The forensic analysis of product/component failures is also studied from beginning to end for certain case studies that normally happen in industries. Student will also be exposed to technical report writing technique.

Course Outcome:

1. Ability to apply basic procedures of forensic failure analysis to evaluate failed components in materials processing.

2. Ability to differentiate and interpret failure mechanisms and root causes in engineering materials through selected case studies.
3. Ability to evaluate material failure cases and propose appropriate corrective or preventive measures to improve safety, performance, and cost-efficiency.
4. Ability to prepare and present a technical failure analysis report in accordance with professional standards.

MMK49203 TEKNOLOGI KACA [GLASS TECHNOLOGY]

No Of Credits: 3

Course Synopsis:

This course is introduced to enhance the knowledge on ceramic materials. It consists of the principles of glass formation, understanding on phase diagram and structure of glass. It will also include the understanding of glass properties and its performance on the final applications.

Course Outcome:

1. Ability to analyze the principles and mechanisms of glass formation by distinguishing the roles of composition, structure, and processing parameters in glass technology.
2. Ability to evaluate phase diagrams and distinguish the structural characteristics of glass in relation to its formation and properties.
3. Ability to evaluate and justify the properties of glass for complex glass design solutions
4. Ability to demonstrate commitment and respect while working in diverse and multidisciplinary teams to interpret phase diagrams and identify structural characteristics of glass.

MMK3XX2 ARTIFICIAL INTELLIGENCE IN MATERIALS PROCESSING AND MANUFACTURING [KECERDASAN BUATAN DALAM PEMROSESAN BAHAN DAN PEMBUATAN]

No Of Credits: 2

Course Synopsis:

This course introduces digital intelligence technologies—including artificial intelligence (AI), machine learning (ML), and data analytics—applied in material manufacturing systems. It focuses on how intelligent digital tools can enhance material selection, process control, defect prediction, and energy efficiency in industrial environments. Through structured lectures, case studies, and software demonstrations, students will explore how AI-driven tools can transform modern materials processing systems to meet the challenges of Industry 4.0.

Course Outcome:

1. Ability to explain fundamental AI concepts and their relevance in material processing and manufacturing systems.
2. Ability to apply AI principles to interpret and evaluate material and manufacturing case studies.
3. Ability to conduct AI-based investigations using structured datasets to draw

- valid conclusions on material or manufacturing performance.
4. Able to communicate effectively through oral and visual presentation of AI-based solutions in material processing and manufacturing.

UR6521006

Bachelor of Technology in Industrial Machining with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

To produce machining technologist that perform related work including machinist, design, manufacturer, maintenance, facility manager and production manager.

PEO 2

To produce technopreneurs in machining related technology.

PEO 3

To produce relevant, respected and referred professionals in machining technology

PROGRAMME OUTCOMES (PO)

PO1

Knowledge: Apply knowledge of technology fundamentals to broadly-defined procedures processes, systems and methodologies in machining technology.

PO2

Practical Skills and High Technology: Able to suggest and apply latest tools and techniques to solve broadly-defined problems.

PO3

Analytical, Critical Thinking and Scientific Approach: Demonstrate strong analytical and critical thinking skills to solve broadly-defined problems in machining technology.

PO4

Communication Skills: Able to communicate and articulate effectively in both verbal and written among technologist communities and society at large.

PO5

Social Responsibility in Society and Technologist Community: Demonstrate understanding of the societal related issues and the consequent responsibilities relevant to broadly-defined technology practices.

PO6

Lifelong Learning and Information Management: Recognize the needs for professional development and to engage independent lifelong learning in specialist technologists.

PO7

Technopreneurship and Management Skills: Demonstrate an awareness of management and technopreneurship practices in real perspective.

PO8

Ethics and Professionalism: Demonstrate professionalism and social and ethical consideration.

PO9

Teamwork and Leadership: Demonstrate leadership quality, mentoring and work effectively in diverse teams

CURRICULUM STRUCTURE UR6521006 BACHELOR OF TECHNOLOGY IN INDUSTRIAL MACHINING WITH HONOURS INTAKE 2025/20256								
YEAR	FIRST		SECOND		THIRD			FOURTH
SEMESTER	1	2	3	4	5	6	BREAK	7
DISCIPLINE CORE & ELECTIVE COURSES (104 CREDITS)	MMT15003 Product Drafting and Specification	MMT15404 Tool Setup and Refurbishment	MMT25004 Precision and Finishing in CNC Technology	MMT25404 Multi Axis Machining	MMT35004 Assembly Method	MMT32510 Final Industrial Project		MMT49912 Industrial Training
	MMT15103 Standard Product Precision	MMT15503 Sustainable Machining	MMT25103 Precision and Finishing in EDM and Grinding Technology	MMT25503 Complex CAD/CAM Product	**MMTXXX04 Electives	MMT35304 Project Management and Supervision		
	MMT15203 Workpiece and Cutting Tool Properties	MMT15603 Assessment of Machinability	MMT25204 Prismatic CAD/CAM Product	MMT25603 Heat Treatment of Machined Component	MMT35104 Rework and Rehabilitation of Machined Component	MMT35404 Acts and Risks Assessment in Machining Production		
	MMT15303 Jig and Fixture	MMT15703 Condition Monitoring in Machining	MMT25304 Surface Aesthetics of Machined Component	MMT25804 Technopreneur Project 1	MMT35204 Technopreneur Project 2	MMT35504 Machine Maintenance		
UNIVERSITY REQUIREMENT COURSES (18 CREDITS)	SMZ1XX01 Co-Curriculum 1	SMZ2XX01 Co-Curriculum 2	SMB1XX02 Third Language ^[5]	SMU22402 Engineering Entrepreneurship	SMU13102 Appreciation of Ethics and Civilization			
	SMB41002 University Malay Language ^[3]	SMU13002 Philosophy and Current Issues	SMB31202 English for Technical Communication					
	SMU12102 Integrity and Anti- Corruption ^[4]	SMB20102 English for General Communication ^[2]						
TOTAL CREDITS (122 CREDITS)	17	18	19	16	18	16	6	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]							

****Elective courses :** MMT35604 Tool and Die Making, MMT35704 Aerospace Machining, MMT35804 Rapid Machining, MMT35903 Human Factor Technology, MMT36004 Production Planning in Machining

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).
SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

[5] SMB1XX02: Germany, Mandarin or Japanese

UR6525001

Bachelor of Technology in Automotive with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

To produce automotive technologists that perform automotive related work including diagnostic specialist and retrofit specialist.

PEO 2

To produce technopreneurs in automotive related technology.

PEO 3

To produce relevant respected referred professionals in automotive technology.



PROGRAMME OUTCOMES (PO)

PO1

Knowledge: Apply knowledge of technology fundamentals to broadly-defined procedures, processes, systems, and methodologies in the field of automotive study.

PO2

Practical Skills/ Modern Tools Usage: Able to suggest and apply latest tools and techniques to solve broadly-defined problems.

PO3

Analytical, Critical Thinking and Scientific Approach: Demonstrate strong analytical and critical thinking skills to solve broadly-defined problems in automotive study.

PO4

Communication Skills: Able to communicate and articulate effectively in both verbal and written among technologist communities and society at large.

PO5

Social and responsibility in society and Technologist community: Demonstrate understanding of the societal related issues and the consequent responsibilities relevant to broadly-defined technology practices

PO6

Life Long Learning and Information Management: Recognize the needs for professional development and to engage independent lifelong learning in specialist technologists.

PO7

Entrepreneurs and Management skills: Demonstrate an awareness of management and technopreneurship practices in real perspective.

PO8

Ethics and Professionalism: Demonstrate professionalism and social and ethical consideration.

PO9

Team work and Leadership: Demonstrate leadership quality, mentoring and work effectively in diverse teams.

CURRICULUM STRUCTURE								
UR6525001 BACHELOR OF TECHNOLOGY IN AUTOMOTIVE WITH HONOURS INTAKE 2025/2026								
YEAR	FIRST		SECOND		THIRD			FOURTH
SEMESTER	1	2	3	4	5	6	BREAK	7
DISCIPLINE CORE & ELECTIVE COURSES (104 CREDITS)	MMT11004 Automotive Industry & Technology	MMT11303 Shopfloor Supervision	MMT21003 Project Management	MMT20404 Powertrain System Service	MMT31003 Automotive Legislation	MMT32510 Industrial Final Project		MMT49912 Industrial Training
	MMT11103 Automotive Drafting	MMT11404 Automotive Component Design & Assembly	MMT21104 Autotronic System Service	MMT21304 Technopreneur Project 1	MMT31104 Technopreneur Project 2	MMT31306 Quality Management		
	MMT11204 Automotive Workshop Practice	MMT11504 Automotive Component Fabrication	MMTXXX04 Elective I	MMTXXX04 Elective III	MMT31202 Vehicle Marketing	MMT31403 Risk Assessment		
			MMTXXX04 Elective II	MMTXXX04 Elective IV	MMTXXX04 Elective V	MMT31603 Asset & Inventory Management		
					MMTXXX04 Elective VI			
UNIVERSITY REQUIREMENT COURSES (18 CREDITS)	SMZ1XX01 Co-Curriculum 1	SMZ2XX01 Co-Curriculum 2	SMB1XX02 Third Language ^[5]	SMU22402 Engineering Entrepreneurship	SMU13102 Appreciation of Ethics and Civilization			
	SMB41002 University Malay Language ^[3]	SMU13002 Philosophy and Current Issues	SMB31202 English for Technical Communication					
	SMU12102 Integrity and Anti-Corruption ^[4]	SMB20102 English for General Communication ^[2]						
TOTAL CREDITS (122 CREDITS)	16	16	19	18	19	16	6	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]							

- Elective I** : MMT 21404 Commercial Vehicle Servicing / MMT21504 Surface Design
Elective II : MMT21604 Drivetrain Maintenance / MMT21704 Automotive Modelling
Elective III : MMT21804 Vehicle Performance Analysis / MMT21904 Exterior Design
Elective IV : MMT22004 Vehicle Fault Diagnosis / MMT22104 Component Remanufacturing
Elective V : MMT31704 Hybrid Servicing / MMT31804 Interior Design
Elective VI : MMT31904 Electric Vehicle Service / MMT32004 Painting

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

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[4] International students should register SMU13202 Malaysian Studies.

[5] SMB1XX02: Germany, Mandarin or Japanese

UR6521005

Bachelor of Technology in Welding with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

To produce welding technologist that perform related welding work including maintenance, fabricator, design, safety advisor and production manager.

PEO 2

To produce technopreneurs in related welding technology.

PEO 3

To produce relevant respected referred professionals in welding technology

PROGRAMME OUTCOMES (PO)

PO1

Knowledge: Apply knowledge of technology fundamentals to **broadly-defined** procedures processes, systems and methodologies in **welding technology**.

PO2

Practical Skills/ Modern Tools Usage: Able to suggest and apply latest tools and techniques to solve **broadly-defined** problems.

PO3

Analytical, Critical Thinking and Scientific Approach: Demonstrate strong analytical and critical thinking skills to solve broadly-defined problems in welding technology.

PO4

Communication Skills: Able to **communicate and articulate** effectively in both verbal and written among technologist communities and society **at large**.

PO5

Social and responsibility in society and Technologist community: Demonstrate understanding of the societal related issues and the consequent responsibilities relevant to **broadly-defined** technology practices

PO6

Life Long Learning and Information Management: Recognize the needs for professional development and to engage independent lifelong learning in **specialist technologists**.

PO7

Entrepreneurs and Management skills: Demonstrate an awareness of management and technopreneurship practices in real perspective

PO8

Ethics and Professionalism: Demonstrate professionalism and social and ethical consideration.

PO9

Team work and Leadership: Demonstrate leadership quality, mentoring and work effectively in diverse teams.

CURRICULUM STRUCTURE UR6521005 BACHELOR OF TECHNOLOGY IN WELDING WITH HONOURS INTAKE 2025/2026								
YEAR	FIRST		SECOND		THIRD			FOURTH
SEMESTER	1	2	3	4	5	6	BREAK	7
DISCIPLINE CORE & ELECTIVE COURSES (104 CREDITS)	MMT13004 CAD and Welding Graphics	MMT13303 Product Design in Welding	MMT23004 Material Behaviour in Welding	MMT23604 Computer Aided Analysis	MMT33004 Welding Quality Assurance	MMT32510 Industrial Final Project		MMT49912 Industrial Training
	MMT13104 Safety in Welding	MMT13404 Welding Documentation	MMT23104 Safety Management	MMT23704 Imperfection In Welding and Testing	MMT33104 Economic Of Welding and Procurement	MMT33403 Cyber Physical System in Welding		
	MMT13204 [Metal Fabrication Process]	MMT13504 Non-Conventional Welding Process	MMT23204 Welding Design Analysis	MMT23804 Welding Electrical Equipment	MMT33204 Non-Destructive Test [Ujian Tanpa Musnah]	MMT33504 Reclamation Workshop		
			ELECTIVE I	MMT23904 Technopreneur Project 1	MMT33304 Technopreneur Project 2	MMT33604 Managing Production and Supervision		
UNIVERSITY REQUIREMENT COURSES (18 CREDITS)	SMZ1XX01 Co-Curriculum 1	SMZ2XX01 Co-Curriculum 2	SMB1XX02 Third Language ^[5]	SMB31202 English for Technical Communication	SMU13102 Appreciation of Ethics & Civilization			
	SMB41002 University Malay Language ^[3]	SMU13002 Philosophy and Current Issues						
	SMU12102 Integrity and Anti- Corruption ^[4]	SMB20102 English for General Communication ^[2]						
		SMU22402 Engineering Entrepreneurship						
TOTAL CREDITS (122 CREDITS)	17	18	18	18	18	15	6	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]							

Elective 1 : MMT23304 Welding Technology / MMT23404 NDT Professional / MMT23504 Welding Inspection

- [1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).
SMB10102 Preparatory English is an Audit course.
- [2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.
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- [5] SMB1XX02: Germany, Mandarin or Japanese

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
MMT11004	Industri & Teknologi Automotif [Automotive Industry & Technology]	-
MMT11103	Lukisan Automotive [Automotive Drafting]	-
MMT11204	Amalan Bengkel Automotif [Automotive Workshop Practice]	-
MMT11303	Penyeliaan Bahagian Pengeluaran [Shopfloor Supervision]	-
MMT11404	Reka Bentuk Komponen Automotif & Pemasangan [Automotive Component Design & Assembly]	-
MMT11504	Fabrikasi Komponen Automotif [Automotive Component Fabrication]	-
MMT21003	Pengurusan Projek [Project Management]	-
MMT21104	Servis Sistem Autotronik [Autotronic System Service]	-
MMT 21404	Servis Kenderaan Perdagangan [Commercial Vehicle Servicing]	-
MMT21504	Reka Bentuk Permukaan [Surface Design]	-
MMT21604	Penyenggaraan Rangkaian Pemacu [Drivetrain Maintenance]	-
MMT21704	Permodelan Automotif [Automotive Modelling]	-
MMT20404	Servis Sistem Rangkaian Kuasa [Powertrain System Service]	-
MMT21304	Projek Keusahawanan Teknologi Projek 1 [Technopreneur Project 1]	-
MMT21804	Analisa Prestasi Kenderaan [Vehicle Performance Analysis]	-
MMT21904	Reka Bentuk Luaran [Exterior Design]	-
MMT22004	Diagnosis Kegagalan Kenderaan [Vehicle Fault Diagnosis]	-
MMT22104	Pembuatan Semula Komponen [Component Remanufacturing]	-

COURSE CODE	COURSE NAME	SDG
MMT31003	Perundangan Automotif [Automotive Legislation]	-
MMT31104	Projek Keusahawanan Teknologi Projek 2 [Technopreneur Project 2]	-
MMT31202	Pemasaran Kenderaan [Vehicle Marketing]	-
MMT31704	Servis Hibrid [Hybrid Servicing]	-
MMT31804	Reka Bentuk Dalamam [Interior Design]	-
MMT31904	Servis Kenderaan Elektrik [Electric Vehicle Service]	-
MMT32004	Mengecat [Painting]	-
MMT31306	Pengurusan Kualiti [Quality Management]	-
MMT31403	Penilaian Risiko [Risk Assessment]	-
MMT31603	Pengurusan Aset & Inventori [Asset & Inventory Management]	-
MMT32510	Projek Akhir Industri [Industrial Final Project]	-
MMT49912	Latihan Industri [Industrial Training]	-
MMT13004	CAD dan Grafik Kimpalan [CAD and Welding Graphics]	-
MMT13104	Keselamatan dalam Kimpalan [Safety in Welding]	-
MMT13204	Proses Fabrikasi Logam [Metal Fabrication Process]	-
MMT13303	Rekabentuk Produk dalam Kimpalan [Product Design in Welding]	-
MMT13404	Dokumentasi Kimpalan [Welding Documentation]	-
MMT13504	Proses Kimpalan Bukan Konvensional [Non-Conventional Welding Process]	-
MMT23004	Perilaku Bahan dalam Kimpalan [Material Behaviour in Welding]	-

COURSE CODE	COURSE NAME	SDG
MMT23104	Pengurusan Keselamatan [Safety Management]	-
MMT23204	Analisis Reka Bentuk Kimpalan [Welding Design Analysis]	-
MMT23304	Teknologi Kimpalan untuk Profesional [Welding Technology for Professional]	-
MMT23404	Ujian Tanpa Musnah untuk Amalan Profesional [NDT for Professional Practice]	-
MMT23504	Pemeriksaan Kimpalan untuk Profesional [Welding Inspection for Professional]	-
MMT23604	Analisis Berbantu Komputer [Computer Aided Analysis]	-
MMT23704	Pengujian & Ketidaksempurnaan Kimpalan [Imperfection in Welding & Testing]	-
MMT23804	Peralatan Kimpalan Elektrik [Welding Electrical Equipment]	-
MMT23904	Projek Keusahawanan Teknologi 1 [Technopreneur Project 1]	-
MMT33004	Jaminan Kualiti Kimpalan [Welding Quality Assurance]	-
MMT33104	Ekonomi Kimpalan & Perolehan [Economics of Welding & Procurement]	-
MMT33204	Ujian Tanpa Musnah [Non-Destructive Testing]	-
MMT33304	Projek Keusahawanan Teknologi 2 [Technopreneur Project 2]	-
MMT33403	Sistem Fizikal Siber dalam Kimpalan [Cyber Physical System in Welding]	-
MMT33504	Bengkel Pemulihan [Reclamation Workshop]	-
MMT33604	Pengurusan Pengeluaran & Pengawasan [Managing Production & Supervision]	-
MMT15003	Lukisan Produk Dan Spesifikasi [Product Drafting And Specification]	-
MMT15103	Kepersisian Produk Piawaian [Standard Product Precision]	-
MMT15203	Sifat-Sifat Bahan Kerja Dan Alat Pemotong [Workpiece and Cutting Tool Properties]	-

COURSE CODE	COURSE NAME	SDG
MMT15303	Jig Dan Lekapan [Jig and Fixtures]	-
MMT15404	Penyediaan Dan Baik Pulih Mata Alat [Tool Setup and Refurbishment]	-
MMT15503	Pemesinan Mapan [Sustainable Machining]	SDG 12
MMT15603	Taksiran Kebolehmesinan [Assessment Of Machinability]	-
MMT15703	Pemantauan Keadaan Dalam Pemesinan [Condition Monitoring in Machining]	-
MMT25004	Kepersisian Dan Kemasan Dalam Teknologi CNC [Precision and Finishing in CNC Technologies]	-
MMT25103	Kepersisian Dan Kemasan Dalam Teknologi EDM Dan Pencanaian [Precision and Finishing in EDM And Grinding Technology]	-
MMT25204	Produk CAD/CAM Prismatic [Prismatic CAD/CAM Product]	-
MMT25304	Estetika Permukaan Komponen Mesin [Surface Aesthetic of Machined Component]	-
MMT25404	Pemesinan Berbilang Paksi [Multi Axis Machining]	-
MMT25503	Produk Cadcam Kompleks [Complex Cadcam Product]	-
MMT25603	Rawatan Haba Komponen Mesin [Heat Treatment of Machined Component]	-
MMT25804	Projek Keusahawanan Teknologi 1 [Technopreneur Project 1]	-
MMT35004	Kaedah Pemasangan [Assembly Method]	-
MMT35104	Kerja Semula Dan Pemulihan Komponen Mesin [Rework and Rehabilitation of Machined Components]	-
MMT35204	Projek Keusahawanan Teknologi 2 [Technopreneur Project 2]	-
MMT35704	Pemesinan Aeroangkasa [Aerospace Machining]	-
MMT35304	Pengurusan Dan Penyeliaan Projek [Project Management And Supervision]	-

COURSE CODE	COURSE NAME	SDG
MMT35404	Akta Dan Taksiran Risiko Di Dalam Pengeluaran Pemesinan [Acts and Risks Assessment in Machining Production]	-
MMT35504	Penyelenggaraan Mesin [Machine Maintenance]	-
MMT36004	Perancangan Pengeluaran Dalam Pemesinan [Production Planning In Machining]	-

MMT11004 AUTOMOTIVE INDUSTRY AND TECHNOLOGY

No of Credits: 4

Course Synopsis:

This course is designed to expose students to the knowledge of the automotive industry and technological revolutions that have happened globally. It also introduces knowledge of automotive industry revolutions, national automotive policy, and the automotive ecosystem in general. Students will be exposed to current automotive activity processes, enabling them to view the latest technology developments and the role of responsible agencies in monitoring the industry.

Course Outcomes:

1. Ability to relate the emerging smartness technology in the automotive industry.
2. Ability to demonstrate knowledge of various systems used and their role in the automotive industrial world.
3. Ability to justify the opportunities, challenges brought about by industry, and how organisations and individuals should prepare to reap the benefits.

MMT11103 AUTOMOTIVE DRAFTING

No of Credits: 3

Course Synopsis:

This course introduces methods used to generate 2D drawings typically applied in industries. Students will learn the suitable views and methods for generating dimensions on selected views. The course also covers geometric dimensioning and tolerancing, along with manufacturing process symbols in drafting practices, to aid in producing accurate and efficient technical drawings for communication. Students will have the opportunity to re-create existing automotive component CAD data and propose 2D drafting drawings with respect to manufacturing aspects. Additionally, topics of power system engineering—such as generation, transmission, and distribution—will be introduced, with emphasis on subjects including per-unit systems, transmission line parameters and models, load characteristics, fault, and protection systems.

Course Outcomes:

1. Ability to apply knowledge and comprehension in generating 2D drafting for technical communication purposes.
2. Ability to construct 2D views and 2D drafting with correct dimensions, tolerances, and symbols.

3. Ability to demonstrate automotive component drafting with correct dimensions, tolerances, and symbols.

MMT11204 AUTOMOTIVE WORKSHOP PRACTICE

No of Credits: 4

Course Synopsis:

This course introduces students to the operation of general vehicle servicing for internal combustion engines. The coverage includes service, repair, maintenance, design, and testing of both conventional and internal combustion engines. Students will also learn to solve engineering problems in real time by applying knowledge and integrating new information. The course emphasizes workshop practices as a foundation for developing competence in handling essential automotive systems and components.

Course Outcomes:

1. Ability to apply knowledge on essential components in automotive systems.
2. Ability to follow basic routine maintenance for major automotive components.
3. Ability to demonstrate effective work in diagnostic procedures and resources in workshop settings.

MMT11303 SHOPFLOOR SUPERVISION

No of Credits: 3

Course Synopsis:

Shop Floor Supervision is the system by which standards for running daily operations are established, maintained, controlled, and improved. The approach focuses on continuously enhancing daily operations to achieve better outcomes in safety, quality, cost, delivery, and morale across business operations. Emphasis is placed on waste elimination at all levels within the manufacturing system. Students will be trained in techniques required to analyze manufacturing systems and design improved methods and layouts. The main application of this module will be the integration of these techniques into simulated industrial scenarios.

Course Outcomes:

1. Ability to determine the philosophy and foundation of shopfloor supervision.
2. Ability to assemble the shopfloor layout.
3. Ability to explain good leadership and teamwork in shopfloor supervision.

MMT11404 AUTOMOTIVE COMPONENT DESIGN & ASSEMBLY

No of Credits: 4

Course Synopsis:

This course introduces methods used for constructing 3D CAD data, which is widely applied in industries. Students will learn techniques for generating 3D CAD data to produce accurate and effective representations for technical communication purposes. Emphasis is placed on the construction of 3D CAD data of automotive components while considering relevant manufacturing processes. Students will gain the necessary skills to construct, assemble, and interpret 3D CAD drawings for automotive applications.

Course Outcomes:

1. Ability to apply knowledge and comprehension in generating 3D CAD drawings for technical communication purposes.
2. Ability to construct 3D CAD data based on manufacturing processes using proper tool features.
3. Ability to demonstrate 3D CAD data of automotive components considering complete assembly and design.

MMT11504 AUTOMOTIVE COMPONENT FABRICATION

No of Credits: 4

Course Synopsis:

Automotive manufacturing processes play a crucial role in determining vehicle design characteristics and overall cost. This course emphasizes selecting appropriate manufacturing processes to fabricate automotive components effectively. Students will differentiate between the capabilities and limitations of each process to fabricate components according to specified design tolerances. Topics covered include sheet metal forming, joining, machining, finishing, painting, composites, and engine manufacturing processes.

Course Outcomes:

1. Ability to determine the fundamental concepts of manufacturing processes in automotive.
2. Ability to construct various skills of manufacturing techniques individually or in groups.
3. Ability to explain the manufacturing process of automotive components based on a Standard Operating Procedure (SOP).

MMT21003 PROJECT MANAGEMENT

No of Credits: 3

Course Synopsis:

This subject emphasizes the principles of project management, highlighting the importance and interrelationship of its components. Students will learn about project management process groups (initiating, planning, executing, controlling, and closing) and project knowledge areas such as integration, scope, time, cost, quality, human resources, communications, risks, and procurement. The course introduces tools for supporting analysis and project implementation. Key topics include initiating and planning projects, working with management, project appraisal and sensitivity, creating budgets, managing uncertainties and risks, breaking down project structures, and contract laws. Students will also learn about revising projects, monitoring progress, and completing projects effectively.

Course Outcomes:

1. Ability to analyze the core concepts and principles, functions, and processes of project management.
2. Ability to apply the knowledge of project management to solve project problems.
3. Ability to demonstrate team or group collaboration in implementing project goals.

MMT21104 AUTOTRONIC SYSTEM SERVICE

No of Credits: 4

Course Synopsis:

This course emphasizes the theory, operation, and application of automotive electrical and electronic systems. Coverage includes vehicle electrical wiring systems, sensors and actuators, engine control systems, ignition systems, starting systems, lighting systems, chassis electrical systems, auxiliary systems, mechatronics, and automotive networking. Students will develop the ability to diagnose, service, and maintain automotive electrical and electronic components while applying structured reporting and teamwork skills.

Course Outcomes:

1. Ability to identify the components of automotive electrical and electronic systems.
2. Ability to perform the functions and operations of automotive electrical and electronic systems.
3. Ability to explain automotive electrical and electronic systems comprehensively.

MMT21404 POWERTRAIN SYSTEM SERVICE

No of Credits: 4

Course Synopsis:

This course focuses on powertrain system services for light and heavy vehicles, emphasizing the engine and transmission systems. Topics include engine designs, engine cleaning, lower and upper end service, intake and exhaust systems, manual and automatic transmission systems, transaxle service, and powertrain lubrication systems. Students will learn to diagnose, disassemble, reassemble, and service powertrain components while identifying and resolving system faults.

Course Outcomes:

1. Ability to describe the principle and design of powertrain system components.
2. Ability to demonstrate services on engine and transmission system components.
3. Ability to solve various problems related to powertrain system service.

MMT21304 TECHNOPRENEUR PROJECT 1

No of Credits: 4

Course Synopsis:

This course exposes students to financial aspects relating to new ventures, including approaches to secure start-up capital and venture financing. Students will learn about basic accounting, financial indicators, and tools for evaluating company worth and cash flow. The course also addresses securing financing, valuing a company, assessing investment opportunities, intellectual property, and business plan development. Emphasis is placed on negotiation with investors and applying effective project management and technopreneurial skills in solving given problems.

Course Outcomes:

1. Ability to apply various financial indicators and tools to prepare financial information for a business venture.
2. Ability to explain effective project management and technopreneurial skills in solving given problems.
3. Ability to demonstrate teamwork and leadership in completing entrepreneurial project tasks.

MMT21404 COMMERCIAL VEHICLE SERVICING

No of Credits: 4

Course Synopsis:

Commercial vehicles are motor vehicles designed for transporting goods or paying passengers. This course introduces students to commercial vehicle servicing, covering laws, regulations, maintenance, and repair of commercial vehicle systems and engines. Students will gain an understanding of commercial vehicle components such as brake systems, diesel engines, piston and cylinder repairs, and transmission systems. Emphasis is placed on applying structured servicing and repair practices according to industry standards.

Course Outcomes:

1. Ability to identify rules, regulations, and components of the commercial vehicle system.
2. Ability to perform various servicing and repair skills as an individual or in groups.
3. Ability to explain servicing and maintenance procedures according to Standard Operating Procedure (SOP).

MMT21504 SURFACE DESIGN

No of Credits: 4

Course Synopsis:

This course introduces surfacing methods used to construct 3D CAD data, widely applied in the automotive and industrial design fields. Students will learn suitable techniques for industrial design surfacing that enable efficient and accurate generation of surface data for technical communication purposes. The course also includes a mini-project requiring students to construct 3D CAD data of automotive components using surfacing modules, with an emphasis on surface quality and verification.

Course Outcomes:

1. Ability to illustrate surfacing data for technical communication purposes.
2. Ability to construct surfacing data with quality emphasis using proper tools and features.
3. Ability to explain surfacing data obtained from scanning automotive vehicles or components.

MMT21604 DRIVETRAIN MAINTENANCE

No of Credits: 4

Course Synopsis:

This course introduces chassis load and tire contact forces, including modeling of chassis dynamics in vertical, lateral, and longitudinal directions. It covers performance criteria and introduces the suspension test machine for evaluating suspension characteristics. Students will analyze the effects of suspension parameters on chassis dynamics, focusing on semi-active and active suspension systems. The course also emphasizes drivetrain servicing, maintenance, and repair practices to ensure reliable performance of automotive systems.

Course Outcomes:

1. Ability to analyze kinematics and dynamics principles, concepts, and working principles of advanced drivetrain components.
2. Ability to perform tests on drivetrain components.
3. Ability to explain their findings to an audience using various tools and media.

MMT21704 AUTOMOTIVE MODELLING

No of Credits: 4

Course Synopsis:

This course provides students with the knowledge and skills required in the modelling process for automotive design development. Students will apply various methods and techniques in modelling scale vehicle models, automotive components, and fabricating working parts for automotive purposes. Emphasis is given to integrating materials, tools, and processes to produce professional-grade models. The course also cultivates analytical and problem-solving skills in constructing models based on technical specifications, with exposure to advanced equipment and fabrication tools.

Course Outcomes:

1. Ability to integrate relevant materials, technology, and processes.
2. Ability to construct 3-dimensional physical models based on 2-dimensional data using appropriate tools, equipment, and materials.
3. Ability to organize systematic workflows and processes in completing a model to industry standards.

MMT21804 VEHICLE PERFORMANCE ANALYSIS

No of Credits: 4

Course Synopsis:

This course introduces students to methods for analyzing vehicle performance. Students will learn to distinguish vehicle performance analysis methods and parameters, applying both theoretical and practical approaches. Coverage includes engine performance analysis, engine performance parameters, engine testing and test facilities, brake and power measurement of an engine, analyzing fuel consumption testing, and other vehicle testing methods commonly practiced in industry. Emphasis is given to both analytical instrumentation methods and real vehicle data analysis, with attention to cognitive, psychomotor, and affective domains of learning.

Course Outcomes:

1. Ability to determine vehicle performance analysis methods and parameters.
2. Ability to demonstrate chassis dynamometer testing for engine performance.
3. Ability to interpret vehicle performance data based on measurement and analysis.

MMT21904 EXTERIOR DESIGN

No of Credits: 4

Course Synopsis:

This course provides students with knowledge and skills in automotive exterior design and development processes. Students will apply methods and techniques for developing exterior vehicle design illustrations, transforming 2D ideas into 3D physical models. Coverage includes packaging design, sketching, digital rendering, simulation, and presentation techniques. The course emphasizes both technical principles and professional skills relevant to automotive design practices.

Course Outcomes:

1. Ability to evaluate vehicle exterior design based on fundamental principles and technical knowledge.
2. Ability to construct two-dimensional and three-dimensional exterior design using suitable tools and techniques.
3. Ability to propose and present design ideas effectively to an audience using structured tools and methods.

MMT22004 VEHICLE FAULT DIAGNOSIS

No of Credits: 4

Course Synopsis:

This course introduces diagnostic equipment, tools, and general electrical system diagnostics for vehicles. Students will learn to describe diagnostic tools and methods used to evaluate vehicle performance, covering engine, drivetrain, powertrain, and control components. The course emphasizes identification of proper procedures required to diagnose faults in vehicle systems. Students will also be trained to propose corrective and preventive measures, while observing relevant safety precautions and methodologies in fault diagnosis.

Course Outcomes:

1. Ability to describe various diagnostic tools and methods for vehicle components and systems.
2. Ability to demonstrate vehicle fault diagnosis using appropriate methods and equipment.
3. Ability to propose precautionary and corrective measures in conducting vehicle system diagnosis.

MMT22104 COMPONENT REMANUFACTURING

No of Credits: 3

Course Synopsis:

This course introduces additive manufacturing and reverse engineering techniques for component remanufacturing. Students will gain experience in 3D scanning and fabrication processes using additive manufacturing technology. The course emphasizes redesigning and reconstructing automotive components by applying suitable tools and processes. Through practical applications, students will enhance their ability to restore automotive parts to functional conditions with improved reliability.

Course Outcomes:

1. Ability to combine a wide range of additive manufacturing processes, engineering concepts, and tools in component remanufacturing.
2. Ability to construct parts and components using additive manufacturing methods and materials.
3. Ability to perform systematic workflows and processes for remanufacturing components effectively.

MMT31003 AUTOMOTIVE LEGISLATION

No of Credits: 3

Course Synopsis:

This course provides knowledge and theoretical understanding of legislative and regulatory frameworks in the automotive sector. Students will explore national and international automotive policies, safety requirements, and legal standards. The course covers automotive standards in Malaysia, national automotive policy, safety regulations, and vehicle inspection procedures. Emphasis is placed on interpreting policies and proposing vehicle inspection requirements in accordance with the Malaysian Road Safety framework.

Course Outcomes:

1. Ability to justify automotive standards available globally and in the Malaysian National Automotive Policy.
2. Ability to interpret vehicle safety requirements related to Malaysian Road Safety.
3. Ability to propose vehicle inspection requirements.

MMT31104 TECHNOPRENEUR PROJECT 2

No of Credits: 4

Course Synopsis:

This course focuses on the organizational, human resource, and financial aspects required to manage and sustain new ventures. Students will learn how to secure venture funding, design organizational structures, and develop business plans. The course emphasizes managing human resources, building strong teams, handling conflicts, and developing leadership skills. Additionally, students will gain experience in valuing businesses, identifying components of a business plan, and presenting business proposals to attract investors.

Course Outcomes:

1. Ability to design organizational structures necessary to grow a business.
2. Ability to discuss business models effectively.
3. Ability to influence and motivate staff and stakeholders to build a cohesive organization.

MMT31202 VEHICLE MARKETING

No of Credits: 2

Course Synopsis:

This course introduces the fundamentals of vehicle marketing, focusing on the relationship between consumer behavior and vehicle selling. Students will learn how to market vehicles, analyze marketing management activities, and assess market value. Coverage includes marketing concepts, marketing environment, financial strategy, competitive strategy, regulation in imported vehicles, and development of marketing strategies. The course emphasizes practical applications of marketing knowledge within the automotive industry.

Course Outcomes:

1. Ability to identify technology related to strategic marketing that supports entrepreneurs in developing new business prospects.
2. Ability to explain the 4Ps of marketing for automotive services and identify the role of marketing strategies.
3. Ability to analyze various marketing management activities in entrepreneurship and technology-based industry competitiveness, as well as produce a marketing plan report.

MMT31306 QUALITY MANAGEMENT

No of Credits: 6

Course Synopsis:

This course introduces concepts, theories, and applications of quality management in organizations. Students will learn basic quality principles and practices, quality problem-solving techniques, and product reliability as applied to the automotive industry. Emphasis is placed on the application of total quality management (TQM), control plans, and failure mode analysis, as well as the implementation of quality tools and techniques in organizations. The course also covers data collection, quality inspection, and improvement methods.

Course Outcomes:

1. Ability to adapt quality principles and techniques in quality processes in an ethical and professional manner.
2. Ability to solve quality problems using appropriate quality tools and techniques.
3. Ability to organize the implementation of quality management in automotive organizations.

MMT31403 RISK ASSESSMENT

No of Credits: 3

Course Synopsis:

This course introduces the fundamentals of risk management, including risk identification, risk analysis, risk prioritization, and risk treatment. Students will be trained to identify workplace hazards, classify different types of risks, and propose effective control measures. The course also emphasizes the development of leadership qualities, teamwork, and effective communication skills in diverse settings. Students will be able to produce structured risk assessments and countermeasure reports, while demonstrating their ability to communicate ideas effectively in both written and oral forms within the scope of risk management.

Course Outcomes:

1. Ability to identify risk hazards presented in the workplace.
2. Ability to demonstrate suitable and effective risk control measures.
3. Ability to propose suitable risk treatment in the workplace.

MMT31603 ASSET & INVENTORY MANAGEMENT

No of Credits: 3

Course Synopsis:

This course introduces the principles, methods, and practices related to industrial asset and inventory management. Students will learn the processes of asset management, inventory control, and demand forecasting, as well as the application of best practices in organizing and managing inventories. Emphasis is placed on applying ethical values in asset and inventory systems and integrating management practices into industrial contexts. The course also focuses on enhancing students' ability to manage information, exercise teamwork, and demonstrate professionalism in handling asset and inventory systems.

Course Outcomes:

1. Ability to identify types of assets and inventory management systems while applying ethical values professionally.
2. Ability to coordinate and manage an inventory system effectively.
3. Ability to propose appropriate asset and inventory management processes using suitable methods and best practices.

MMT31804 INTERIOR DESIGN

No of Credits: 4

Course Synopsis:

This course introduces the principles of automotive interior design in terms of conceptual design, safety, structures, aesthetics, and the integration of new technological approaches. Students will gain an understanding of the methodologies applied in designing and fabricating vehicle interior components, including mock-up construction, instrument panel and assembly, restoration processes, and quality inspection. Emphasis is placed on applying design techniques to meet industry standards, supported by practical applications in laboratories and project work. Students will also develop skills in preparing structured presentations and applying appropriate equipment and tools for specific design purposes.

Course Outcomes:

1. Ability to decide on vehicle interior design concepts that meet specific requirements and industrial standards.
2. Ability to produce appropriate vehicle interior components and assemblies according to design specifications.
3. Ability to analyze and select suitable advanced equipment and tools for automotive interior applications.

MMT32004 PAINTING

No of Credits: 4

Course Synopsis:

This course introduces the techniques and processes involved in automotive painting. Students will be exposed to surface preparation, spray painting procedures on various materials such as steel, metal, and plastic, as well as final finishing processes including clear coating and other protective finishes. Emphasis is placed on understanding painting tools, processes, safety, and quality control during and after painting. Through both theoretical and laboratory work, students will acquire the knowledge and practical skills necessary to perform automotive painting tasks in accordance with industrial standards.

Course Outcomes:

1. Ability to describe concepts, methodologies, and materials related to automotive painting processes in industrial practice.
2. Ability to demonstrate painting skills on various surfaces with proper

preparation and finishing processes.

3. Ability to solve systematic workflow challenges in completing automotive painting tasks according to industry requirements.

MMT49912 INDUSTRIAL TRAINING

No of Credits: 12

Course Synopsis:

Industrial training is a core component of the Work-Based Learning (WBL) program for Bachelor of Technology students in Automotive, Industrial Machining, and Welding. This course provides students with practical experience in an industrial environment, allowing them to apply technical knowledge and skills gained from their studies. Students will be exposed to company operations, work culture, safety procedures, project management, technical communication, and presentation practices. Emphasis is placed on applying ethical principles, demonstrating responsibility, and developing teamwork skills in real workplace settings. Industrial training equips students with the experience and adaptability required to meet professional standards and prepares them for future careers.

Course Outcomes:

1. Ability to demonstrate technical expertise relevant to an industrial environment during training.
2. Ability to present effective presentations on assigned industrial-related tasks with proper responsibilities.
3. Ability to practice knowledge and skills gained during industrial training as a means of fulfilling social responsibility towards the community.
4. Ability to practice ethical principles when dealing with issues and challenges associated with industrial training.
5. Ability to practice effective teamwork in accomplishing industrial training-related tasks.

MMT32510 PROJEK AKHIR INDUSTRI [INDUSTRIAL FINAL PROJECT]

No of Credits: 10

Course Synopsis:

This course introduces students to investigative, small-scale projects aimed at solving industry-related problems. Students will identify real-world challenges, employ systematic information-gathering techniques, and conduct comprehensive literature reviews. Through the selection of appropriate methodologies and modern tools, students will independently analyze and execute project tasks. Deliverables include written progress reports, oral presentations, and the effective use of multimedia technology to showcase findings at the semester's end, enhancing both technical and communication skills.

Course Outcomes:

1. Ability to demonstrate advanced analytical and critical thinking skills to effectively solve broadly defined industrial problems.
2. Ability to employ appropriate tools and techniques to address broadly defined technical challenges in industry-related tasks.
3. Ability to communicate effectively to articulate proposed solutions and outcomes with clarity and precision.
4. Ability to engage in independent, lifelong learning to enhance expertise in specialized technological projects.
5. Ability to engage in independent, lifelong learning to enhance expertise in specialized technological projects.

MMT13004 CAD DAN GRAFIK KIMPALAN [CAD AND WELDING GRAPHICS]

No of Credits: 4

Course Synopsis:

The course will provide students with an understanding of the importance of engineering graphics as a communication tool, especially for welding applications. Student will be exposed to the geometry drawing, dimensions and tolerance drawings, orthographic drawing, isometric drawing sectioning and assembly drawings and also welding symbol and standard codes using manual sketches and computer aided design (CAD) software.

Course Outcomes:

1. Construct technical drawing using manual sketching and computer aided design.

2. Analyze engineering drawings, including welding symbols and standard codes.
3. Communicate by using engineering drawings for welding applications.

MMT13104 KESELAMATAN DALAM KIMPALAN [SAFETY IN WELDING]

No of Credits: 4

Course Synopsis:

The aim of this course is to expose students on safety practices and procedures. The students are required to identify types of hazards that may occur in industries especially related to welding processes. The students are required to understand equipment, and instruction and carefully review the material safety data sheets.

Course Outcomes:

1. Examining welding hazards that impact the safety, health, and environment at working area
2. Explain the welding risk control by various procedures in the working environment
3. Identifies control method or procedure to minimize or remove the impact of possible hazard in the working environment

MMT13204 PROSES FABRIKASI LOGAM [METAL FABRICATION PROCESS]

No of Credits: 4

Course Synopsis:

This course is to equip students with the knowledge of metal fabrication and welding technology to improve manufacturing expertise in providing human capital development at par with global technological developments.

Course Outcomes:

1. Organising themselves either its individuals or in groups during project generating process.
2. Manipulating the basic principles and scientific processes and materials to produce products with reasonable judgment.
3. Demonstrate understanding of the concept and use of the terms contained in metal

MMT13303 REKABENTUK PRODUK DALAM KIMPALAN [PRODUCT DESIGN IN WELDING]

No of Credits: 3

Course Synopsis:

This course covers product design problems, formulation design problems, concept design, configuration design, parametric design, product costing, project and teamwork especially for welding product application.

Course Outcomes:

1. Ability to apply an appropriate design method of developing a practical solution of product design problem
2. Ability to display welding product as a practical design solution through a systematic investigation of the product design problem
3. Ability to communicate effectively in written, oral, and visual including teamwork

MMT13404 DOKUMENTASI KIMPALAN [WELDING DOCUMENTATION]

No of Credits: 4

Course Synopsis:

The job of welding inspection requires that the inspector possess or have access to a great deal of information and guidance. Welding inspectors cannot evaluate a welded structure without information from the designer or the welding engineer regarding weld quality. The inspector also needs to know when and how to evaluate the welding. To satisfy this need, there are documents available to be performed. Many of these documents also include acceptance criteria with codes and standards. The course identifies the competence required in welding design, welding joint detail and welding symbol according to AWS/BS/ISO standard.

Course Outcomes:

1. Ability to apply welding procedure qualification and welder qualification
Interpret various type of drawing design and symbol in welding according to related standard
2. Ability to construct a various type of drawing design and symbol in welding according to related standard
3. Ability to demonstrate a type of drawing design and symbol in welding as required according to related standard

MMT13504 PROSES KIMPALAN BUKAN KONVENSIIONAL [NON-CONVENTIONAL WELDING PROCESS]

No of Credits: 4

Course Synopsis:

This course is to provide students with welding processes that are not commonly used in the current industries that can be categories as new or advanced welding technology. Students will be exposed to all welding processes and required should be able to perform process selection when dealing with the special and complex demand of welding work.

Course Outcomes:

1. Ability to manipulate types of joining processes applied in the manufacturing sector.
2. Ability to appreciate the characteristics of joining in terms of process, equipment, and setup.
3. Ability to practice the joining processes using certain equipment to make variety of joints.

MMT23004 PERILAKU BAHAN DALAM KIMPALAN [MATERIAL BEHAVIOUR IN WELDING]

No of Credits: 4

Course Synopsis:

This course describes the materials used in engineering. Scope covers engineering materials, latest development in materials. Metal classification and its structure, physical metallurgy includes solidification, recovery, recrystallization and grain growth. This course also provide the students with understanding of the microstructure development with phase diagram and relations to mechanical properties. This course emphasis on steels especially structural and high strength steels, metallurgy of welding. This course also covers the knowledge of ceramics, polymers and composites on microstructure relationship and mechanical properties.

Course Outcomes:

1. Ability to classify metals based on generic properties, structural relationships with properties, especially the emergence of microstructure by heat treatment methods for the metal class.
2. Ability to understand the behaviour of structure in fusion welding and testing of materials welded joints.
3. Ability to identify the classification of ceramics, polymers and composites based on testing and microstructures.

MMT23104 PENGURUSAN KESELAMATAN [SAFETY MANAGEMENT]

No of Credits: 4

Course Synopsis:

Safety management is a course that is designed to provide knowledge for managing activities in the business workplace that applies comprehensive management system design to manage safety elements in the workplace. It includes acts, policy, objectives, plans, risk assessment, procedures, organization responsibilities and other measures. This is important to prevent accidents, injuries and other impact on organization that show the role of management that focus deter such catastrophic.

Course Outcomes:

1. Ability to explain the different requirements and regulations of Factory and Machinery Act and Occupational Safety and Health Act.
2. Ability to conduct hazard identification and risk assessment in workplace.
3. Ability to construct preventive and control technique according the acts pertinent to the acts pertinent to the Occupational Safety and Health.

MMT23204 ANALISIS REKA BENTUK KIMPALAN [WELDING DESIGN ANALYSIS]

No of Credits: 4

Course Synopsis:

This course covers the design of welded joints requirements according to the mechanical and physical properties of the service application and environment. Also, evaluating the effects these properties may have on the design of weldments. Such properties can include strength, ductility, toughness, fatigue resistance, and corrosion resistance, among others.

Course Outcomes:

1. Ability to describe basic concepts and fundamental principles of mechanical applications.
2. Ability to apply basic concepts and fundamental principles to solve design for welding applications.
3. Ability to analyse basic problems in design considerations for welding.

MMT23304 TEKNOLOGI KIMPALAN UNTUK PROFESIONAL [WELDING TECHNOLOGY FOR PROFESSIONAL]

No of Credits: 4

Course Synopsis:

This subject provides students with knowledges and skills related with welding technology. They will be taught with various topics covering Introduction to Welder Certification Scheme, Welding Processes and Procedures, Welding Codes and Standards, Welding Procedure specification (WPS), Welding Procedure Qualification Test (WPQT), Pre and Post-weld Inspection, Reports and Documentations and Welder Qualification Training and Testing (WQT).

Course Outcomes:

1. Ability to design a WPS and WPQT using according to specifications and standards.
2. Ability to develop the welding procedure based on knowledge related to weld techniques and position.
3. Ability to apply creative thinking in problem solving to solve the problems associated with welding qualification.

MMT23404 UJIAN TANPA MUSNAH UNTUK AMALAN PROFESIONAL [NON-DESTRUCTIVE TESTING FOR PROFESSIONAL PRACTICE]

No of Credits: 4

Course Synopsis:

This course provides foundational knowledge and practical exposure to non-destructive testing (NDT) techniques in preparation for professional certification. Students will explore the fundamental principles behind selected NDT methods and learn how to apply them to support inspection activities. Emphasis is placed on hands-on practice using standard NDT procedures to achieve accurate and consistent inspection results. The course also cultivates professional communication skills by guiding students in the preparation of technical reports that clearly present inspection findings. By the end of the course, students will be better prepared to enter formal certification programs with a solid understanding of NDT theory, procedures, and reporting practices.

Course Outcomes:

1. Ability to apply fundamental principles and techniques of non-destructive testing (NDT) for defect inspection.
2. Ability to perform NDT procedures by combining standard techniques to achieve accurate and consistent results.
3. Ability to communicate NDT results clearly through well-prepared technical reports.

MMT23504 PEMERIKSAAN KIMPALAN UNTUK PROFESIONAL [WELDING INSPECTION FOR PROFESSIONAL]

No of Credits: 4

Course Synopsis:

This course describes the professional practices in welding inspection. The content of the course covers welding inspection and certification, standards and terminology, visual inspection, welding metallurgy, materials and their weldability, welding processes inspection, residual stress and distortion, fracture modes and welding defects, destructive and non-destructive testing, welding equation and calibration.

Course Outcomes:

1. Describe basic concepts and fundamental principles of welding inspection processes.
2. Perform visual inspection, the testing of parent metals and welds, and destructive and non-destructive test techniques.
3. Practice procedure approval based on codes and standards, and an outline of safe working practices.

MMT23604 ANALISIS BERBANTU KOMPUTER [COMPUTER AIDED ANALYSIS]

No of Credits: 4

Course Synopsis:

This course will empower the students with the different techniques for creating solid models and surface with emphasis on design intent. The students also will be exposed to the introduction to Finite Element Analysis, structural stress analysis, modelling of the assembly and dynamic response analysis. The course includes hands-on exercises and practice methods about weld products for students during drafting stage, part, assembly, Finite Element Analysis and modelling.

Course Outcomes:

1. Ability to carry out structural stress analysis of welded joints.
2. Ability to model the parts and assemblies.
3. Ability to produce document design intent of parts and assemblies.

MMT23704 PENGUJIAN DAN KETIDAKSEMPURNAAN DALAM KIMPALAN [IMPERFECTION IN WELDING AND TESTING]

No of Credits: 4

Course Synopsis:

This course is designed to bridge the gap between theory and practice of testing to analyze the imperfection of welding. It is presented in a highly practical manner to encourage students to grasp the techniques for testing and analyzing welding imperfections to improve better quality productions.

Course Outcomes:

1. Ability to apply critical testing and inspection methods to examine the welding integrity.
2. Ability to conduct general procedures, techniques, and precautions in root cause analysis of welding imperfection.
3. Ability to recommend preventative and corrective actions to eliminate welding imperfections.

MMT23804 PERALATAN KIMPALAN ELEKTRIK [WELDING ELECTRICAL EQUIPMENT]

No of Credits: 4

Course Synopsis:

This course provides the students with an understanding of the characteristics of electric arc welding and its associated power characteristics. Students will learn the knowledge of basic principles, methods and circuit components that control operating power, operating principles of alternators, D.C. generators and the volt-ampere characteristics in arc welding.

Course Outcomes:

1. Ability to examine the physical phenomena occurring in the arc and the types of forces and metal transfer in the arc based on measurements of power sources characteristics.
2. Ability to demonstrate the right choice of diode material, thyristors and inverters based on the understanding of the basic principles and methods for controlling the volt-ampere characteristics of the electric welding machines.
3. Ability to integrate the welding current, voltage, temperature, load, and displacement using equipment such as clamp meter, linear variable differential transformer (LVDT), arc welding analyser, and resistance for welding quality monitoring.

MMT23904 PROJEK KEUSAHAWANAN TEKNOLOGI 1 [TECHNOPRENEUR PROJECT 1]

No of Credits: 4

Course Synopsis:

Entrepreneurs need money to start and to grow their business. It is important to understand how revenue is generated, how to source for funds, how to control cash flow, how to assess the success of the company in monetary terms, and how to value a company for various purposes. The course exposes students to the various financial aspects relating to new ventures. These include approaches to secure start-up capital and venture financing. Students learn about the basic accounting, essential financial indicators, the types of funds available, the different categories of investors, the importance of intellectual property in securing finance, the financial details to be included in a business plan required for investment purpose, valuation of company and the art of negotiation with investors.

Course Outcomes:

1. Ability to apply various financial indicators & tools to prepare for financial

- information for a new business.
2. Ability to integrate effective project management and technopreneur skills in solving given problems.
3. Ability to perform effectively teamwork and leadership skills in completing the technopreneur project

MMT33004 JAMINAN KUALITI KIMPALAN [WELDING QUALITY ASSURANCE]

No of Credits: 4

Course Synopsis:

This course provides students with knowledge related to welding quality assurance. They will be taught various topics covering Introduction to Welding Quality Assurance, Quality System Management and Responsibilities, Quality Assurance Planning, Welding Quality Standards, Inspections and Tests, Statistical Process Control, Nonconformances, and Corrective Actions, Preventive Actions, Quality Audits, Records and Documents Control.

Course Outcomes:

1. Ability to propose a plan for quality assurance and control in welding manufacturing process using specifications and standards.
2. Ability to demonstrate the procedure and inspection techniques related to welding assurance and control.
3. Ability to apply creative thinking in problem solving to solve the problems associated with welding assurance and control.

MMT33104 EKONOMI KIMPALAN DAN PEROLEHAN [ECONOMIC OF WELDING AND PROCUREMENT]

No of Credits: 4

Course Synopsis:

The aim of this course is to provide students with a clear understanding of the principles of effective procurement by utilizing the capabilities to plan, implement, and evaluate a sourcing process appropriate to the value/ risk of the joining technology, materials/ part/ equipment being procured, communication and negotiation skills, and capacity to manage strategic supply, services, and consultancy contracts. Besides acquiring knowledge in welding economics in the selection of process, consumables, and workpiece materials.

Course Outcomes:

1. Ability to explain the importance of effective costing and the factors influencing welding costs.
2. Ability to calculate welding costs that include machine, material and labour.
3. Ability to record of transactions in journals and ledgers, trial-balance and preparation of final account.

MMT33204 UJIAN TANPA MUSNAH [NON -DESTRUCTIVE TEST]

No of Credits: 4

Course Synopsis:

This course introduces the basic principles of non-destructive testing and the methods of non-destructive testing that are widely use in the industry, which are Visual Inspection, Penetrant Test, Magnetic Particle Testing, Eddy Current Testing, Ultrasonic Testing and Radiographic Testing. This course also covers each NDT technique's execution, evaluation, and interpretation. The advantages, limitations and main application of each NDT technique are also provided.

Course Outcomes:

1. Ability to explain the current basic and some advanced principles of Non-Destructive Testing (NDT) techniques to satisfy complex engineering problems.
2. Ability to perform suitable NDT techniques based on their analysis of engineering problems that fulfill the standard practice.
3. Ability to communicate effectively using available resources to disseminate knowledge of NDT techniques in relation to industrial problems.

MMT33304 PROJEK KEUSAHAWANAN TEKNOLOGI 2 [TECHNOPRENEUR PROJECT 2]

No of Credits: 4

Course Synopsis:

This course consists of two parts: in the first part, organization and human resource management are introduced; in the second part, the focus is on writing an effective business plan to attract venture capital investment. When an enterprise starts to take shape and grow, more people will be hired, and proper organization, team building, and human resource management will become important issues. In this course, students will be exposed to the various organizational aspects relevant to new ventures and established companies. These include the pros and cons of the different organization structures, conflicts

among employees, and approaches to building strong teams. Human resource management techniques will also be introduced and discussed. In the second part of the course, the business model canvas will be described listing the connections among the different components of a business. The value of a business plan and the techniques of writing a business plan will be introduced.

Course Outcomes:

1. Ability to design vital organizational behaviours necessary to grow a new venture.
2. Ability to arrange the business model canvas incorporating human and financial elements.
3. Ability to influence and motivate all stakeholders to build a cohesive venture team.

MMT33403 SISTEM FIZIKAL SIBER DALAM KIMPALAN [CYBER PHYSICAL SYSTEM IN WELDING]

No of Credits: 3

Course Synopsis:

This course aims to provide participants with a clear understanding of the potential application of cyber-physical systems (CPS) in the welding industry. Competency in applying CPS technology, both with standalone and built-in CPS in the analysis of welding parameters (e.g. current, temperature) and welding outputs (e.g. fume composition, welding bead) is thought for improving the marketability of the graduates in the era of the industrial revolution 4.0.

Course Outcomes:

1. Ability to explain the added value that can be achieved through application of CPS in welding process.
2. Ability to demonstrate effectively the appropriate CPS tools in acquiring process variables in real time.
3. Ability to verify the logged data acquired from variable welding techniques.

MMT33504 BENGKEL PEMULIHAN [RECLAMATION WORKSHOP]

No of Credits: 4

Course Synopsis:

The aim of this subject is to acquire knowledge and solve problems associated with failure and to update personal on the latest technology to ensure welded subject would be maintained in good operating condition and at low maintenance cost.

Course Outcomes:

1. Ability to extrapolate the repair welding skill and apply techno-economics for practical problems.
2. Ability to demonstrate high quality of repair welding techniques.
3. Ability to display feasible welding repair techniques.

MMT33604 PENGURUSAN PENGELUARAN DAN PENGAWASAN [MANAGING PRODUCTION AND SUPERVISION]

No of Credits: 4

Course Synopsis:

Welding production planning is another very important element in manager's responsibility to allocate the resources required to achieve cost-effectiveness in welding processes. Furthermore, this subject shall cover managers responsibility to maintain equipment and consistently meet throughput requirements with a level of quality that conforms to the required standards.

Course Outcomes:

1. Ability to identify the standardize the welding procedure.
2. Ability to identify required maintenance of equipment and record.
3. Ability to display competency in managing and developing industrial environment maintenance activities.

MMT15003 LUKISAN PRODUK DAN SPESIFIKASI [PRODUCT DRAFTING AND SPECIFICATION]

No of Credits: 3

Course Synopsis:

This course teaches the students on product drafting and specification principles.

Students are required to learn topics on part drawings such as geometries, sectional views and multi-view drawings. Students will learn to use CAD software to produce part drawings and apply the lettering functions, product tolerances and dimensions. Students will also learn the method for assembling the individual parts and generate the assembly drawing of the product. Finally, students will be taught to interpret part drawings especially from 2-dimensional industrial part drawings.

Course Outcomes:

1. Ability to apply knowledge required for product drafting processes based on part examination, analysis and interpretation suitable for machining processes.
2. Ability to demonstrate the ability to produce 2D and 3D part drafting complete with technical specifications suitable for machining processes.
3. Ability to justify reasons of applying the chosen drafting requirements to meet objectives of the project.

MMT15103 KEPERSISAN PRODUK PIAWAIAAN [STANDARD PRODUCT PRECISION]

No of Credits: 3

Course Synopsis:

This course teaches the students about the principles and methods of applying product precision based on the standards for the machining of parts and product. Basically, the application involves with dimensional metrology and quality control of the machined parts and the relationship between those two fields of knowledge. Students will learn to use the dimensional metrology equipment for linear and angular measurements, surface measuring equipment and a coordinate measuring machine. Students will also learn and apply the quality control tools (7 QC Tools) and sampling method for quality control proses.

Course Outcomes:

1. Ability to discuss and explain knowledge required for product precision according to the standards related to industrial machining processes.
2. Demonstrate the ability to measures and constructs the required techniques for metrology and measurements using various inspection and quality control tools.
3. Able to organize a task for using selecting range of measuring tools/equipments and FORMULATE multi-control planning charts to solve the problem givens.

MMT15203 SIFAT-SIFAT BAHAN KERJA DAN ALAT PEMOTONG [WORKPIECE AND CUTTING TOOL PROPERTIES]

No of Credits: 3

Course Synopsis:

This course covers types, setup, applications and specifications of common cutting tools and workpiece materials that frequently applied in industry. The course also introduces why the selection of the appropriate cutting tools and cutting fluids are essential in metal cutting operations to reduce the heat and friction produced during material removal operations and how the selection, setup and applications affect the quality, accuracy, efficiency and productivity of the workpiece produced.

Course Outcomes:

1. Ability to discuss the properties of common cutting tools and workpiece material that being applied in industries.
2. Ability to classify the usage of cutting tools and workpiece materials in the specific application in industry.
3. Ability to construct manufacturing process to produce cutting tool and/or workpiece materials.

MMT15303 JIG DAN LEKAPAN [JIG AND FIXTURES]

No of Credits: 3

Course Synopsis:

This subject introduces students to jig and fixture. It starts with types and functions of jig and fixture. In addition, students will be exposed to knowledge about classification of jig and fixture for selected operation. This course also introduces student to identify the principles and analysis of a tool design in jig and fixture application. The tool drawing is important to students in order to design the jig and fixture therefore the guideline of tool and jig design are explained.

Course Outcomes:

1. Ability to apply the knowledge to use the proper work holding, clamping mechanism and specialized work holding systems through effective designs of jig and fixtures.
2. Ability to follow the specific design and manufacturing process to build the jig and fixtures.
3. Ability to organize a task for integrating multi-components to fabricate the jig and fixtures.

MMT15404 PENYEDIAAN DAN BAIK PULIH MATA ALAT [TOOL SETUP AND REFURBISHMENT]

No of Credits: 4

Course Synopsis:

This course covers type, setup, applications and specifications of common cutting tools that frequently applied in industry. The course also introduces why the selection of the appropriate cutting tools are essential in metal cutting operations to reduce the heat and friction produced during material removal operations. In addition, how the selection, setup and applications affect the quality, accuracy, efficiency and productivity of the workpiece produced also will be covered. It also focuses on fundamentals required to refurbish cutting tools that would enable the industry to prolong the life of each cutting tools.

Course Outcomes:

1. Ability to analyze the difference design of cutting tools and its application in machining operations.
2. Ability to perform the cutting tool setup for turning, milling and drilling operations.
3. Ability to propose the usage of refurbished cutting tools in machining operation

MMT15503 PEMESINAN MAPAN [SUSTAINABLE MACHINING]

No of Credits: 3

Course Synopsis:

This subject covers the recent technologies in sustainable machining processes. It starts with principles, applications and direction of sustainable manufacturing. Furthermore, students will be exposed to knowledge related to coolant-lubricant strategies, eco-friendly metal cutting fluids and energy/power consumption in machining operations. This course also introduces students to machining cost, design of experiments and life cycle assessments in the machining processes.

Course Outcomes:

1. Ability to apply knowledge to illustrate sustainable concepts appropriate to the machining processes.
2. Ability to follow the concepts and techniques in responding the output/data of the machining.
3. Ability to organize a task that integrates methods and justify reasons for application in machining processes.

MMT15603 TAKSIRAN KEBOLEHMESINAN [ASSESSMENT OF MACHINABILITY]

No of Credits: 3

Course Synopsis:

This course provides students with the measurement of machining performances i.e. machinability. Machinability is an indicator of one engineering material on how easy or difficult to be machined to achieve acceptable performances. Engineers are often challenged to find ways to improve machinability without harming material performance, which are focused on the machining efficiency and productivity. However, unlike most material properties, machinability cannot be simplified into a unique work material property, but rather considering as a resultant property of the machining system which is mainly affected by work material as well as physical properties, heat treatment processes, and work-hardening behavior, cutting tool materials, tool geometry, machining operation type, cutting conditions and cutting fluids. In addition factors and method for improving machinability are also covered in this course. This course covers various topics such as factors affecting machinability in surface finish, cutting force, material removal rate, tool life and wear rate, and chip formation and wear mechanism.

Course Outcomes:

1. Ability to define the factors that is governed or influenced on the machinability.
2. Ability to demonstrate a various type of assessment according to the standards related to assessment of machinability.
3. Ability to organize a various method of improvement for machinability.

MMT15703 PEMANTAUAN KEADAAN DALAM PEMESINAN [CONDITION MONITORING IN MACHINING]

No of Credits: 3

Course Synopsis:

This course teaches students the fundamental concepts of condition monitoring technique and its application in the industry. Students will also learn to utilize several tools to monitor and analyze signals from machine such as vibration, acoustic and electrical current. In addition, conventional methods such as visual inspection, machine performance and trend monitoring will also be used to examine machine condition. Basic analysis methods will also be learned in this course to identify the root problem. Finally, common types of machine maintenance such as corrective and preventive maintenances will be exposed

to the students.

Course Outcomes:

1. Ability to explain knowledge regarding machine condition monitoring technique, its application and related tools used.
2. Ability to demonstrate and perform the required techniques and skills to be applied in machine condition monitoring.
3. Ability to formulates the systematic planning in identifying machine problem using related tools.

MMT25004 KEPERSISAN DAN KEMASAN DALAM TEKNOLOGI CNC [PRECISION AND FINISHING IN CNC TECHNOLOGIES]

No of Credits: 4

Course Synopsis:

This course provides student with concept and practices of CNC machining process. It emphasis on how to program and operate CNC milling and CNC turning. Students will learn to develop the CNC program base on G-Code and M-Code languages. In addition, student will acquire in specific knowledge and skill in precision and finishing processes such as drilling, tapping, boring, grooving, facing, pocketing, radius forming, angular cutting and threading.

Course Outcomes:

1. Ability to explain applications of 2 and 3 axis CNC Machining.
2. Ability to develop programs and conduct processes using coordinate system and ISO coding system for turning and milling processes.
3. Ability to manage CNC machining processes with a good precision and finishing requirement.

MMT25103 KEPERSISAN DAN KEMASAN DALAM TEKNOLOGI EDM DAN PENCANAIAN [PRECISION AND FINISHING IN EDM AND GRINDING TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This subject introduces students to Electrical Discharge Machine (EDM) and grinding technologies. In addition, students will be exposed to knowledge about classification of EDM and grinding technologies for selected operation. This course also will introduce student to identify the principles and analysis of a tool design and tool manufactured in both machine application. In this course, the tool drawing is important to students in order to operate and manage the machine in laboratory.

Course Outcomes:

1. Ability to analyze and differentiate the abilities and principle of EDM and grinding machine.
2. Ability to construct and creates program by using a coordinate system for EDM and grinding for machining solution.
3. Ability to organize and prepare the production by using EDM and grinding machines to produce components.

MMT25204 PRODUK CAD/CAM PRISMATIK [PRISMATIC CAD/CAM PRODUCT]

No of Credits: 4

Course Synopsis:

This course teaches the students on the principles and application of CAD/CAM system used in manufacturing industries. Students are required to learn the concepts and applications of CAD/CAM as used in the industries for product development and machining processes. Students will use CAD software to produce 3-dimensional (3D) models including parts and their assembly followed by generating 2-dimensional (2D) drafting. Students will also learn the CAM software that can be used to simulate the 3D machining processes of the developed parts in order to generate numerical control (NC) codes for the CNC machines. This course focuses on prismatic products that can only be machined using 3-axis milling machines and 2-axis lathe machines.

Course Outcomes:

1. Ability to apply knowledge required for prismatic product development that can be machined using 3-axis milling machines and 2-axis lathe machines.
2. Ability to construct 2D and 3D product drawings. Use the drawings to

simulate machining processes and produce the NC programs for milling and lathe CNC machines.

3. Ability to justify reasons of applying the chosen processes to meet objectives of the project.

MMT25304 ESTETIKA PERMUKAAN KOMPONEN MESIN [SURFACE AESTHETIC OF MACHINED COMPONENT]

No of Credits: 4

Course Synopsis:

This course covers many types of coating methods for machined component performance and aesthetics. It explains the fundamentals of coating technologies, as well as the testing and procedures for each coating method. Physical Vapor Deposition, Chemical Vapor Deposition, Electroless Plating, Chroming, Embossing, Flame Surface Treatment, and Plasma Nitriding are some of the coating processes that will be discussed in detail.

Course Outcomes:

1. Ability to propose the suitable surface treatment process for suitable application.
2. Ability to organize a process to be applied to treat the surface from machining to coating.
3. Ability to present the benefit of fine surface finish of machined component to reduce operational costs.

MMT25404 PEMESINAN BERBILANG PAKSI [MULTI AXIS MACHINING]

No of Credits: 4

Course Synopsis:

This course gives in depth knowledge to students regarding to the multi axis machining process. This process is conducted through the additional rotary axis of A, B and C on the CNC machine, instead of the 3-axes machining at X, Y and Z. Students will be introduced to the machine configuration and machine kinematics to have better understanding of the machine tools. They will also learn about the requirements of the clamping system, tooling and NC programming in order to produce complex parts from the process.

Course Outcomes:

1. Ability to differentiate the configuration, kinematics and technical requirements of the multi axis machine.
2. Ability to create NC programming for multi axis machining.
3. Ability to present the effectiveness of the machining strategy and any possibility of machine collision during the process.

MMT25503 PRODUK CADCAM KOMPLEKS [COMPLEX CADCAM PRODUCT]**No of Credits: 3****Course Synopsis:**

This course teaches the students on the principles and application of CAD/CAM system used in manufacturing industries specifically for development of complex products. Students will use CAD software to produce 3-dimensional (3D) complex models including parts and their assembly followed by generating 2-dimensional (2D) drafting. Students will also learn the CAM software that can be used to simulate the 3D machining processes of the developed complex parts in order to generate numerical control (NC) codes for the CNC machines. This course focuses on complex products which will be developed using wireframe and surface design application that can be manufactured using 3-axis milling machines, 2-axis lathe machines and 5-axis CNC machines.

Course Outcomes:

1. Ability to apply knowledge required for analyzing prismatic product development that can be machined using 3-axis milling machines and 2-axis lathe machines.
2. Ability to construct 2D and 3D complex product drawings. Use the drawings to simulate machining processes and produce the NC programs for Milling and Lathe CNC machines.
3. Ability to justify reasons of applying the chosen processes to meet objectives of the project.

MMT25603 RAWATAN HABA KOMPONEN MESIN [HEAT TREATMENT OF MACHINED COMPONENT]**No of Credits: 3****Course Synopsis:**

This course covers types, setup, applications and specifications of common cutting tools and workpiece materials that frequently applied in industry. The

course also introduces why the selection of the appropriate cutting tools and cutting fluids are essential in metal cutting operations to reduce the heat and friction produced during material removal operations and how the selection, setup and applications affect the quality, accuracy, efficiency and productivity of the workpiece produced.

Course Outcomes:

1. Ability to differentiate the heat treatment application to change the properties of material.
2. Ability to conduct heat treatment to alter the properties of selected steel.
3. Ability to present the capability of heat-treated steel to be applied in other application.

MMT25804 PROJEK KEUSAHAWANAN TEKNOLOGI 1 [TECHNOPRENEUR PROJECT 1]**No of Credits: 4****Course Synopsis:**

Entrepreneurs need money to start and to grow their business. It is important to understand how revenue is generated, how to source for funds, how to control cash flow, how to assess the success of the company in monetary terms, and how to value a company for various purposes. The course exposes non-business students to the various financial aspects relating to new ventures. These include approaches to secure start-up capital and venture financing. Students learn about the basic accounting, essential financial indicators, the types of funds available, the different categories of investors, the importance of intellectual property in securing finance, the financial details to be included in a business plan required for investment purpose, valuation of company and the art of negotiation with investors.

Course Outcomes:

1. Ability to apply and combine/compare various financial indicators & tools to prepare for financial information for a new business venture.
2. Ability to choose and adopt effective project management and technopreneur skills in solving given problems.
3. Ability to perform effectively teamwork and leadership skills in completing the technopreneur project.

MMT35004 KAEDAH PEMASANGAN [ASSEMBLY METHOD]

No of Credits: 4

Course Synopsis:

This course is to introduce students to a design approach that focuses on ease of manufacture and assembly. It starts with guidelines and rules in designing each component of the product based on assembly analysis. In addition, students will also be exposed to the design for manufacture regarding the selection of appropriate materials and the manufacturing process. Eventually, students will be able to analyze product designs and suggest better design to facilitate product manufacture and assembly.

Course Outcomes:

1. Ability to analyze assembly efficiency to illustrate better product design.
2. Ability to revise the existing product design responding the assembly efficiency method.
3. Ability to organize a task that integrates methods and justify reasons for application in assembly method.

MMT35104 KERJA SEMULA DAN PEMULIHAN KOMPONEN MESIN [REWORK AND REHABILITATION OF MACHINED COMPONENTS]

No of Credits: 4

Course Synopsis:

This subject will teach students how to identify defects in machine components that can be reworked or rehabilitated. Students will learn about methods and processes for reworking and rehabilitating parts that are out of specification or tolerance. Students will also learn that rework is necessary when parts are out of tolerance due to machinability issues and machine faults during machining process. Whereas, when a part is out of tolerance due to wear and tear from prolonged use, a rehabilitation process is required. Students will be able to verify that the finished parts are within the specified tolerance at the end of this course, as well as gain an understanding of the effects of the rework and rehabilitation processes on the environment and their impact on the society.

Course Outcomes:

1. Ability to identify parts that can be reworked or rehabilitated.
2. Ability to propose methods or procedures for rework and rehabilitation process.
3. Ability to choose a method or process that has the least amount of impact on the environment and society.

MMT35204 PROJEK KEUSAHAWANAN TEKNOLOGI 2 [TECHNOPRENEUR PROJECT 2]

No of Credits: 4

Course Synopsis:

The start-up and growth of an enterprise invariably involves both human and financial capital. To manage the increasing pool of human resources and to convince venture capitalists to invest become two main issues especially for growing venture. This course consists of two parts;

- 1) Organization and human resource management are introduced
- 2) Focus on writing a convincing business plan to attract venture capital investment

When enterprise starts to take shape and grow, more people will be hired, proper organization, team building and human resource management will become important issues. In this course, students will be exposed to the various organizational aspects relevant to new ventures and established companies. These include the pros and cons of the different organization structure, conflicts that may arise among employees, and approaches to building strong teams. Human resource management techniques will also be introduced and discussed. In the second part of the course, the business model canvas will be described listing the connections among the different companies of a business. The value of a business plan and the techniques of writing a business plan will be introduced.

Course Outcomes:

1. Ability to design vital organizational behaviors necessary to grow a new venture.
2. Ability to arrange the business model canvas incorporating human and financial elements.
3. Ability to influence and motivate all stakeholders to build a cohesive venture team.

MMT35704 PEMESINAN AEROANGKASA [AEROSPACE MACHINING]

No of Credits: 4

Course Synopsis:

This course provides students with advanced concepts and practices in CNC machining that are advanced computer programming of CNC drilling, milling and turning specific for different aerospace materials. Emphasis is on programming and production of complex aerospace parts including developing in 3, 4 and 5-axis programming techniques. The uses of CAM and CNC machining in producing complex and efficient programming techniques are utilized to product the aerospace component.

Course Outcomes:

1. Ability to demonstrate the professional concept of design, process, and inspection in the manufacturing field of aerospace industry.
2. Ability to integrate the machining principle and technology in the project management to improve machinability of aerospace materials.
3. Ability to perform effective work in team to accomplish the project of machining characteristics that can be adapted in the aerospace industry.

MMT35304 PENGURUSAN DAN PENYELIAAN PROJEK [PROJECT MANAGEMENT AND SUPERVISION]

No of Credits: 4

Course Synopsis:

The course will teach students project management techniques and the application of machining concepts, as well as other aspects such as company operation, department function, work procedure, safety procedure, management, and communication. Students must also learn about troubleshooting in project management and apply their knowledge and skills in the workplace. Overall, the course is practical in nature and will assist students in gaining an effective understanding of project management and supervision.

Course Outcomes:

1. Ability to demonstrate knowledge, basic concepts and principles of project management in the case study industry.
2. Ability to explain the main factors influencing project management outcome with consideration of professionalism and ethics.
3. Ability to perform effective teamwork in order to complete a project using management skills gained through theoretical understanding and practical application of project management principles.

MMT35404 TAKSIRAN PEMBUATAN DAN RISIKO DI DALAM PENGELUARAN PEMESINAN [ACTS AND RISKS ASSESSMENT IN MACHINING PRODUCTION]

No of Credits: 4

Course Synopsis:

This subject teaches students about health and safety and work in safer and healthier ways. Students will be exposed with the related act in the industry. The student also will learn project management techniques such as work procedure, safety procedure, management and communication related to acts and risks assessment in machining production practice. Overall, the course is practical in nature and will assist students in gaining an effective understanding of project management and supervision.

Course Outcomes:

1. Ability to interpret risks to the health and safety with related to management skills.
2. Ability to review the preventive and protective measures with consideration of professionalism and ethics.
3. Ability to implement effective teamwork in order to complete the operational risk management skills gained through theoretical understanding and practical application of project management principles.

MMT35504 PENYELENGGARAAN MESIN [MACHINE MAINTENANCE]

No of Credits: 4

Course Synopsis:

The student will be exposed to the maintenance techniques, troubleshooting and fault diagnosis for mechanical and electrical equipment. It also includes the basic maintenance methods of condition-based monitoring, vibration analysis, alignment dynamic balancing and essential steps of troubleshooting and repair of machine equipment. Furthermore, the preventive maintenance and Total Productive Maintenance (TPM) will be also stressed in this course.

Course Outcomes:

1. Ability to demonstrate knowledge of management in machine maintenance.
2. Ability to propose suitable maintenance techniques with consideration of professionalism and ethics.
3. Ability to practice effectively in a team to complete a project task

MMT36004 PERANCANGAN PENGELUARAN DALAM PEMESINAN [PRODUCTION PLANNING IN MACHINING]

No of Credits: 4

Course Synopsis:

This course teaches students the fundamental concepts of Production Planning in Machining in manufacturing. It involves two separate stages: production planning and production control. Production planning focuses on managing resources, manpower, schedules, and other aspects to produce goods and services efficiently. On the other hand, production control aims to optimize performance by utilizing different control techniques within the production system. The primary goals of Production Planning and Control are to maximize resources, ensure quality, quantity, and schedule adherence, enhance material procurement, improve production time, reduce costs, minimize resource waste, and streamline the production process. The process involves steps like planning, routing, scheduling, loading, dispatching, expediting, inspection, and correction to ensure a smooth production flow and maintain quality standards. Efficient Production Planning is crucial for organizations to optimize resource utilization, reduce costs, improve customer satisfaction, and enhance operational efficiency.

Course Outcomes:

1. Ability to DEMONSTRATE continuous learning for new tools for PPM activities [LifeLong Learning].
2. Ability to INTEGRATE several tools or formulas in Spreadsheet to plan and control production output and quality for PPM activities [Entrepreneurs & Management Skill]
3. Ability to PERFORM effective teamwork to accomplish given projects related to PPM activities. [TeamWork & Leadership]

FACULTY OF CHEMICAL ENGINEERING & TECHNOLOGY (FKTK)



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Programmes Offered:

- Bachelor of Materials Engineering with Honours
- Bachelor of Chemical Engineering with Honours
- Bachelor of Polymer Engineering with Honours
- Bachelor of Chemical Engineering Technology (Food Technology) with Honours
- Bachelor of Chemical Engineering Technology (Industrial Chemical Process) with Honours
- Bachelor of Chemical Engineering Technology (Industrial Biotechnology) with Honours
- Bachelor of Applied Science (Materials and Metallurgical Technology) with Honours
- Diploma in Materials Engineering

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UR6527001

Bachelor of Materials Engineering with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates who have demonstrated career advancement in the field of Materials Engineering or related engineering field.

PEO 2

Graduates who are involved in a professional body or society.

PEO 3

Graduates who pursue life-long learning.



PROGRAMME OUTCOMES (PO)

PO1

Engineering Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialisation to develop solutions to complex engineering problems.

PO2

Problem analysis: Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development

PO3

Design/development of solutions: Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required

PO4

Investigation: Conduct investigation of complex engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5

Tool Usage: Create, select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems.

PO6

The Engineer and the World: Analyse and evaluate sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving complex engineering problems.

PO7

Ethics: Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings.

PO9

Communication: Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments.

PO11

Lifelong Learning: Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change.

CURRICULUM STRUCTURE UR6527001 BACHELOR OF MATERIALS ENGINEERING WITH HONOURS INTAKE 2025/2026									
YEAR	FIRST		SECOND		THIRD			FOURTH	
SEMESTER	1	2	3	4	5	6	BREAK	7	8
DISCIPLINE CORE & ELECTIVE COURSES (102 CREDITS)	KMJ15603 Engineering Drawing	KMJ10003 Engineering Skills	KMJ20003 Materials Physical Chemistry	KMJ20103 Analytical Chemistry	KMJ30303 Surface Engineering	KMJ30002 Materials Selection and Design 1	KMJ39905 Industrial Training	KMJ40003 Materials Selection and Design 2	KMJ40103 Corrosion Engineering
	KMJ15303 Electrical Technology	KMJ16203 Statics	KMJ20303 Strength of Materials	KMJ20203 Dynamics	KMJ30203 Fluid Mechanics	KMJ4XXX03 Elective 1		KMJ4XXX03 Elective 2	KMJ40203 Non Destructive Testing
	KMJ16803 Introduction to Computer Programming	KMJ10103 Engineering Quality Control	KMJ20004 Materials Structure & Properties	KMJ20403 Transport Phenomena in Materials Engineering	KMJ30004 Polymer Properties	KMJ30003 Polymer Processing		KMJ49802 Final Year Project 1	KMJ49904 Final Year Project 2
			KMJ20104 Physical Metallurgy	KMJ20204 Whiteware, Glass and Glass-Ceramic	KMJ30104 Materials Characterization	KMJ30103 Process Control		KMJ40303 Technical Ceramic	
					KMJ30503 Electronic Materials Engineering	KMJ30403 Materials Thermodynamics			
COMMON CORE COURSES (17 CREDITS)	IMQ10103 Engineering Mathematics 1	IMQ10203 Engineering Mathematics 2	IMQ20303 Engineering Mathematics 3	IMQ27103 Engineering Statistics		KMJ45802 Professional Engineers			
				KMJ42403 Engineering Management					
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMU12102 Integrity and Anti- Corruption ^[4]	SMU13102 Appreciation of Ethics & Civilization	SMB20102 English for General Communication ^[2]		SMU22402 Engineering Entrepreneurship	SMB31202 English for Technical Communication			
	SMU13002 Philosophy and Current Issues	SMZ2XX01 Co-Curriculum 2							
	SMZ1XX01 Co-Curriculum 1	SMB41002 University Malay Language ^[3]							
TOTAL CREDITS (135 CREDITS)	17	17	19	19	19	18	5	11	12
AUDIT COURSES		SMB10102 Preparatory English ^[1]							

Elective I : KMJ40403 Composite Materials [Bahan Komposit], KMJ40503 Construction Materials [Bahan Binaan], KMJ40603 Joining of Materials and Structures [Penyambungan Bahan dan Struktur].

Elective II : KMJ40703 Advanced Material Engineering [Kejuruteraan Bahan Termaju], KMJ40803 Advanced Electronic Packaging [Pembungkusan Elektronik Termaju], KMJ40903 Materials for Energy Application [Bahan untuk Aplikasi Tenaga], KMJ41003 Materials Failure Analysis [Analisis Kegagalan Bahan]

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).
SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

UR6524001

Bachelor of Chemical Engineering with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

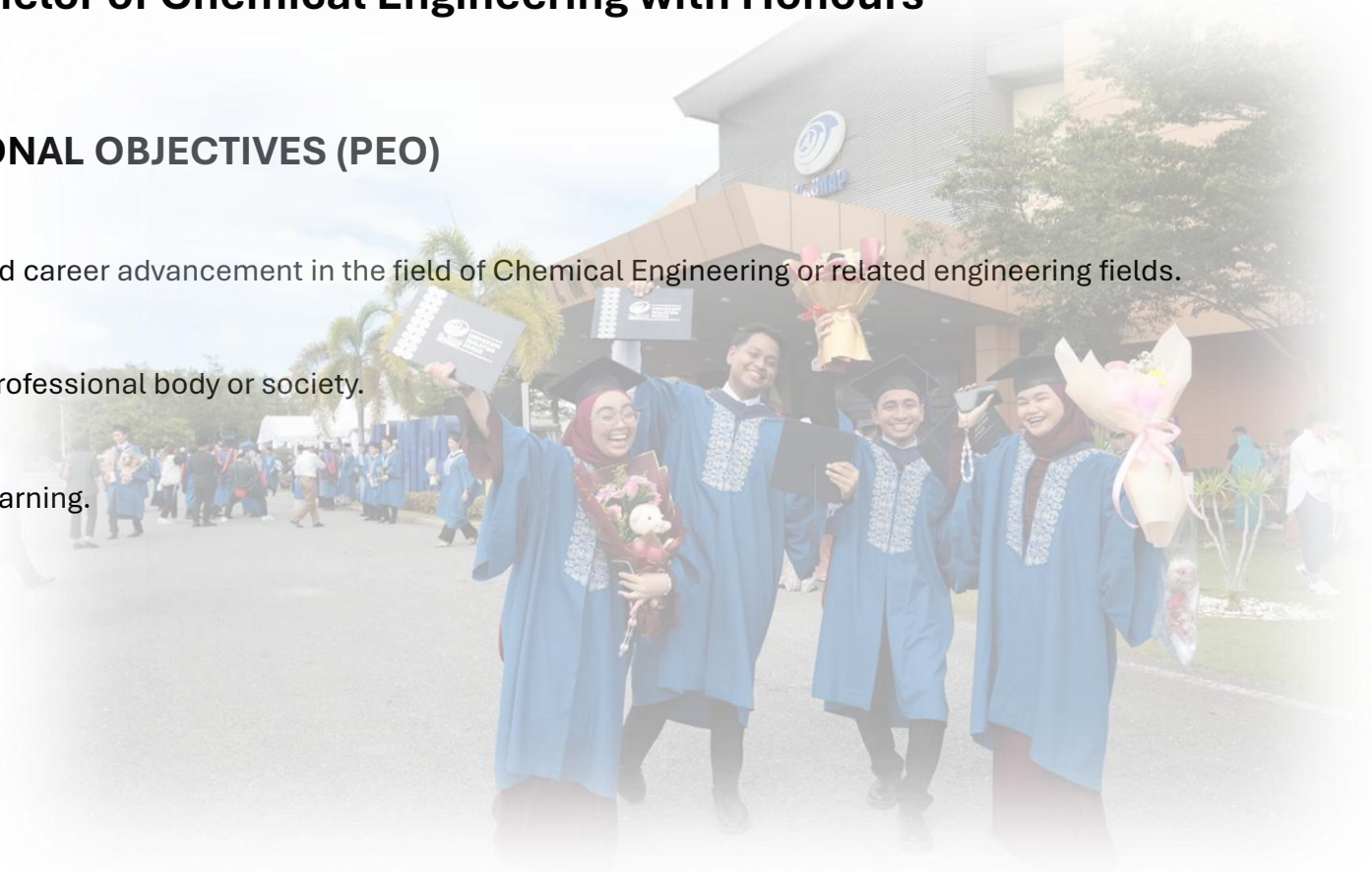
Graduates who have demonstrated career advancement in the field of Chemical Engineering or related engineering fields.

PEO 2

Graduates who are involved in a professional body or society.

PEO 3

Graduates who pursue life-long learning.



PROGRAMME OUTCOMES (PO)

PO1

Engineering Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialisation to develop solutions to complex engineering problems.

PO2

Problem Analysis: Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development.

PO3

Design/ Development of Solutions: Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO4

Investigation: Conduct investigation of complex engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5

Tool Usage: Create, select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems.

PO6

The Engineer and the World: Analyse and evaluate sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving complex engineering problems.

PO7

Ethics: Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings.

PO9

Communication: Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments.

PO11

Lifelong Learning: Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change.

CURRICULUM STRUCTURE UR6524001 BACHELOR OF CHEMICAL ENGINEERING WITH HONOURS INTAKE 2025/2026																																																	
YEAR	FIRST		SECOND		THIRD			FOURTH																																									
SEMESTER	1	2	3	4	5	6	BREAK	7	8																																								
DISCIPLINE CORE & ELECTIVE COURSES (102 CREDITS)	KMJ12103 Organic Chemistry	KMJ12501 Biochemical Science	KMJ22003 Chemical Engineering Thermodynamics	KMJ22403 Heat Transfer	KMJ32003 Reaction Engineering	KMJ32301 Skills in Separation Process	KMJ39905 Industrial Training	KMJ42203 Good Manufacturing Practice	KMJ49904 Final Year Project 2																																								
	KMJ12203 Introduction to Biological and Chemical Science Principles	KMJ12903 Biochemical Engineering	KMJ22103 Fluid Mechanics	KMJ22503 Mass Transfer	KMJ32104 Process Dynamics and Control	KMJ32603 Safety and Loss Prevention		KMJ42704 Chemical Plant Design 2	KMJ4XX03 Elective 2																																								
	KMJ12303 Introduction to Sustainability	KMJ13003 Thermodynamics [Termodinamik]	KMJ22303 Analytical Chemistry	KMJ22903 Bioreactor System	KMJ32203 Separation Process	KMJ32803 Engineering Economics		KMJ49802 Final Year Project 1	KMJ4XX03 Elective 3																																								
	KMJ12503 Mass and Energy Balance	KMJ13103 Process Instrumentations	KMJ22802 Materials Science and Engineering	KMJ22601 Transport Phenomena Application	KMJ33203 Simulation for Chemical Engineering	KMJ33303 Industrial Waste Treatment		KMJ3XX03 Elective 1	KMJ4XX03 Free Elective ^[5]																																								
		KMJ16803 Introduction to Computer Programming				KMJ42003 Chemical Plant Design 1																																											
COMMON CORE COURSES (17 CREDITS)	IMQ10103 Engineering Mathematics 1	IMQ10203 Engineering Mathematics 2	IMQ20303 Engineering Mathematics 3	IMQ27103 Engineering Statistics	KMJ42403 Engineering Management	KMJ45802 Professional Engineers																																											
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMZ1XX01 Co-Curriculum 1	SMZ2XX01 Co-Curriculum 2	SMU13002 Philosophy and Current Issues	SMB31202 English for Technical Communication		SMU22402 Engineering Entrepreneurship																																											
	SMB41002 University Malay Language ^[3]	SMB20102 English for General Communication ^[2]		SMU12102 Integrity and Anti-Corruption ^[4]	SMU13102 Appreciation of Ethics & Civilization																																												
TOTAL CREDITS (135 CREDITS)	18	19	16	17	18	17	5	12	13																																								
AUDIT COURSES	SMB10102 Preparatory English ^[1]																																																
<table border="1"> <tr> <th>* Please refer to additional NOTE.</th><th colspan="3">PROCESS ENGINEERING</th><th colspan="3">BIOCHEMICAL ENGINEERING</th><th colspan="3">SUSTAINABILITY</th></tr> <tr> <td>Elective I</td><td colspan="3">KMJ32903 Colloidal and Biomaterials Processing</td><td colspan="3">KMJ33003 Halal Processing</td><td colspan="3">KMJ33103 Sustainable Energy</td></tr> <tr> <td>Elective II</td><td colspan="3">KMJ43203 Energy and Process Utility Engineering</td><td colspan="3">KMJ42503 Food Engineering</td><td colspan="3">KMJ42603 Biomass Utilization</td></tr> <tr> <td>Elective III</td><td colspan="3">KMJ42903 Petrochemical Process</td><td colspan="3">KMJ43003 Pharma and Nutraceutical Engineering</td><td colspan="3">KMJ43103 Fuel Cells</td></tr> </table>										* Please refer to additional NOTE.	PROCESS ENGINEERING			BIOCHEMICAL ENGINEERING			SUSTAINABILITY			Elective I	KMJ32903 Colloidal and Biomaterials Processing			KMJ33003 Halal Processing			KMJ33103 Sustainable Energy			Elective II	KMJ43203 Energy and Process Utility Engineering			KMJ42503 Food Engineering			KMJ42603 Biomass Utilization			Elective III	KMJ42903 Petrochemical Process			KMJ43003 Pharma and Nutraceutical Engineering			KMJ43103 Fuel Cells		
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[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

UR6524002

Bachelor of Polymer Engineering with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates who have demonstrated career advancement in the field of Polymer Engineering or related engineering field.

PEO 2

Graduates who are involved in a professional body or society.

PEO 3

Graduates who pursue life-long learning.



PROGRAMME OUTCOMES (PO)

PO1

Engineering Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialisation to develop solutions to complex engineering problems.

PO2

Problem Analysis: Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development.

PO3

Design/ Development of Solutions: Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO4

Investigation: Conduct investigation of complex engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5

Tool Usage: Create, select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems.

PO6

The Engineer and the World: Analyse and evaluate sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving complex engineering problems.

PO7

Ethics: Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings.

PO9

Communication: Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments.

PO11

Lifelong Learning: Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change.

CURRICULUM STRUCTURE
UR6524002 BACHELOR OF POLYMER ENGINEERING WITH HONOURS INTAKE 2025/2026

YEAR	FIRST		SECOND		THIRD			FOURTH	
SEMESTER	1	2	3	4	5	6	BREAK	7	8
DICIPLINE CORE & ELECTIVE (102 CREDITS)	KMJ15204 Organic Chemistry	KMJ10003 Engineering Skills	KMJ25203 Physical Chemistry	KMJ10103 Engineering Quality Control	KMJ30203 Fluid Mechanics	KMJ30103 Process Control	KMJ39905 Industrial Training	KMJ45203 Polymer Engineering Integrated Design Project	KMJ45XX3 Elective II
	KMJ15303 Electrical Technology	KMJ15403 Engineering Mechanics	KMJ24003 Plastic Materials	KMJ25304 Polymer Synthesis	KMJ34803 Polymer Testing & Characterization	KMJ35203 Polymer Engineering Design		KMJ44003 Polymer Composites	KMJ45603 Polymer in Electronic Application
	KMJ16803 Introduction to Computer Programming	KMJ15503 Introduction to Polymer	KMJ24403 Elastomeric Materials	KMJ25404 Structure & Polymer Properties	KMJ34404 Rubber Processing	KMJ35304 Mass & Heat Transfer for Polymer Engineering		KMJ44104 Polymer Blends	KMJ49904 Final Year Project II
		KMJ15603 Engineering Drawing		KMJ25503 Thermodynamics for Polymer Engineering	KMJ34004 Plastic Processing	KMJ34504 Latex Processing		KMJ49802 Final Year Project I	
						KMJ35XX2 Elective I			
COMMON CORE COURSES (17 CREDITS)	IMQ10103 Engineering Mathematics 1	IMQ10203 Engineering Mathematics 2	IMQ20303 Engineering Mathematics 3	IMQ27103 Engineering Statistics		KMJ42403 Engineering Management			KMJ45802 Professional Engineer
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMU12102 Integrity and Anti-Corruption ^[4]	SMB41002 University Malay Language ^[3]	SMU13102 Appreciation of Ethics & Civilization		SMB31202 English for Technical Communication			SMU13002 Philosophy & Current Issues	
	SMZXXX01 Co-Curriculum 1	SMZXXX01 Co-Curriculum 2	SMB20102 English for General Communication ^[2]					SMU22402 Engineering Entrepreneurship	
TOTAL CREDIT (135 CREDITS)	16	18	16	17	16	19	5	16	12
AUDIT COURSES		SMB10102 Preparatory English ^[1]							

Elective I : KMJ35402 Polymers in Biomedical Applications OR KMJ35502 Photoluminescent Polymers

Elective II : KMJ45403 Polymer Adhesive & Coating OR KMJ45503 Environmental Friendly Polymer

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LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
KMJ10003	Engineering Skill [Kemahiran Kejuruteraan]	-
KMJ10103	Engineering Quality Control [Kawalan Mutu Kejuruteraan]	SDG 12
KMJ15303	Electrical Technology [Teknologi Elektrik]	SDG 12
KMJ15603	Engineering Drawing [Lukisan Kejuruteraan]	SDG 4, SDG 9
KMJ16203	Statics [Statik]	SDG 9
KMJ16803	Introduction to Computer Programming [Pengenalan kepada Pengaturcaraan Komputer]	SDG 9
KMJ20003	Materials Physical Chemistry [Kimia Fizikal Bahan]	SDG 7
KMJ20004	Materials Structure & Properties [Struktur & Sifat-sifat Bahan]	SDG 9
KMJ20103	Analytical Chemistry [Kimia Analitik]	SDG 6
KMJ20104	Physical Metallurgy [Metalurgi Fizikal]	SDG 12
KMJ20203	Dynamics [Dinamik]	SDG 7, SDG 11
KMJ20204	Whiteware, Glass and Glass-Ceramic [Tembikar Putih, Kaca dan Kaca-Seramik]	SDG 11
KMJ20303	Strength Of Materials [Kekuatan Bahan]	SDG 9
KMJ20403	Transport Phenomena in Materials Engineering [Fenomena Pengangkutan dalam Kejuruteraan Bahan]	SDG 7
KMJ30002	Materials Selection & Design I [Pemilihan Bahan dan Reka Bentuk 1]	SDG 9, SDG 11, SDG 12
KMJ30003	Polymer Processing [Pemprosesan Polimer]	SDG 9
KMJ30004	Polymer Properties [Sifat-sifat Polimer]	SDG 12
KMJ30103	Process Control [Kawalan Proses]	SDG 7

COURSE CODE	COURSE NAME	SDG
KMJ30104	Materials Characterization [Pencirian Bahan]	SDG 12
KMJ30203	Fluid Mechanics [Mekanik Bendalir]	SDG 9
KMJ30303	Surface Engineering [Kejuruteraan Permukaan]	SDG 9
KMJ30403	Materials Thermodynamics [Termodinamik Bahan]	SDG 9
KMJ30503	Electronic Materials Engineering [Bahan Elektronik Kejuruteraan]	SDG 9
KMJ39905	Industrial Training [Latihan Industri]	SDG 4
KMJ40003	Materials Selection & Design 2 [Pemilihan Bahan dan Reka Bentuk 2]	SDG 9, SDG 11, SDG 12
KMJ40103	Corrosion Engineering [Kejuruteraan Kakisan]	SDG 9
KMJ40203	Non Destructive Testing [Ujian Tanpa Musnah]	SDG 9, SDG 12
KMJ40303	Technical Ceramic [Seramik Teknikal]	SDG 9
KMJ40403	Composite Materials [Bahan Komposit]	SDG 7, SDG 9
KMJ40503	Construction Materials [Bahan Binaan]	SDG 9, SDG 11
KMJ40603	Joining of Materials and Structures [Penyambungan Bahan dan Struktur]	SDG 9, SDG 11
KMJ40703	Advanced Material Engineering [Kejuruteraan Bahan Termaju]	SDG 9
KMJ40803	Advanced Electronic Packaging [Pembungkusan Elektronik Termaju]	SDG 12
KMJ40903	Materials For Energy Application [Bahan Untuk Aplikasi Tenaga]	SDG 7
KMJ41003	Materials Failure Analysis [Analisis Kegagalan Bahan]	SDG 11
KMJ42403	Engineering Management [Pengurusan Kejuruteraan]	SDG 11

COURSE CODE	COURSE NAME	SDG
KMJ45802	Professional Engineer [Jurutera Profesional]	-
KMJ49802	Final Year Project 1 [Projek Tahun Akhir 1]	-
KMJ49904	Final Year Project 2 [Projek Tahun Akhir 2]	SDG 9
KMJ12103	Organic Chemistry [Kimia Organik]	SDG 12
KMJ12203	Biological and Chemical Science Principles [Pengenalan Kepada Prinsip-Prinsip Sains Biologi Dan Kimia]	SDG 6, SDG 7
KMJ12303	Introduction to Sustainability [Pengenalan Kepada Kelestarian]	SDG 6, SDG7, SDG12, SDG 13, SDG 17
KMJ12503	Mass and Energy Balance [Imbangan Jisim dan Tenaga]	SDG 12
KMJ12501	Biochemical Science [Sains Biokimia]	-
KMJ12903	Biochemical Engineering [Kejuruteraan Biokimia]	SDG 6, SDG 7, SDG 12
KMJ13003	Thermodynamics [Termodinamik]	SDG 7
KMJ13103	Process Instrumentations [Instrumentasi Proses]	SDG 9
KMJ22003	Chemical Engineering Thermodynamics [Termodinamik Kejuruteraan Kimia]	SDG 12
KMJ22103	Fluid Mechanics [Mekanik Bendalir]	SDG 7
KMJ22303	Analytical Chemistry [Kimia Analisis]	SDG 9, SDG 12
KMJ22403	Heat Transfer [Pemindahan Haba]	SDG 12
KMJ22503	Mass Transfer [Pemindahan Jisim]	SDG 13
KMJ22601	Transport Phenomena Application [Aplikasi Fenomena Pengangkutan]	-
KMJ22802	Materials Science and Engineering [Sains dan Kejuruteraan Bahan]	SDG 12

COURSE CODE	COURSE NAME	SDG
KMJ22903	Bioreactor System [Sistem Bioreaktor]	SDG 9
KMJ32003	Reaction Engineering [Kejuruteraan Tindakbalas]	SDG 12
KMJ32104	Process Dynamics and Control [Dinamik dan Kawalan Proses]	SDG 9, SDG 12
KMJ32203	Separation Process [Proses Pemisahan]	SDG 6, SDG 13
KMJ32301	Skills in Separation Process [Kemahiran dalam Proses Pemisahan]	SDG 6, SDG 9
KMJ32603	Safety and Loss Prevention [Keselamatan dan Pencegahan Kehilangan]	SDG 3, SDG 12
KMJ32803	Engineering Economics [Ekonomi Kejuruteraan]	SDG 8
KMJ32903	Colloidal and Biomaterial Processing [Pemprosesan Koloid Dan Biobahan]	-
KMJ33003	Halal Processing [Pemprosesan Halal]	SDG 3, SDG 8, SDG 12, SDG 15
KMJ33103	Sustainable Energy [Tenaga Lestari]	SDG 7
KMJ33203	Simulation for Chemical Engineering [Simulasi untuk Kejuruteraan Kimia]	SDG 9
KMJ33303	Industrial Waste Treatment [Rawatan Sisa Industri]	SDG 12
KMJ42003	Chemical Plant Design 1 [Rekabentuk Loji Kimia 1]	SDG 8, SDG 9, SDG 12
KMJ42203	Good Manufacturing Practice [Amalan Pengilangan Baik]	SDG 12
KMJ42403	Engineering Management [Pengurusan Kejuruteraan]	SDG 11
KMJ42503	Food Engineering [Kejuruteraan Makanan]	SDG 2, SDG 8, SDG 12
KMJ42603	Biomass Utilization [Penggunaan Biomass]	SDG 7, SDG 9, SDG 12, SDG 13
KMJ42704	Chemical Plant Design 2 [Rekabentuk Loji Kimia 2]	SDG 12

COURSE CODE	COURSE NAME	SDG
KMJ42903	Petrochemical Process [Proses Petrokimia]	SDG 9, SDG 12
KMJ43003	Pharma and Nutraceutical Engineering [Kejuruteraan Farma dan Neutraceutikal]	SDG 3, SDG 12
KMJ43103	Fuel Cells [Sel Bahan Api]	SDG 9
KMJ43203	Energy and Process Utility Engineering [Kejuruteraan Tenaga dan Utiliti Proses]	SDG 12
KMJ15204	Organic Chemistry [Kimia Organik]	-
KMJ15403	Engineering Mechanics [Mekanik Kejuruteraan]	-
KMJ15503	Introduction to Polymer [Pengenalan Kepada Polimer]	-
KMJ24003	Plastic Materials [Bahan-bahan Plastik]	-
KMJ24403	Elastomeric Materials [Bahan-bahan Elastomerik]	-
KMJ25203	Physical Chemistry [Kimia Fizika]	-
KMJ25304	Polymer Synthesis [Sintesis Polimer]	-
KMJ25404	Structure & Polymer Properties [Struktur & Sifat-Sifat Polimer]	-
KMJ25503	Thermodynamics for Polymer Engineering [Termodinamik untuk Kejuruteraan Polimer]	-
KMJ34004	Plastic Processing [Pemprosesan Plastik]	-
KMJ34404	Rubber Processing [Pemprosesan Getah]	-
KMJ34803	Polymer Testing & Characterization [Pengujian & Pencirian Polimer]	-
KMJ35203	Polymer Engineering Design [Reka Bentuk Kejuruteraan Polimer]	-
KMJ35304	Mass & Heat Transfer for Polymer Engineering [Pemindahan Jisim & Haba untuk Kejuruteraan Polimer]	-

COURSE CODE	COURSE NAME	SDG
KMJ34504	Latex Processing [Pemprosesan Lateks]	-
KMJ35402	Polymers in Biomedical Applications [Polimer dalam Aplikasi Bioperubatan]	-
KMJ35502	Photoluminescent Polymers [Polimer Pemancar Cahaya]	-
KMJ44003	Polymer Composites [Komposit Polimer]	-
KMJ44104	Polymer Blends [Adunan-Adunan Polimer]	-
KMJ45203	Polymer Engineering Integrated Design Project [Projek Reka Bentuk Bersepadu Kejuruteraan Polimer]	-
KMJ45403	Polymer Adhesive & Coatings [Perekat & Pelitup Polimer]	-
KMJ45503	Environmental Friendly Polymer [Polimer Mesra Alam]	-
KMJ45603	Polymer in Electronic Application [Polimer dalam Aplikasi Elektronik]	-

KMJ10003 ENGINEERING SKILL [KEMAHIRAN KEJURUTERAAN]

No of Credits: 3

Course Synopsis:

This subject is 100 % practical coursework and carries out 3 units credit hours. This course contains basic practical works for engineers which are Mechanical Workshop Practice, Welding, Domestic Electrical Wiring, Basic Electronic, Simulation/ Analysis Software, Technical Drawing and AutoCAD that specifically planned for non-electronic based programs.

Course Outcomes:

1. Ability to demonstrate effectively the skills and standard practice of mechanical machining process, equipment and tools.
2. Ability to perform the skills and standard practice of domestic electrical wiring and explain the theoretical approach when resolving physical issues.
3. Ability to construct the electronic circuit based on schematic circuit diagram and demonstrate basic knowledge of electronic components.
4. Ability to perform modern engineering and IT tools /software to analyse the data for engineering problem solving.
5. Ability to perform standard practice of engineering drawing to design a product using common drawing tool or software.
6. Ability to communicate effectively on laboratory/ workshop activities, make effective explanation, and give and receive clear.

KMJ10103 ENGINEERING QUALITY CONTROL [KAWALAN MUTU KEJURUTERAAN]

No of Credits: 3

Course Synopsis:

This course is an overview of quality studies that take into account the philosophical, managerial and technical issues of quality. The managerial aspects include TQM, ISO 9000. The technical aspects include statistical tools and techniques used in many industrial applications. Topics covered include: Introduction to Quality, TQM, ISO standard, design of experiment, six sigma, basic statistics, fundamentals of probability, control charts for variable and attribute, process capability, acceptance sampling plan, acceptance sampling system and reliability.

Course Outcomes:

1. Ability to differentiate the fundamentals in quality management systems, quality management tools and quality management philosophy.
2. Ability to assess engineering problems in quality management systems and quality control tools.

3. Ability to demonstrate proper use of quality control tools in engineering problems solving.

KMJ15303 ELECTRICAL TECHNOLOGY [TEKNOLOGI ELEKTRIK]

No of Credits: 3

Course Synopsis:

This course introduces the fundamentals and applications of electrical technology involving DC and AC circuits. Key concepts include current, voltage, resistance, power, and laws such as Ohm's Law, Kirchhoff's Laws, and Thevenin's Theorem. The syllabus also covers three-phase systems, electromagnetism, transformers, and the principles and performance of DC and AC machines.

Course Outcomes:

1. Ability to analyze DC and AC circuits using fundamental concepts and principles of mathematics, science, and engineering.
2. Ability to evaluate magnetic material properties and machine operation of DC and AC circuits in electromagnetic principles

KMJ15603 ENGINEERING DRAWING [LUKISAN KEJURUTERAAN]

No of Credits: 3

Course Synopsis:

Engineering Drawing is a fundamental course that develops students' skills in technical visualization and communication. It covers geometrical constructions, orthographic and isometric projections, and the transformation of 2D and 3D representations. Students will apply mathematical and engineering fundamentals to construct and analyze drawings, interpret complex geometries, and solve graphical challenges. They will also utilize modern drawing tools and CAD software to enhance precision, efficiency, and modelling capabilities. This course enhances creativity, technical competence, and problem-solving skills essential for engineering practice.

Course Outcomes:

1. Ability to apply the basic skills and knowledge of engineering drawings.
2. Ability to analyse the elements of engineering drawing based on drawing information and components.
3. Ability to sketch the required design in engineering drawing via computer-aided design (CAD).

KMJ16203 STATICS [STATIK]

No of Credits: 3

Course Synopsis:

The course exposes the students about basic concepts of forces and resultant force through the concepts of free body diagram in two and three dimensions and apply the knowledge to solve problems related to the concepts of equilibrium, the concepts of a particle and rigid body. Students also will be exposed to the concepts of the moment of a force in two and three dimensions. Friction, concepts of center of gravity and center of mass and moment inertia will also be discussed to understand the overall basic statics.

Course Outcomes:

1. Ability to analyse the concepts and theories of mechanics in statics.
2. Ability to evaluate the distribution of forces and moments in equilibrium objects, systems and structures.

KMJ16803 INTRODUCTION TO COMPUTER PROGRAMMING [PENGENALAN KEPADA PENGATURCARAAN KOMPUTER]

No of Credits: 3

Course Synopsis:

In this course, students will be introduced to computer systems, problem solving analysis and programming concepts including variables, operators, control structures, functions, arrays and pointers. These crucial knowledge and skills allow students to innovate, create solutions for the global problems, automate, collect, manage, calculate, analyse processing of data and information accurately.

Course Outcomes:

1. Ability to evaluate fundamental computer programming concepts and principles, and the application in devising solutions to engineering-related problems.
2. Ability to design simple computer programs to solve problems/issues in multidisciplinary engineering field.
3. Ability to operate coding software editor for coding, compiling, executing and debugging computer programs for related engineering programs.

KMJ20003 MATERIALS PHYSICAL CHEMISTRY [KIMIA FIZIKAL BAHAN]

No of Credits: 3

Course Synopsis:

This course is designed to introduce the students fundamental aspect of thermodynamics including first law and second law of thermodynamics, thermochemistry, chemical equilibrium, reaction kinetics such as effect of reactants and products concentration, effect of temperature, determination of order and velocity constant of reaction, electrochemistry, interface phenomenon, adsorption and colloids.

Course Outcomes:

1. Ability to apply the physical chemistry concepts, laws and principles relevant to materials engineering.
2. Ability to assess the engineering problem related to the chemical and physical behaviour of engineering materials.
3. Ability to investigate the concentration and temperature dependence of the potentials and enthalpy of the reaction through experiments, knowledge, data analysis and data interpretation.
4. Ability to perform effectively as an individual and a member of leader in multi-disciplinary settings.

KMJ20004 MATERIALS STRUCTURE & PROPERTIES [STRUKTUR & SIFAT-SIFAT BAHAN]

No of Credits: 4

Course Synopsis:

This course is designed to introduce some fundamentals of materials engineering; materials structure, solid defects and basic theory of diffusion. Introduction to mechanical and physical properties for various types of engineering materials, how these properties are measured and what these properties represent.

Course Outcomes:

1. Ability to assess the material structure and properties in fundamental knowledge of atomic bonding, electrical, optical, thermal, magnetic and mechanical properties.
2. Ability to perform investigation of crystal structure, electrical and mechanical properties of materials using knowledge-based analysis.
3. Ability to perform effectively as an individual and as a member or leader in a team during experimental work and data analysis tasks.

KMJ20103 ANALYTICAL CHEMISTRY [KIMIA ANALITIK]

No of Credits: 3

Course Synopsis:

This course is designed to introduce the students about the nature and scope of analytical chemistry, analytical reaction in the solution, separation technique using precipitation, solvent extraction, solid phase extraction, ion exchange, complexometric methods and chromatographic technique. Instrumental analysis of thermal, spectrochemical, atomic spectrometric analysis, sensor, automation and computing. And evaluation of analytical data with statistical treatment.

Course Outcome:

1. Ability to apply the basic knowledge of elements and chemical compositions analysis in analytical chemistry.
2. Ability to evaluate the statistical treatment of data, chemical and instrumental analysis in materials chemistry

KMJ20104 PHYSICAL METALLURGY [METALURGI FIZIKAL]

No of Credits: 4

Course Synopsis:

This course is focused more on metallographic study, the relation between microstructure and properties of steels and nonferrous alloys. The subtopic in this subject are: introduction to physical metallurgy, solidification process, imperfections in solid, slip mechanism, metallography quantitative, non-ferrous alloys, strengthening mechanism, introduction to phase diagram, iron-iron carbide phase diagram, recovery, recrystallization and grain growth, procedure of steel heat treatment, surface of heat treatment, introduction to isothermal transformation (IT) and continuous cooling transformation (CCT) diagrams, hardenability and cast iron.

Course Outcomes:

1. Ability to analyse the crystal structure, properties and fabrication of metals and alloys and their relation with the microstructures and phase diagrams in physical metallurgy.
2. Ability to propose appropriate heat treatment processes to achieve the targeted metal properties considering application requirements and process constraints.
3. Ability to investigate the formation of microstructures and metal properties in the casting or heat treatment process.
4. Ability to engage in critical thinking and life-long learning related to processes and emerging technologies in physical metallurgy.

KMJ20203 DYNAMICS [DINAMIK]

No of Credits: 3

Course synopsis:

In this course, students use the concepts of mechanics in dynamics conditions. This course will be presented in two parts: kinematics, which treats only the geometric aspects of motion, and kinetics, which is the analysis of the forces causing the motion. To develop these principles, students learn the dynamics of a particle first, followed by topics in rigid-body dynamics in two dimensions. Emphasis will be given on the kinematics and kinetics of a particle and planar kinematics and kinetics of a rigid body.

Course Outcomes:

1. Ability to apply the concepts and theories of motions in basic mechanics.
2. Ability to solve problems of 2-dimensional kinetics and kinematics of a particle and rigid body in engineering dynamics.

KMJ20303 STRENGTH OF MATERIALS [KEKUATAN BAHAN]

No of Credits: 3

Course Synopsis:

Strength of Materials course introduces the concepts and principles in engineering mechanics of materials (statics) and behaviour of the materials and structures under external loadings. The fundamental knowledge on the mechanics of solids incorporating static equilibrium, materials geometry, deformations under applied loads are basics for solving numerous engineering problems involving materials and various structural members subjected to axial load, torsion, bending, transverse shear and combined loadings in engineering applications.

Course Outcomes:

1. Ability to analyze the stress strain relationship in components using the principles of mechanics of materials.
2. Ability to evaluate the stress and deflection in beams, columns, and other structural elements when subjected to various loading conditions.
3. Ability to perform finite element analysis to evaluate the stress and deflection of components under various loading scenarios.

KMJ20204 WHITEWARE, GLASS AND GLASS-CERAMIC [TEMBIKAR PUTIH, KACA DAN KACA-SERAMIK]

No of Credits: 4

Course Synopsis:

This course presents the essential knowledge on the production of whitewares, glasses and glass-ceramic from raw materials to the final product. Whitewares: Raw materials and processing. Basic compositions and batch calculation, testing for quality control purpose, type of additives used and the scientific basis, shaping techniques such as slip casting, powder pressing, plastic forming, Plaster of Paris and mold making, glaze type, formulation and decoration technique, drying and firing, sintering mechanism (solid state and liquid phase sintering). Glasses: Classification and type of glass, basic properties, elementary concept of glass manufacturing process, fundamental of glass formation, liquid immiscibility, mechanism of phase separation and chemical durability of glass, different methods of producing glasses, heat treatment of glass. Technology of making radiation shielding glasses, optical glass, photosensitive glasses and heat absorbing glasses. Optical properties of glass, coating of glass, coloured glass including photochromic and electrochromic glass. Glass-ceramics: Classification and type of glass-ceramics, elementary concept of glass-ceramics manufacturing process, nucleation and growth, viscous sintering mechanism, technology used for glass-ceramics manufacturing, optical properties, type of glaze and decoration techniques.

Course Outcomes:

1. Ability to assess the fundamentals theory and characteristics of whiteware ceramics, glass and glass-ceramic materials.
2. Ability to evaluate problems related to the fabrication of crystalline and non-crystalline ceramics.
3. Ability to engage in lifelong learning in the broadest context of ceramic processing technology.

KMJ20403 TRANSPORT PHENOMENA IN MATERIALS ENGINEERING [FENOMENA PENGANGKUTAN DALAM KEJURUTERAAN BAHAN]

No of Credits: 3

Course Synopsis:

This course is divided into three (3) main topics: momentum transfer, heat transfer and mass transfer. In momentum transfer, students will learn the basic concept of fluid behaviour in static, fluid dynamics, 1-D solutions to Navier-Stokes equations

and energy equations. While heat transfer deals with the transfers of heat through conduction, convection and radiation. In mass transfer, students will learn about Fick's Law and diffusion in materials, mass transfer in fluid systems and interphase mass transfer.

Course Outcomes:

1. Ability to apply the fundamental concept of motion in momentum, heat, and mass transfer for materials engineering
2. Ability to evaluate the problems of momentum, heat, and mass transfer for transport phenomena in materials engineering.

KMJ30003 POLYMER PROCESSING [PEMROSESAN POLIMER]

No of Credits: 3

Course Synopsis:

This course is aimed to equip students with knowledge and basic concepts of polymer processing for thermoplastic, thermoset and rubber materials. Particular emphasis will be given on the principle of the related processing techniques and rheological behaviour of polymer melt during processing. The influence of processing variables or parameters on the final products such as the existence of product defects and solutions to overcome the processing issues will also be introduced. Several readily available techniques namely injection moulding, compression moulding, extrusion, gelling time and casting of thermoset will be explored, and students will gain the knowledge and ability to compare and evaluate the advantages and disadvantages of these processing techniques respectively. The students will be also introduced to sustainable concepts in polymer processing and their applications towards environmental and global needs within this course.

Course Outcomes:

1. Ability to analyse basic theory of processing methods in thermoplastic, thermoset and rubber processing.
2. Ability to investigate the relationship between processing parameters and resulting product properties in processing technologies.
3. Ability to evaluate the impact of sustainability and safety on the environment in polymer processing.

KMJ30004 POLYMER PROPERTIES [SIFAT-SIFAT POLIMER]

No of Credits: 4

Course Synopsis:

This course introduces the fundamental aspects of polymeric materials including their type of matrix as well as reinforcements. In addition, the students may also be exposed to several testing and characterization including physical, mechanical, thermal and chemical properties. Students may also be exposed to fundamental concepts, sample preparation, standard procedures, etc for all related testing and characterizations. At the end of the course, the students are expected to be able to relate various aspects of polymer properties by using numerous characterizations and testing equipment.

Course Outcomes:

1. Ability to evaluate the structure and properties of polymer materials for solutions of complex engineering problems.
2. Ability to analyze the chemical, mechanical and thermal properties of polymer materials through research base knowledge and data analysis.
3. Ability to assess solutions by adapting to new and emerging technologies in polymer science and engineering.

KMJ30103 PROCESS CONTROL [KAWALAN PROSES]

No of Credits: 3

Course Synopsis:

The aim of this course is to introduce the principle of process control system, including continuous and batch control approaches; knowledge of control algorithm implementation for selected processes; capability of selecting instrumentation for process control; proficiency of managing and handling projects from designing to applying the process control approach into the system.

Course Outcomes:

1. Ability to differentiate the essential features and element in process control.
2. Ability to evaluate the dynamic components and elements of the process in the overall transfer function control system.
3. Ability to design an appropriate controller by assessing stability and various system responses in control system.
4. Ability to perform the dynamic behavior processes by utilizing the necessary tools in process control.

KMJ30104 MATERIALS CHARACTERIZATION [PENCIRIAN BAHAN]

No of Credits: 4

Course Synopsis:

This course is an overview of the basic principles of materials characterization involving crystallography, thermal, microscopy and related spectroscopy. The basic and working principles of the instrument are reviewed where several methods, factors and errors related to measurements are introduced to assist in the analysis of materials characterization. At the end of the course, the students are expected to be able to investigate and perform engineering problems related to materials characterization.

Course Outcomes:

1. Ability to assess material characterization techniques, including their testing applications and underlying principles.
2. Ability to analyze various characterization test result to achieve testing objectives.
3. Ability to perform appropriate material characterization techniques to solve materials engineering problems.

KMJ30203 FLUID MECHANICS [MEKANIK BENDALIR]

No of Credits: 3

Course Synopsis:

Course will be concentrated with fluid properties, fluid classification and force types in fluids. Thus, students will be learning about fluid properties in two different conditions: static and dynamic conditions. Students also will learn momentum principles including basic equations for controlled system and volume, and then basic equations in differential form. The students will see fluid application in flow topics in pipes and turbomachine. The course also concentrates flow measurement aspects, like tools and procedures which are used in flow measurement.

Course Outcomes:

1. Ability to apply fundamentals and concepts of fluid static and fluid motion in fluid mechanics.
2. Ability to assess the fluid problem related to fluid properties, fluid static, fluid flow and its application in materials engineering.
3. Ability to perform a simple simulation for fluid flow in fluid mechanics

KMJ30303 SURFACE ENGINEERING [KEJURUTERAAN PERMUKAAN]

No of Credits: 3

Course Synopsis:

This course provides the fundamentals of thin film and processing for various industrial applications. Thin film science and technology have gone through a thorough development which results in numerous new devices (e.g., Light Emitting Diodes (LED), fuel cell and solar cell) and new materials with fundamentally new properties. Topics include, but are not limited to, fundamentals on crystal structures and defects in thin films, the basic nucleation and growth mechanisms of thin films (growth models, lattice matching epitaxy and domain matching epitaxy), thin film processing techniques (CVD, MOCVD, PVD, PLD, Laser-MBE, sputtering, sol-gel, electrochemical and evaporation etc.), thin film growth instrumentation aspect (energy source, chamber configurations, vacuum systems). This course also includes the characterizations and applications which are related for surface coating/thin films.

Course Outcomes:

1. Ability to relate engineering fundamentals and specialization of materials concepts in surface engineering.
2. Ability to assess engineering problems in surface engineering by applying principles of optical, electrical and mechanical properties of materials in surface engineering
3. Ability to evaluate sustainable practices in surface engineering by analyzing environmental, health and safety impacts of materials.
4. Ability to develop innovative solutions for surface engineering challenges by exploring emerging technologies and advanced methodologies.

KMJ30403 MATERIALS THERMODYNAMICS [TERMODINAMIK BAHAN]

No of Credits: 3

Course Synopsis:

Materials thermodynamics introduces the laws of thermodynamics including first law of thermodynamics, second law of thermodynamics and the combined law. The concept of thermodynamic variables and relations as well as equilibrium in thermodynamic system and statistical thermodynamics are introduced to assist in its application towards unary heterogeneous systems and multicomponent homogeneous nonreacting systems. From thermodynamic properties analysis, students are expected to be able to develop phase diagrams.

Course Outcomes:

1. Ability to analyse the basic knowledge and principle of thermodynamics in materials engineering
2. Ability to assess the engineering problems related to the thermodynamic systems in materials
3. Ability to perform the appropriate numerical modelling tools in the phase diagram and unary system of thermodynamics

KMJ30503 ELECTRONIC MATERIALS ENGINEERING [BAHAN ELEKTRONIK KEJURUTERAAN]

No of Credits: 3

Course Synopsis:

This course is designed to introduce the students' various aspects of Electronic Materials such elementary materials science concepts, electrical and thermal conduction in solids, elementary quantum physics, the modern theory of solids, semiconductors and devices, dielectric materials and insulators, the magnetic properties of materials, superconductivity and the optical properties of materials.

Course Outcome:

1. Ability to analyze properties and behaviours of semiconductor and electronic materials in the context of electronic device operation.
2. Ability to evaluate engineering problems by applying principles of mathematics, materials science and electronic materials engineering.
3. Ability to demonstrate accurate and effective use of computer software to perform electronic structure calculations of semiconductor materials.

KMJ30002 MATERIALS SELECTION & DESIGN 1 [PEMILIHAN BAHAN DAN REKA BENTUK 1]

No of Credits: 2

Course Synopsis:

The Materials Selection & Design course is structured to prepare students for their integrated design projects by providing them with a solid foundation in engineering decision-making and practical project execution. Students will explore materials selection through Ashby's approach, gaining the ability to assess material properties and effectively integrate them into design solutions for complex engineering challenges. Complementing this is a module on project management, where students will gain hands-on experience to plan, schedule, and manage projects. The course also integrates sustainability concepts, aligning engineering practices with the United Nations' Sustainable Development Goals (SDGs), fostering a mindset of responsible design. Additionally, students will be introduced to professional engineering practice, emphasizing the standards and ethical responsibilities of the profession. Emphasizing safety, HIRARC (Hazard Identification, Risk Assessment, and Risk Control), and ethics, the course ensures that students are thoroughly equipped to uphold safety protocols and ethical principles in engineering practice. Finally, segment on data validation and simulation will equip students with the skills to verify their designs' accuracy and reliability, preparing them for the practical demands of the capstone project. Overall, this course provides a comprehensive blend of technical knowledge and project management skills, essential for tackling real-world engineering challenges.

Course Outcomes:

1. Ability to design system, components, process or solutions in engineering projects.
2. Ability to investigate in emerging issue of engineering project.
3. Ability to assess sustainability and impact of engineering work in societal and environment context.
4. Ability to perform effectively as an individual and as a collaborative teamwork in diverse teams and in multi-disciplinary settings.
5. Ability to communicate effectively on engineering activities in the project.
6. Ability to devise project planning in multidisciplinary environments.

KMJ40003 MATERIALS SELECTION & DESIGN 2 [PEMILIHAN BAHAN DAN REKA BENTUK 2]

No of Credits: 3

Course Synopsis:

This course consists of an integrated design project that aims to demonstrate a student's proficiency in materials engineering field. It is a culminating project that integrates and applies the knowledge and skills acquired throughout the course of materials engineering degree program. The project involve research, data analysis, problem solving, and creative work that demands students to think critically, communicate effectively and work independently in a team. The utmost aim of this project is to devise an innovative solution, original work for a real-world problem that contributes to the students' academic and professional development.

Course Outcomes:

1. Ability to design engineering solutions, systems, components, or processes for complex problems while considering public health, safety, cost, sustainability, and socio-environmental factors.
2. Ability to assess the sustainability and impact of engineering solutions towards society, economy, health and safety, legal frameworks, and the environment.
3. Ability to perform effectively as an individual and as a member or leader in diverse and inclusive teams and in multi-disciplinary settings.
4. Ability to deliver project ideas, progress, and results effectively through discussions and presentations.
5. Ability to devise project activities, timelines, and financial resources using project management tools and principles.

KMJ40103 CORROSION ENGINEERING [KEJURUTERAAN KAKISAN]

No of Credits: 3

Course Synopsis:

Students will learn corrosion and surface engineering principles. Therefore, in this subject, the student will learn electrochemistry, corrosion type, and corrosion problems in industries. Electrochemistry principles, corrosion types, Pourbaix Diagram, Corrosion mechanism, kinetic and corrosion rate. Corrosion prevention methods, inhibitors, anodic and cathodic prevention, coating, stress corrosion cracking, selection and design, corrosion problems in industry and its solution.

Course Outcomes:

1. Ability to apply the fundamental knowledge of thermodynamics and electrochemistry and their relation to the dissolution of metals and alloys in corrosion.
2. Ability to create solutions to overcome the existing limit of corrosion properties to attain the design requirements of a material.
3. Ability to investigate the corrosion performance of materials to attain the special needs in their application through experiments, data analysis, and data interpretation.
4. Ability to evaluate the impact of professional corrosion engineering on societal, sustainable development, and environmental contexts.

KMJ40203 NON DESTRUCTIVE TESTING [UJIAN TANPA MUSNAH]

No of Credits: 3

Course Synopsis:

Non-destructive testing (NDT) is a method used for inspection of a material's surface and internal part. Testing implies for finding defective parts inside or on the surface of a material and does not damage or ruined tested part/specimen. Identifying defects and flaws in material which could not be seen using our naked eyes is absolutely important in determining the material life span and the material performance. The effective method of NDT is almost depending on the knowledge and skill of the person in charge. Because of that reason, this course offered several topics which is covering the general NDT methods that are normally used in engineering field such as visual testing, liquid penetrant, magnetic particle, eddy current, ultrasonic, and radiography technique. This course also introduces to other NDT techniques such as optical inspection probes, neutron radiography, laser-induced ultrasonics, acoustic emission inspection gauges and thermograph.

Course Outcomes:

1. Ability to apply scientific principles and engineering fundamentals to perform non-destructive testing for accurate measurement and failure analysis of materials.
2. Ability to communicate effectively as a leader and team members in the evolution of materials using non-destructive testing for reliability and sustainability.
3. Ability to evaluate suitable non-destructive methods, with adaptability of new technologies.

KMJ40303 TECHNICAL CERAMIC [SERAMIK TEKNIKAL]

No of Credits: 3

Course Synopsis:

The content of this course covers several important topics related with advanced ceramics materials in modern science and engineering perspectives. This course covers from initial concept and basic principles, functions and properties, synthesis route and processing method until current and potential applications for wide ranges of advanced ceramics including electroceramics (ionic conductivity, superconductor, dielectric, ferroelectric, piezoelectric, magnetic and photonic ceramic), refractories, structural and biocompatible (bio-ceramic) ceramics utilized in biomedical applications. Discussion in the fundamental issues and related problems involving different areas of advanced ceramics materials will be carried out. Overall, this course emphasizes on the relation between the materials-structure-properties and characteristics.

Course Outcomes:

1. Ability to critically evaluate the selection of materials in technical ceramics for specific engineering application.
2. Ability to create solutions for identified problems in technical ceramics by integrating scientific concepts, material behavior, and processing considerations.
3. Ability to demonstrate accurate and effective use of computer software to perform electronic structure calculations of ceramic materials.

KMJ40403 COMPOSITE MATERIALS [BAHAN KOMPOSIT]

No of Credits: 3

Course Synopsis:

The course is focusing on the three major type of composite materials which are ceramic matrix composite (CMC), metal matrix composite (MMC) and polymer matrix composite (PMC). Lecture cover on several important aspects of composite materials. This includes the introductions, classifications, properties, application and characterizations of composite materials, matrix and reinforcements phase. Also, the manufacturing and processing methods, types and influence of different reinforcement, inter-phase properties, mechanical and failure behavior, current and future pointed applications of composites products. At the end of the course, students will have a comprehensive knowledge and well understanding regarding composite materials.

Course Outcomes:

1. Ability to analyse the structure of composite materials and their relationship with the properties and processing method.
2. Ability to evaluate the composite problems and design to meet the requirements of targeted applications and future prospects for composite technology.
3. Ability to relate the impact of composite materials towards society, environment and sustainability in engineering and related technology fields.

KMJ40503 CONSTRUCTION MATERIALS [BAHAN BINAAN]

No of Credits: 3

Course Synopsis:

The subject provides a clear and comprehensive perspective on the range of materials used in the construction. It will cover the production, types, uses in construction, properties and related tests for the construction materials which includes concrete, masonry, plastic, glass, timber and bituminous materials. The concrete mix design calculations will also be covered. The critical factors affecting in situ materials are examined, such as deterioration, behaviour and durability of materials under performances. The role and involvement of various organizations in the construction industry will be discussed.

Course Outcomes:

1. Ability to analyse the properties of construction materials and their relationships with the processing technique and applications in engineering

field.

2. Ability to evaluate the problems and design building materials to fulfil the needs of specific applications and potential future developments in materials technology.
3. Ability to integrate innovative construction materials that address the needs of engineering solutions in society while adhering to principles of sustainable development.

KMJ40603 JOINING OF MATERIALS AND STRUCTURES [PENYAMBUNGAN BAHAN DAN STRUKTUR]

No of Credits: 3

Course synopsis:

Joining is the process used to bring separate parts or components together to produce a unified whole assembly or structural entity. Joining is often one of the last processes to be used in a complex products manufacturing, following part shaping by casting, rolling, drawing, extrusion, forging, forming, machining and powder compacting. This course is comprehensive of various joining fundamentals and techniques of materials. It is not only a pragmatic process for manufacturing that we need every day, but as an enabling technology for what we will need for the future of materials development. Topics include joining conventional, advanced and emerging materials, as well as large, complex structures, primarily from the material perspective. Joining by mechanical fasteners, integral designed-or formed-in features, adhesives, welding, brazing, soldering, thermal spraying, and hybrid processes are addressed as processes and technologies, as are issues associated with the joining of metals, ceramics, glass, plastics, and composites. While focused on materials issues, issues related to joint design, production processing, quality assurance, process economics, and joint performance in service are not ignored.

Course Outcomes:

1. Ability to analyse various joining structures and techniques used for metals, ceramics, glass, plastics, and composite materials, considering their material-specific characteristics and functional applications.
2. Ability to evaluate appropriate joining processes for various materials and structures to promote resilient and sustainable engineering practices.
3. Ability to integrate solutions for materials joining and structural design that reflect an organized commitment to environmental sustainability.

KMJ40703 ADVANCED MATERIAL ENGINEERING [KEJURUTERAAN BAHAN TERMAJU]

No of Credits: 3

Course Synopsis:

This course introduces the principles, fabrications and characterization of nanomaterials with emphasis to Quantum Dots (QDs), and Carbon-based Nanomaterials; Carbon Nanotubes (CNT) and graphene. In the meantime, materials that exhibits extraordinary properties and able to overcome the existing limit in engineering such as Advanced Alloys, Advanced Coatings, Advanced Polymers and Smart Materials also will be discussed. Therefore, students will be familiar with the recent advancement in the field of Materials Science and Engineering that revolutionized the world.

Course Outcomes:

1. Ability to apply fundamental and specialised engineering knowledge in the realm of advanced materials.
2. Ability to evaluate problems regarding the current applications of advanced materials
3. Ability to demonstrate lifelong learning competencies by creating research literature and articulating implications of advancements in materials engineering for future technological and industrial challenges.

KMJ40803 ADVANCED ELECTRONIC PACKAGING [PEMBUNGKUSAN ELEKTRONIK TERMAJU]

No of Credits: 3

Course Synopsis:

This course is designed to introduce the students to various aspects of electronic packaging technology currently being used in the electronic industry. Topics such as types of electronic packages, materials involved in packing, thermal considerations, package assembly and design characteristics, fundamental and process of board and IC assembly, soldering technology, MEMS and MOEMS, thin film processing and reliability assessment techniques will be discussed.

Course Outcomes:

1. Ability to employ engineering fundamentals to solve engineering problems in electronic packages.
2. Ability to assess the problem of electronic packaging based on materials principles in semiconductor and electronic package.
3. Ability to propose appropriate packaging techniques, materials, or design

approaches for specific application requirements base on latest advancements in electronic packaging technology.

KMJ40903 MATERIALS FOR ENERGY APPLICATION [BAHAN UNTUK APLIKASI TENAGA]

No of Credits: 3

Course synopsis:

In this course, students will be exposed to several materials associated with energy conversion and energy storage. The overview of current global energy needs and challenges, as well as types of energy conversion and storage will be introduced to students. Applicable materials for energy application, the properties of materials, fundamental reactions involved, exploration of advanced materials, the vital criteria in selection of materials, extended issues and challenges towards green technology and how to solve the related issue are discussed. Materials for energy applications in lithium-ion battery, supercapacitor, fuel cell, photo-sensitive and thermoelectric materials will be highlighted. The importance of advanced materials in these energy applications towards high performance and efficient-energy conversion and storage will be discussed.

Course Outcomes:

1. Ability to apply principles of energy storage reactions and the fundamental concepts and theories of materials used in energy storage applications.
2. Ability to evaluate materials problems for performance optimisation in energy applications.
3. Ability to review recent energy storage materials and engage in life long learning in the broadest context of design and processing technology.

KMJ41003 MATERIALS FAILURE ANALYSIS [ANALISIS KEGAGALAN BAHAN]

No of Credits: 3

Course synopsis:

This course is designed to bridge the gap between theory and practice of failure analysis in terms of materials aspect. It presents a very practical approach to failure analysis for materials engineering students who are interested in understanding how knowledge of failure analysis can lead to better productivity, safety and/ or cost saving. A comprehensive overview of the field, this course covers four principal areas of interest, which are procedures for forensic analysis, root-causes of failure, failure mechanisms and recommendation to prevent future failure. The forensic analysis of product/component failures is also studied from beginning to end for certain case studies that normally happen in industries. Students will also be exposed to technical report writing techniques.

Course Outcomes:

1. Ability to apply the principles of materials science and engineering to investigate and overcome the complex materials failure problems.
2. Ability to evaluate corrective and preventive actions based on materials failure analysis findings.
3. Ability to develop approaches using emerging technologies and critical thinking to solve materials engineering failures.

KMJ49802 FINAL YEAR PROJECT 1 [PROJEK TAHUN AKHIR 1]

No of Credits: 2

Course Synopsis:

This course provides students with the essential skills to conduct independent research in engineering. Students will select a research topic relevant to their field and carry out systematic investigations under the guidance of a supervisor. Throughout the course, student will develop the ability to explore emerging issues in their research, think critically, and uphold professional ethics and responsibilities. Emphasis is placed on effective communication of complex engineering concepts, research management principles, and adherence to health and safety regulations. Student are required to attend seminar, prepare an introductory chapter, conduct a literature review, propose a research methodology and outline expected results.

Course Outcomes:

1. Ability to investigate emerging issues in complex engineering problems.

2. Ability to assess technological solutions using critical thinking in research activities.
3. Ability to value professional ethics and responsibilities in research project.
4. Ability to value effective communication on complex engineering activities in research project.
5. Ability to organize project activities and documentation through research management concepts.
6. Ability to practice health and safety regulations in research project.

KMJ49904 FINAL YEAR PROJECT 2 [PROJEK TAHUN AKHIR 2]

No of Credits: 4

Course Synopsis:

Students are expected to apply their knowledge on conducting research. In this course, students are to carry out independent studies on a selected research topic. The topic chosen is supposed to be within the scope of Materials Engineering practice. Each student is assigned with a supervisor. The supervisor will assist students in planning and conducting their research. For this stage, students are compulsory to attend seminars, prepare Introductory Chapter, Literature Review and proposed method of study and report preliminary results.

Course Outcomes:

1. Ability to conduct experiments including data interpretation and analysis to provide valid discussion in research project.
2. Ability to value research findings in the project.
3. Ability to apply critical thinking in research activities.
4. Ability to apply professional ethics and responsibilities in research project.
5. Ability to communicate effectively on complex engineering activities in research project.
6. Ability to apply concept of research management in project activities.

KMJ42403 ENGINEERING MANAGEMENT [PENGURUSAN KEJURUTERAAN]

No of Credits: 3

Course synopsis:

This course aims to teach students on how to apply project management skills when undertaking projects and to provide basic tools of engineering economy to enable the students to carry out professional quality economic evaluations. At the end of the course, students will be able to identify and discuss issues and challenges faced by engineers relating to project management in the current economic scenarios.

Course Outcomes:

1. Ability to analyse project management basics and initiation and planning of engineering projects in multidisciplinary environments.
2. Ability to justify economic evaluations in decision making process related to engineering projects and business ventures.
3. Ability to generate project scheduling, resource and risk management, project monitoring and control plans, project termination and post-project reviews.

KMJ45802 PROFESSIONAL ENGINEER [JURUTERA PROFESIONAL]

No of Credits: 2

Course synopsis:

This course aims to explain the main concepts in engineering ethics, risk management and occupational safety and health as well as to expose the students to basic of law in the engineering context. The materials will be of introductory nature to enable engineers to appreciate factors that have to be taken into account in decision-making. At the end of the course, students will be able to identify and discuss issues and challenges faced by engineers relating to engineering ethics, risk management and to understand the legal requirements related to engineering field.

Course Outcomes:

1. Ability to evaluate the issues and challenges of engineering ethics within the norms of engineering practice.
2. Ability to evaluate the risk management principles in relation to sustainability approaches based on engineering practice.
3. Ability to evaluate the aspects and procedures of legal based on engineering issues.

KMJ39905 INDUSTRIAL TRAINING [LATIHAN INDUSTRI]

No of Credits: 5

Course Synopsis:

The course will expose students to technical and practical application as well as other aspects such as the company's operation, work culture, safety procedure, project management, communication, technical skills, and presentation. Students are required to submit their logbook and written report at the end of the industrial training.

Course Outcomes:

1. Ability to demonstrate technical knowledge and practical skills using engineering tools in industry application.
2. Ability to practice sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks and the environment in working environment.
3. Ability to demonstrate professional ethics and responsibilities in working environment.
4. Ability to work effectively as an individual and as a team member in diverse engineering working environment.
5. Ability to demonstrate communication skills to complete task, write reports and present work effectively.

KMJ12103 ORGANIC CHEMISTRY [KIMIA ORGANIK]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental theories (atomic orbital, molecular orbital and hybridization theories) and the application of hybridization theory in reactions involving alkynes and alkenes including conformational analysis of alkanes and emphasizing on the nucleophilic substitution reactions of alkylhalides. The course also covers on physical and chemical properties, and chemical reactions involving alcohol and ester, aldehyde and ketone, carboxylic acid and aromatic compound. The application of organic chemical process is discussed in terms of biofuel and biopharmaceutical production.

Course Outcomes:

1. Ability to demonstrate the basic concept in chemical bonds and acid base reactions in organic chemistry.
2. Ability to analyze theoretical organic chemical reactions of alkenes, alkynes and alkylhalides at molecular level in complex engineering problem.
3. Ability to evaluate the chemistry of alcohol, ether, aldehyde, ketone, carboxylic acid, aromatic compounds and their chemical reaction in complex engineering problem.

KMJ12203 BIOLOGICAL AND CHEMICAL SCIENCE PRINCIPLES [PENGENALAN KEPADA PRINSIP-PRINSIP SAINS BIOLOGI DAN KIMIA]

No of Credits: 3

Course Synopsis:

This course introduces the relevant fundamentals of biochemistry and microbiology, which includes important topics like microbial diversity, cell construction and nutrients, enzymes, molecular cell biology, metabolism and microbial growth. Application of these principles in chemical engineering are also featured with reference to medical, food, waste management and other related processes in chemical industries.

Course Outcomes:

1. Ability to apply biological basics, enzymes, cell structure and functions.
2. Ability to analyse complex problems related to batch growth kinetic, metabolism and alteration of cellular information.
3. Ability to evaluate the solutions of engineering problem related to the application of biochemistry and microbiology in chemical industry.

KMJ12303 INTRODUCTION TO SUSTAINABILITY [PENGENALAN KEPADA KELESTARIAN]

No of Credits: 3

Course Synopsis:

This course introduces the academic approach of sustainability and explores how today's human societies can endure in the face of global change, ecosystem degradation and resource limitations. The course focuses on key knowledge areas of sustainability theory and practice, including population, ecosystems, global change, energy, agriculture, water, and environmental economics. The course also introduces the environmental law and policy practices in Malaysia. Lastly, implementation of sustainable production and production of sustainable products based on analysis of environmental aspects of a product system, integration of significant environmental aspects into product design, and selection of the innovative methods and tools are introduced.

Course Outcomes:

1. Ability to explain the need of the sustainability in the solutions of complex engineering problems for environmental and sustainable development.
2. Ability to adapt the contextual knowledge to assess global issues and the consequent responsibilities relevant to professional engineering practice.
3. Ability to describe a viable solution to a particular challenge to sustainability and defend a persuasive proposal that advocates this solution.

KMJ12503 MASS AND ENERGY BALANCE [IMBANGAN JISIM DAN TENAGA]

No of Credits: 3

Course Synopsis:

The course highlights the basic concept of mass and energy balance in chemical processes. Students are taught with fundamental knowledge of engineering calculations and process variables. Exposure to concepts and understanding of mass and energy balance are emphasized which covers steady-state nonreactive and reactive processes. These concepts are then applied to analyze and solve problems in chemical systems, where applicable. Students will be taught to approach problems systematically; draw and label flowcharts, calculate the degree of freedom to ensure the problems are solvable, and formulate solution plans before any calculations.

Course Outcomes:

1. Ability to apply knowledge of mathematics and engineering fundamentals for unit conversion and process variables to solve complex mass and energy balance calculations.
2. Ability to analyze complex engineering problems involving mass balance in chemical processes.
3. Ability to analyze complex engineering problems involving energy balance in chemical processes.

KMJ12501 BIOCHEMICAL SCIENCE [SAINS BOKIMIA]

No of Credits: 1

Course Synopsis:

This course provides relevant laboratory practices comprising the fundamentals of biochemistry and microbiology, supplemented with relevant lectures. Experiments proposed under several essential areas in biochemical sciences, which are microbiology and microscopy techniques, cell growth and fermentation, cell and molecular biology techniques, as well as enzyme. The course also introduces several specific types of equipment to ease the understanding of the students on the topics as well as to let them familiarized with new technology in this area of knowledge.

Course Outcomes:

1. Ability to demonstrate the microscopy techniques in describing and identifying the different types of cells as well as their structures.
2. Ability to organize experiments and interpret data related to alteration of cellular information, growth, and enzyme kinetics.
3. Ability to evaluate the experimental data to solve engineering problem related to biochemistry and microbiology.

KMJ12903 BIOCHEMICAL ENGINEERING [KEJURUTERAAN BIOKIMIA]

No of Credits: 3

Course Synopsis:

This course covers the relevant and extensive knowledge of biochemistry and microbiology comprising enzyme kinetics study; stoichiometry and growth kinetics in batch and continuous cultures; bioprocess improvement steps by utilizing genetically engineered organisms and current trends/technologies and productions in biochemical engineering. Students will be exposed to a mini project in which they can work effectively as a team on related topics/titles of this course.

Course Outcomes:

1. Ability to apply the fundamental knowledge of enzyme reactions to solve complex engineering problems related to enzyme kinetics and applied catalysis.
2. Ability to analyze complex engineering problems in microbial systems based on its stoichiometry and kinetics study in batch and continuous cultures.
3. Ability to evaluate complex bioprocessing challenges for improved bioconversion processes, including using genetically engineered organisms and mixed cultures to produce value-added products.

KMJ13003 THERMODYNAMICS [TERMODINAMIK]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental concepts of energy and thermodynamics in engineering. It covers the properties of pure substances, closed system analysis, and the first and second laws of thermodynamics. Applications include heat pumps, refrigerators, and heat systems, emphasizing the practical use of thermodynamic principles.

Course Outcomes:

1. Ability to apply the basic concepts of thermodynamics in property diagram, steam table and/ or Equation of State to obtain the properties of pure substances.
2. Ability to analyze the energy-related problems in a closed and control volume systems based on the First Law of Thermodynamics.
3. Ability to evaluate the second law of thermodynamics in heat pumps, gas-power cycles, and refrigeration cycles for complex engineering problem.

KMJ13103 PROCESS INSTRUMENTATIONS [INSTRUMENTASI PROSES]

No of Credits: 3

Course Synopsis:

This course intends to prepare the students with necessary skills in the process instrumentations. The course begins with introduction to the course content of process instrumentations and control, followed by introduction to various process parameters related to chemical processes such as pressure, level, flow, temperature, heat, humidity, density, viscosity and pH. Basic knowledge of safety and alarm, and electrical instruments and conditioning are also covered. This is followed by the introduction to operation of various types of pressure regulators, flow control valves, and actuators. Students are taught about anatomy and general rules of drawing process flow diagram (PFD) and piping and instrumentation diagram (P&ID), where they are exposed to the universal symbols used in process industry, writing the identification letter as well as the tag numbers for unit operation and piping. To complete the course, students are also exposed to the pipes symbol, tag, material specification code and size during the development of P&ID.

Course Outcomes:

1. Ability to analyze various process parameters and different operation of control valves oriented to complex engineering problems.
2. Ability to develop Process Flow Diagram (PFD) and Piping and Instrumentation Diagram (P&ID) for chemical processes and utilize the skills to engage in life-long learning.
3. Ability to use an engineering tool to develop PFD and P&ID for both simple and complex chemical engineering systems.

KMJ22003 CHEMICAL ENGINEERING THERMODYNAMICS [TERMODINAMIK KEJURUTERAAN KIMIA]

No of Credits: 3

Course Synopsis:

The aim of this course is to extend the understandings on classical thermodynamics to theories and applications in chemical engineering. The course begins with the concept of heat effects and volumetric properties of fluids. It also extends to thermodynamic properties of fluids, real gas mixtures and solutions. Introduction to physical and chemical equilibria are also included, which introduces students to vapor-liquid and chemical reaction equilibrium.

Course Outcomes:

1. Ability to analyse volumetric and thermodynamic properties at specified conditions using appropriate thermodynamic approaches.
2. Ability to evaluate complex thermodynamic problems using the thermodynamic property relations for fluids.
3. Ability to design solutions in evaluating complex thermodynamic equilibria problems using chemical engineering principles.
4. Ability to communicate complex engineering problems in thermodynamics verbally and in writing.

KMJ22103 FLUID MECHANICS [MEKANIK BENDALIR]

No of Credits: 3

Course Synopsis:

This course emphasizes basic principles and equations of fluid mechanics in the context of numerous and diverse real-world engineering examples. Topics covered including fluid properties, static and kinematics, control volume analysis, momentum analysis of flow system, dimensional analysis, internal flow (pipe flows), differential analysis, and external flows (lift and drag).

Course Outcomes:

1. Ability to analyse the essential parameters describing a fluid system's static and kinematic properties by applying mathematics and engineering principles.
2. Ability to analyse the fluid flow problems involving mass, energy, and momentum balances, dimensional analysis, and differential equations of fluid mechanics.
3. Ability to design solutions for problems and phenomena associated with

- internal, external, and compressible flow through case study analysis.
4. Ability to solve complex engineering activities related to fluid flow analysis tasks as an individual, leader, or team member.

KMJ22303 ANALYTICAL CHEMISTRY [KIMIA ANALISIS]

No of Credits: 3

Course Synopsis:

This course introduces and discusses the basic principle of analytical chemistry that covers data analysis and interpretation. Basic statistics and the utilization of statistics are applied in most of the analytical methods. In this course students are able to apply classical analytical methods such as gravimetry and titrimetry as well as applying modern methods in analytical chemistry such as chromatographic and spectroscopic techniques.

Course Outcomes:

1. Ability to apply statistical method to data and steps in analytical analysis.
2. Ability to assess complex problem regarding concentration of analytes of various classical titrimetric and gravimetric.
3. Ability to propose techniques, skills, and modern tools for complex engineering problems regarding sample concentration, complex chromatography and spectroscopic methods.
4. Ability to conduct appropriate techniques for complex engineering problems and experiments involving various knowledge of analytical and organic chemistry.

KMJ22403 HEAT TRANSFER [PEMINDAHAN HABAJ]

No of Credits: 3

Course Synopsis:

This course covers the principles of steady-state heat transfer through three basic mechanisms, which are conduction, convection and radiation. The course introduces the methods to calculate conduction and convection heat transfer under various conditions. The course also focuses on the fundamental design and application of heat transfer such as heat exchanger, evaporator and dryer. The fundamental knowledge gained from the single heat exchanger analysis is further applied for designing a heat exchanger network for specific processes towards minimum energy requirement and rejection as well to reduce the number of heat exchangers required.

Course Outcomes:

1. Ability to apply knowledge of mathematics and engineering to solve engineering problems involved in the principles of steady-state heat transfer.
2. Ability to analyze and solve engineering problems involved in the steady-state heat transfer principles of conduction and convection.
3. Ability to evaluate the heat transfer knowledge, designing heat transfer equipment and the heat exchanger networks related to specific processes.
4. Ability to function as an individual, and a member or leader in a team to integrate heat transfer knowledge in complex engineering activities.

KMJ22503 MASS TRANSFER [PEMINDAHAN JISIM]

No of Credits: 3

Course Synopsis:

This course emphasizes the fundamental concepts and problem-solving techniques on mass transfer mechanisms. The course provides the knowledge on mass transfer operations at basic to an intermediate level. The course motivates the analogy between heat and mass transfer and perform calculation on linked heat and mass transfer. Moreover, it introduces the theoretical and analytical solutions to solve the mass transfer operation problems.

Course Outcomes:

1. Ability to differentiate the mechanisms process of mass transfer; analyse and calculate solutions for mass transfer problems related to the diffusion and mass transfer coefficient in different systems using engineering sciences.

2. Ability to design solution for complex engineering problems involving molecular diffusion plus convection and chemical reaction as well as transport phenomena knowledge of drops and bubbles.
3. Ability to use numerical techniques and modern engineering tools to analyse mass transport phenomena problems.
4. Ability to integrate complex engineering activities through effective communication in the form of written reports and presentations.

KMJ22601 TRANSPORT PHENOMENA APPLICATION [APLIKASI FENOMENA PENGANGKUTAN]

No of Credits: 1

Course Synopsis:

This course provides the necessary laboratory practical for students to understand the application of transport phenomena. Transport Phenomena deals with the movement of different physical quantities such as energy and mass in any chemical or mechanical process and combines the basic principles (conservation laws) and laws of various types of transport. The laboratory practical is designed to allow students to identify the heat transfer, mass transfer, thermodynamics and fluid phenomena in laboratory, industrial and daily environment.

Course Outcomes:

1. Ability to analyze and apply the principles of transport phenomena for solving complex engineering problems.
2. Ability to demonstrate the experimental skills in operating modern engineering tools by applying engineering knowledge in heat transfer/ mass transfer/ fluid mechanics/ thermodynamics.
3. Ability to propose and configure appropriate methods for solving complex problems in transport phenomena using theoretical & research-based knowledge and methods.

KMJ22802 MATERIALS SCIENCE AND ENGINEERING [SAINS DAN KEJURUTERAAN BAHAN]

No of Credits: 2

Course Synopsis:

This course introduces the fundamental concepts of materials science, linking atomic structure to macroscopic properties, and explores how materials behave under different conditions. This course also aims to equip students with the knowledge to select appropriate materials for various chemical engineering processes. Upon completion of this course, student will be able to address real-world challenges such as corrosion, failure analysis, and environmental impact of materials.

Course Outcomes:

1. Ability to apply the relationship between atomic structure and material properties to solve material behaviour and performance in engineering applications.
2. Ability to analyze types of the materials, properties and materials failure mechanisms in complex engineering problem.
3. Ability to assess appropriate materials for complex chemical engineering problems based on performance, cost, and environmental considerations.

KMJ22903 BIOREACTOR SYSTEM [SISTEM BIOREAKTOR]

No of Credits: 3

Course Synopsis:

This course provides an introduction to the fundamental ideas of the bioreactor design and operations. It develops students' knowledge and understanding the important principles and techniques that are used in the design and analysis of various types of bioreactor system for microbial, animal and plant cell cultures. It also covers relevant issues in bioreactor system such as scaling up/down, instrumentation and control of bioreactor as well as sterilization.

Course Outcomes:

1. Ability to analyze problems using the knowledge of mathematics, science, engineering in designing specific types of bioreactors for specific applications.
2. Ability to evaluate engineering problems related to bioreactors for biological production systems.
3. Ability to propose a specific bioreactor system according to the desired application individually, through group discussion or oral presentation.

KMJ32003 REACTION ENGINEERING [KEJURUTERAAN TINDAKBALAS]

No of Credits: 3

Course Synopsis:

Reaction Engineering is concerned with the exploitation of reactions on a commercial scale. Its goal is to familiarize with different designs of reactors. It also emphasizes qualitative arguments, simple reactor sizing methods, graphical procedures, and frequent comparison of capabilities of the major reactor types. Simple ideas are treated first and then extended to more complex problems.

Course Outcomes:

1. Ability to analyze problems related to the rate law and rate law parameters for single and multiple reactions.
2. Ability to design chemical reactors including isothermal reactors with complete dimension based on reaction conversion and pressure drop effects.
3. Ability to evaluate the reaction mechanism involved for catalytic reactions and the Residence Time Distribution (RTD) functions in non-ideal reactors.
4. Ability to communicate effectively on complex engineering activities in the form of written reports and oral presentations.

KMJ32203 SEPARATION PROCESS [PROSES PEMISAHAN]

No of Credits: 3

Course Synopsis:

This course introduces different types of separation processes that can be found in chemical and bioprocessing industries. The unit operations for gas-liquid, liquid-liquid, liquid-solid separation are included such as humidification, distillation, absorption, adsorption, solvent extraction, solid leaching, crystallization, membrane separation, filtration, settling, sedimentation, and fluidization. They are designed from materials and energy balance and based on mass and heat transfer principles.

Course Outcomes:

1. Ability to apply material and energy balance as well as heat and mass transfer principles for the selected unit operations of gas-liquid, liquid-liquid, and liquid-solid separation processes.
2. Ability to analyze complex engineering problems related to the separation unit operations to reach substantiated conclusions.
3. Ability to design engineering solutions with proper considerations for separation unit operations.
4. Ability to work effectively as an individual, leader, or in a team to complete complex engineering activities related to separation unit operation.

KMJ32104 PROCESS DYNAMICS AND CONTROL [DINAMIK DAN KAWALAN PROSES]

No of Credits: 4

Course Synopsis:

This course includes an introduction to process control and dynamics, theoretical models, dynamic behaviour and characteristic of first, second and higher order processes, feedback controllers, control system instrumentation, overview of control system design, stability of closed-loop control system, PID controller design, tuning and troubleshooting as well as introduction to feedforward control. The theories are supported by performing laboratory experiments.

Course Outcomes:

1. Ability to formulate theoretical models using Laplace transforms techniques and complex control problems related to transfer functions and state space models.
2. Ability to derive empirical models from process data using the knowledge of mathematics, science and engineering for the dynamic behaviour and characteristics of first, second order and more complicated processes identification.
3. Ability to design feedback and/or feedforward control system for complex chemical processes.
4. Ability to demonstrate proper handling of control system instrumentations/modern engineering tools and experimental data evaluation in analysing control system related problems.
5. Ability to work effectively as an individual, leader, or in a team to complete complex engineering activities related to process control.

KMJ32301 SKILLS IN SEPARATION PROCESS [KEMAHIRAN DALAM PROSES PEMISAHAN]

No of Credits: 1

Course Synopsis:

This course includes an introduction to various separation techniques in chemical processes. Prior to learning the separation processes, the course allows students to be exposed to examples of upstream processes such as fermentations in microbial bioreactor systems. It also covers instrumentation and control of bioreactor as well as sterilization. Then the course introduces various separation methods such as filtration & centrifugation, settling & sedimentation, absorption, adsorption, liquidliquid extraction and distillation. The labs are designed so that the students are able to relate the roles of separation in chemical engineering

processes; analyse the performance of separation unit operations and propose appropriate separation techniques for the given upstream processes.

Course Outcomes:

1. Ability to analyze the role of separation operations in the chemical and biochemical industries for solving complex engineering problems.
2. Ability to demonstrate the experimental skills in operating the separation unit operations using modern engineering tools.
3. Ability to propose the appropriate methods for the separation of chemical mixtures based on complex problems using theoretical & research-based knowledge and methods.
4. Ability to communicate effectively on complex engineering problems related to separation process.

KMJ32603 SAFETY AND LOSS PREVENTION [KESELAMATAN DAN PENCEGAHAN KEHILANGAN]

No of Credits: 3

Course Synopsis:

This course covers the fundamental of process safety specifically toxicology, industrial hygiene, sources model, fires and explosions as wells as relief concept design. The students are also exposed to hazard identification, risk assessment and accident investigation. Lastly, the course introduces biohazard and biosafety principles for chemical and biochemical industries.

Course Outcomes:

1. Ability to analyze the source, toxic release and dispersion models and evaluate the significance of the events towards the environment and society.
2. Ability to distinguish fires and explosions as well as examine ways to prevent it, and to assess the impacts towards engineers and society.
3. Ability to analyze relief concepts as well as calculate or sizing relief system to ensure the safety of the plant.
4. Ability to analyze problems and develop process safety to identify the hazard and risk associated with the industry.
5. Ability to function in a group to integrate process safety knowledge and identify problems related with integrated project.

KMJ32803 ENGINEERING ECONOMICS [EKONOMI KEJURUTERAAN]

No of Credits: 3

Course Synopsis:

This course aims to teach students the fundamentals of engineering economics, from the foundations of engineering economic based on the concept of time value of money, till utilization of analysis tools for selections and evaluations of engineering projects especially in the field of chemical engineering. This course also provides basic knowledge of entrepreneurship in engineering to inculcate their mindset with entrepreneurial mind and business acumen. At the end of the course, students will be able to identify, analyse and evaluates issues and challenges of engineering economics faced by engineers and propose solutions in the current economic scenarios.

Course Outcomes:

1. Ability to apply the concepts of entrepreneurship in engineering and the effect of time value of money in engineering economics.
2. Ability to analyse the concepts of economic equivalence and comparison tools for project alternatives, and the effects of inflation and depreciation in economic evaluations.
3. Ability to perform capital cost estimation of engineering project through well-organized technical reports.
4. Ability to evaluate the economics of engineering project using breakeven, payback and sensitivity analysis.

KMJ32903 COLLOIDAL AND BIOMATERIAL PROCESSING [PEMROSESAN KOLOID DAN BIOBAHAN]

No of Credits: 3

Course Synopsis:

This course brings together colloidal systems, various biomaterials production and processing aspects, including painting and printing, cosmetics, oil and gas production, plastics and polymers, tissue engineering scaffold materials, drug delivery systems, nanobiomaterials, therapeutics, pharmaceuticals, and biosensors. This course explains the fundamental of colloidal systems and biomaterials as well as the development of new materials. The structure and properties of colloidal particles and biomaterials with their specific theoretical interactions are discussed. The use of colloidal particles and biomaterial in chemical, pharmaceutical and biomedical applications are also utterly explained in this course.

Course Outcomes:

1. Ability to differentiate the non-covalent colloidal forces (van der Waals, electrostatics, and dlvo), emulsions and adsorption adopted in colloids formation using knowledge of mathematics, engineering fundamentals and an engineering specialization for solving any given complex engineering problems.
2. Ability to predict properties of colloids using Hansen solubility, and Flory-Huggins interactions effects involved in the colloidal systems and to introduce biomaterials with their surface characterizations by applying principles of mathematics, natural sciences, and engineering sciences.
3. Ability to distinguish classes of biomaterials and to discuss the biological interactions of materials and identify the application of materials in medicine at the specified needs with appropriate consideration for public health and safety, and environmental considerations.

KMJ33003 HALAL PROCESSING [PEMROSESAN HALAL]

No of Credits: 3

Course Synopsis:

Halal food industries emerge as one of the important international trades in providing and supplying clean and permissible food to not only Muslim populations but also people across the globe. The requirements for producing halal food is very crucial to be upheld and becoming one of the important subjects in the food industries. Thus, this course discusses various halal requirements for the main food including meat, dairy, fish and seafood, and cereals. Some food ingredients for example gelatine, enzymes and alcoholic materials will also be examined in terms of their requirements in the food processing. Towards the end of the course, student will learn about the current trend on biotechnology-based processing food or GMO, their processing and packaging and application of modern tools for laboratory testing and halal analysis.

Course Outcomes:

1. Ability to analyze the regulation and guidelines of halal food laws to meet domestic and international requirements and comparison of kosher, halal and vegetarian.
2. Ability to design solution or process related to halal production and halal control points of the production.
3. Ability to propose and conduct investigation of complex problem related to halal production and requirement, halal ingredients, halal testing and analysis.

KMJ33103 SUSTAINABLE ENERGY [TENAGA LESTARI]

No of Credits: 3

Course Synopsis:

This course introduces energy production that can be generated from bioresources or biomass which is an alternative way of producing energy from fossil-based fuels. This course emphasizes the use of more environmental-friendly technologies which can lead to reduction of pollution, thus sustaining the ecology system. The contents cover the characteristics of biofuels, bioresources suitable for conversion technologies, biological routes and chemical routes in producing fuels, and also the limitations of bioconversion processes.

Course Outcomes:

1. Ability to analyse and compare the characteristics of different sustainable energies and their production processes using first principles of natural sciences and engineering sciences.
2. Ability to understand and evaluate the impact of sustainable energy production on the environment and society.
3. Ability to design a sustainable energy production process from potential feedstocks with safety and environment considerations.

KMJ33203 SIMULATION FOR CHEMICAL ENGINEERING [SIMULASI UNTUK KEJURUTERAAN KIMIA]

No of Credits: 3

Course Synopsis:

This course will cover the use of some software packages to model chemical and biochemical processes and unit operations in batch and continuous modes. Material and energy balances, equipment sizing and costing, environmental impact assessment and process design for single and continuous processes are also introduced. Students are exposed to the usage of chemical engineering software for simulation purposes. Subsequently, sustainability assessment will be introduced, emphasizing on economic and profitability analysis.

Course Outcomes:

1. Ability to construct process and organize unit operation in biochemical and chemical engineering related problems using computer simulation software.
2. Ability to collect process data and manage engineering economic evaluation from the simulation process.
3. Ability to design solutions for complex engineering problems using simulation

software and develop the data to meet specific needs.

4. Ability to communicate effectively to solve complex engineering problems using simulation software.

KMJ33303 INDUSTRIAL WASTE TREATMENT [RAWATAN SISA INDUSTRI]

No of Credits: 3

Course Synopsis:

This course encompasses the physical, chemical and biological methods in the treatment of wastes especially from chemical and bioprocess industries. It includes the calculations, considerations and designs of unit operations involved in the primary, secondary and tertiary waste treatments for those three methods. The landfill and incineration waste treatment systems are introduced at the second half of the course. The waste management and minimization strategies are emphasized as a key focus in the overall treatment approach.

Course Outcomes:

1. Ability to organize sustainable waste management practices through the integration of environmental, economic, and legal values into coherent and responsible decision-making.
2. Ability to design wastewater treatment solutions with a commitment to lifelong learning in waste management.
3. Ability to organize ethical solutions for landfill management, incineration and solid waste treatment systems.

KMJ42003 CHEMICAL PLANT DESIGN 1 [REKABENTUK LOJI KIMIA 1]

No of Credits: 3

Course Synopsis:

Chemical Engineering Design is a 2-part course covering aspects of engineering design related to open-ended design projects at professional level engineering design task in chemical engineering field. The design project is a team-based approach to provide capstone design experience emphasizing the application of sciences, mathematics and engineering science acquired in earlier course work in design of projects. The scope of the course covers the knowledge on the elements in project formulation, planning/scheduling, management and communication, engineering economics including cost-benefits analysis and budgeting, critical thinking, ethics, and safety in engineering design.

Course Outcomes:

1. Ability to synthesize technical, economic, and environmental information relevant in the proposed chemical plant design project feasibility study.
2. Ability to construct a process simulation for the chemical plant design process.
3. Ability to demonstrate a commitment to sustainability in chemical plant design process.
4. Ability to integrate ethical principles into the decision-making process for the chemical plant design project.
5. Ability to organize values of inclusivity, communication, and responsibility in team collaboration, leadership, and decision-making in the chemical plant design project.
6. Ability to deliver effective communication skills in presenting complex engineering concepts and writing clear, organized reports and design documentation.
7. Ability to implement engineering economic decision-making tools in assessing the economic viability of the chemical engineering plant design project.
8. Ability to conclude comprehensive analysis from diverse resources materials.

KMJ42203 GOOD MANUFACTURING PRACTICE [AMALAN PENGILANGAN BAIK]

No of Credits: 3

Course Synopsis:

This course gives complete overview about the production facility from start of the project up to the production process and how to carry out all project steps

according to the guidelines of the GMP. Topics include the background to GMP and cGMP regulations and guidelines and their relevance in the laboratory, process development and plant.

Course Outcomes:

1. Ability to analyze the basic concepts, construction, and requirements of GMP and cGMP in related industries.
2. Ability to design facility layout, production areas, HVAC systems, and facility equipment in accordance with cGMP requirements.
3. Ability to evaluate manufacturing design, Good Laboratory Practices (GLP), process validation, and biosafety in compliance with cGMP.

KMJ42403 ENGINEERING MANAGEMENT [PENGURUSAN KEJURUTERAAN]

No of Credits: 3

Course Synopsis:

This course aims to teach students the foundations of engineering management, from the project management basics, initiation, planning and execution till project closing and post-project review, when undertaking engineering projects. This course also provides basic tools of engineering economy to enable the students to carry out economic decision-making and evaluations. At the end of the course, students will be able to identify, analyse and evaluates issues and challenges of engineering management faced by engineers and propose solutions in the current economic scenarios.

Course Outcomes:

1. Ability to analyse project management basics and initiation and planning of engineering projects in multidisciplinary environments.
2. Ability to justify economic evaluations in decision making process related to engineering projects and business ventures.
3. Ability to generate project scheduling, resource and risk management, project monitoring and control plans, project termination and post-project reviews.

KMJ42503 FOOD ENGINEERING [KEJURUTERAAN MAKANAN]

No of Credits: 3

Course Synopsis:

This course covers the application of scientific knowledge and engineering principles in food processing. This course explains the properties of food and the influence of processing parameter that changes the food properties to impart important sensory, safety, storage and handling characteristics. This course allows students to develop an understanding of key unit operations relevant to the food industry. This course also provides students with a fundamental understanding of food preservation and food packaging.

Course Outcomes:

1. Ability to examine the characteristics and nutritional properties of foods for interpreting food impacts on health and informing dietary choices.
2. Ability to design solutions for food processes and the unit operations with appropriate considerations on food security and sustainable food systems.
3. Ability to evaluate food spoilage causes and food preservation techniques for ensuring food safety and security.

KMJ42603 BIOMASS UTILIZATION [PENGGUNAAN BIOMASS]

No of Credits: 3

Course Synopsis:

This course introduces students to the sustainable production and use of biomass as a renewable feedstock for chemicals, fuels, and materials, covering topics such as biomass resource classification, biochemical and thermochemical conversion processes, and biomass valorization. It emphasizes the biorefinery concept, microbial and enzymatic applications, and the production of biomass-derived products like biofuels, green solvents, enzymes, and single-cell proteins (SCP). Additionally, the course addresses biomass pretreatment, waste biomass utilization, biochar, and nanocellulose, while focusing on circular economy principles and low-carbon technologies. It also explores the broader impacts of biomass production on society, economic sustainability, public health, safety, legal frameworks, and the environment, integrating considerations for whole-life cost, net-zero carbon goals, resource efficiency, and cultural and environmental impacts.

Course Outcomes:

1. Ability to apply knowledge of natural science and engineering specialization of biomass properties and types of extraction technologies for sustainable biomass production.
2. Ability to organise complex engineering problems systematically in

sustainable biomass-based product production impacts on society, the economy, sustainability, health and safety, legal frameworks and the environment.

3. Ability to design a creative solution for a biomass conversion system and technology for biomass-based products that meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon, as well as resources, cultural, societal, and environmental concerns as required.

KMJ42704 CHEMICAL PLANT DESIGN 2 [REKABENTUK LOJI KIMIA 2]

No of Credits: 4

Course Synopsis:

This course requires students to work in a predetermined group to solve a practical and industrially relevant design problem in the same way as might be expected in an industrial situation. The scope of the class is to develop and evaluate process design via rigorous simulation, perform equipment sizing, optimize various process units, analyse the safety and environmental impact of the process, estimate capital and operating costs, and assess plant profitability to meet desired project needs within realistic constraint. The use of modern engineering design practices, tools and product/solution development process, trouble-shooting methodology, learn and utilise a realistic simulation of the real-world design process, engineering analysis and synthesis through their projects Knowledge integration from other Chemical Engineering courses is required to identify, solve, and design solution for complex engineering problems.

Course Outcomes:

1. Ability to design component, equipment, and process in chemical engineering.
2. Ability to develop the process engineering drawings using appropriate software.
3. Ability to develop a waste treatment and waste management plan to treat the waste coming out from the proposed plant.
4. Ability to assess the safety of the plan using appropriate method.
5. Ability to assemble effective, well organized oral presentation as well as effective, well organized technical report.
6. Ability to execute and manage project as well as evaluate the economics feasibility of a design project.
7. Ability to manage time, adapt to unexpected challenges, and produce high quality work.
8. Ability to work independently while also developing crucial teamwork skills in the specified group to execute the design project.

KMJ42903 PETROCHEMICAL PROCESS [PROSES PETROKIMIA]

No of Credits: 3

Course Synopsis:

This course provides a holistic understanding of petrochemical products manufactured from petroleum and natural gas by a variety of processes and used for a variety of commercial purposes. The natural gas processing, petroleum refinery processes, and the manufacturing principles of industrially important petrochemical products are introduced in this course. Some engineering aspects of commercial petrochemical plants are focused in this course.

Course Outcomes:

1. Ability to analyse chemical processes involved in natural gas processing and crude oil refineries.
2. Ability to evaluate chemical processes involved in petrochemical industries.
3. Ability to analyse the characteristics and polymerization of plastics, synthetic rubber, and synthetic fibers.

KMJ43003 PHARMA AND NUTRACEUTICAL ENGINEERING [KEJURUTERAAN FARMA DAN NEUTRASEUTIKAL]

No of Credits: 3

Course Synopsis:

This course includes the principles of drug pharmacokinetics: absorption, distribution, metabolism and excretion of drugs. The course introduces the nutritional and nutraceutical sciences of dietary supplements and functional foods. This course also covers the scientific and technological aspects of the designing, formulating and manufacturing of pharmaceutical and nutraceutical products according to the current requirement and regulations.

Course Outcomes:

1. Ability to analyze the basic concept of drug absorption and disposition, nutritional and nutraceutical sciences of dietary supplements and functional foods and the related pharmacokinetics in the body.
2. Ability to evaluate the complex engineering processes involved in the formulation and production of pharmaceutical and nutraceutical products.
3. Ability to design pharmaceutical and nutraceutical manufacturing facilities, based on the current requirement and regulations.

KMJ43103 FUEL CELLS [SEL BAHAN API]

No of Credits: 3

Course Synopsis:

This course introduces students with an emerging technology which is a fuel cell system. Students will learn about the principle and variants of fuel cells including proton exchange, alkaline, liquid, and microbial fuel cells. The final section covers advanced fuel cell systems and future technological challenges of fuel cell systems.

Course Outcomes:

1. Ability to analyze the concept, design, operations and efficiency of fuel cell system.
2. Ability to evaluate and analyze the variants of fuel cell systems, operations, and related technological problems.
3. Ability to propose the advanced fuel cell system and plan for future fuel cell technological changes and challenges.

KMJ43203 ENERGY AND PROCESS UTILITY ENGINEERING [KEJURUTERAAN TENAGA DAN UTILITI PROSES]

No of Credits: 3

Course Synopsis:

This course intends to give students fair knowledge of various chemical utilities which are required to maintain the operation of chemical plant at the desired operating conditions. The subtopics that will be covered include efficient use of utilities, fuel, inert gases, compressed air, steam system & cogeneration, cooling & refrigeration system, and water system. By the end of this course, student will be also exposed to several ways of recovering energy and heat integration technology, making the chemical processes more efficient, economic, and practical.

Course Outcomes:

1. Ability to apply the working principles, cogeneration potentials and efficiency of various process utilities in chemical plants.
2. Ability to evaluate different functions of air, water and refrigeration in chemical plant systems.
3. Ability to design heat exchanger network for maximum heat and energy recovery in process plants.

KMJ15204 ORGANIC CHEMISTRY [KIMIA ORGANIK]

No of Credits: 4

Course Synopsis:

This course provides a comprehensive introduction to organic chemistry, focusing on the fundamental principles governing chemical structures, bonding, and intermolecular interactions. Students will explore key organic reactions and their mechanisms, developing a deeper understanding of organic reaction pathways. Additionally, the course integrates experimental techniques in organic chemistry to strengthen students' analytical and problem-solving skills in practical applications. Through a combination of theoretical learning, problem-solving exercises, and laboratory work, students will develop the necessary competencies to analyze and apply organic chemistry principles in polymer engineering and related fields.

Course Outcomes:

1. Ability to identify the structure, nomenclature, functional groups and chemical bonding to comprehend structural and intermolecular forces in chemical compounds.
2. Ability to demonstrate concepts and principles of organic reactions and mechanisms for understanding reaction pathways in organic chemistry.
3. Ability to analyze experimental results regarding purification techniques, structural-related properties, and reactions, for understanding the experimental process and its implications in organic chemistry

KMJ15403 ENGINEERING MECHANICS [MEKANIK KEJURUTERAAN]

No of Credits: 3

Course Synopsis:

This course is to expose students to the basic concepts of force and resultant force. They will also learn about friction and distributed forces. Students will apply this basic knowledge to analyse the stability and equilibrium of structures such as truss and machines. In terms of dynamics, the students will learn how to solve kinematics problems for particles and rigid bodies. They will also learn how to solve kinetics problems, which can be considered by using forces and acceleration and principle of work and energy.

Course Outcomes:

1. Ability to analyse the basic concepts and principles of engineering mechanics in static or dynamic states.
2. Ability to evaluate engineering mechanics problems by applying the principles of static or dynamic through sketching and/or drawing diagrams in specific conditions.

KMJ15503 INTRODUCTION TO POLYMER [PENGENALAN KEPADA POLIMER]

No of Credits: 3

Course Synopsis:

This course intends to expose the fundamentals of polymers that cover classification, introduction, characteristics and applications of polymers. There are also discussions related to the differences in polymer, metal and ceramic materials. The students will also be exposed to the applications of polymer materials and their relation with the environment.

Course Outcomes:

1. Ability to compare the fundamental principles of polymerization reaction and polymer identification for diverse industrial applications.
2. Ability to analyze different materials in describing the structure, mechanical properties, and processing for specific applications.
3. Ability to discuss recyclability/disposability issues in metals, glass, plastics, rubber, and composite materials.

KMJ24003 PLASTIC MATERIALS [BAHAN-BAHAN PLASTIK]

No of Credits: 3

Course Synopsis:

This course provides fundamental knowledge of plastic materials and plastic additives, focusing on the relationship between their structures and properties. Students will apply this knowledge to design sustainable solutions in polymer engineering, addressing complex challenges with considerations for public health, safety, whole-life cost and the environment impacts. The course also introduces AI tools for material selection and design optimization and emphasizes the evaluation of plastic usage and recycling in the context of sustainability, social responsibility and global impact.

Course Outcomes:

1. Ability to analyse plastic materials and additives based on fundamental knowledge of their types, structures and properties.
2. Ability to design solutions using suitable plastic materials and additives by considering their types, structures and engineering constraints, while integrating AI tools to meet specific engineering requirements, including considerations for public health, safety, whole-life cost and environmental impacts.
3. Ability to evaluate sustainable practices and the effects of plastic recycling on society, economy, health, safety, laws and the environment in plastic engineering.

KMJ24403 ELASTOMERIC MATERIALS [BAHAN-BAHAN ELASTOMERIK]

No of Credits: 3

Course Synopsis:

To introduce basic knowledge on elastomeric materials based on types and classification, structure and properties relationship, additives used in elastomer and some common formulations, and use of elastomer in engineering applications. The principle of viscoelasticity are extended for rubber engineering applications. After studying this course, the students have the basic knowledge on different type's elastomer. They also learn structure properties relationship for fabricating and designing rubber engineering product.

Course Outcomes:

1. Ability to analyze elastomeric materials based on the knowledge of structure and properties relationship.
2. Ability to justify elastomer properties and relate them to rubber engineering products and applications.
3. Ability to adapt new and emerging technologies related to elastomeric materials and applications.

KMJ25203 PHYSICAL CHEMISTRY [KIMIA FIZIKAL]

No of Credits: 3

Course Synopsis:

This course provides a foundational understanding of the principles governing the physicochemical behaviour of matter. It covers essential topics including solution concentration, polymer solutions, determination of polymer molecular weight, and the classification and interpretation of chemical equilibrium and phase diagrams. Students will also explore the fundamentals of chemical kinetics and surface chemistry to analyse and evaluate chemical processes effectively. Additionally, the course introduces the principles of electrochemistry, with a focus on electrochemical cells, batteries, fuel cells, and ion behaviour in electrolyte solutions.

Course Outcomes:

1. Ability to apply engineering fundamentals based on the basic concepts and principles of physical chemistry to develop solutions in engineering practices.
2. Ability to evaluate physicochemical behaviour of substances and systems by applying basic concepts and principles of physical chemistry in solving engineering problems.

KMJ25304 POLYMER SYNTHESIS [SINTESIS POLIMER]

No of Credits: 4

Course Synopsis:

This course aims to introduce the basic concepts of synthesis polymer starting with chemical structures, reaction schemes, and mechanistic aspects of polymerization. Emphasis on the general polymerization and processes on the polymeric material for the understanding methods and techniques for the synthesis, modification, and characterization of the polymers.

Course Outcomes:

1. Ability to identify the basic concepts of polymerization based on the polymer structures and their properties.
2. Ability to distinguish the polymeric materials based their polymerization methods and kinetics involves at the specific reactions.
3. Ability to evaluate the synthesise of polymer and analyse the polymeric material through laboratory experiments.

KMJ25404 STRUCTURE & POLYMER PROPERTIES [STRUKTUR & SIFAT-SIFAT POLIMER]

No of Credits: 4

Course Synopsis:

This course provides knowledge on the structure-property relationships of polymeric materials, covering viscoelasticity, transition phenomena, and mechanical and thermal properties. Students will apply engineering knowledge to understand these principles, analyze complex problems related to polymer performance, and use modern tools and techniques for material property prediction and analysis through laboratory experiments.

Course Outcomes:

1. Ability to apply the fundamental concept of polymer structures and properties in various polymer applications.
2. Ability to assess the mechanical and thermal properties of polymeric materials based on its various characteristics.
3. Ability to analyse the mechanical properties of polymeric materials through laboratory experiments.

KMJ25503 THERMODYNAMICS FOR POLYMER ENGINEERING [TERMODINAMIK UNTUK KEJURUTERAAN POLIMER]

No of Credits: 3

Course Synopsis:

The purpose of this course is to introduce the basic concepts of thermodynamics and chemical equilibrium. This course emphasizes the use of theories in solving problems related to the basic of thermodynamics. Specifically, this course is focus on various energy changes within a physical system, generally associated with changes in pressure, volume, internal energy (i.e. temperature), or any sort of heat transfer. Thermodynamic processes usually result in work being done by the system and are guided by the laws of thermodynamics.

Course Outcomes:

1. Ability to analyze the work, heat, energy, and enthalpy changes associated with the principles of the First Law under specified conditions.
2. Ability to analyze the thermodynamic properties associated with First Law based on its thermodynamics processes.
3. Ability to analyze the thermodynamic properties related to the Second and Third Laws, based on the principles of thermodynamic processes.
4. Ability to discuss the criteria of spontaneity and the direction of a reaction before reaching equilibrium, based on the principles of thermodynamics.

KMJ34004 PLASTIC PROCESSING [PEMROSESAN PLASTIK]

No of Credits: 4

Course Synopsis:

This course introduces students the processing methods of thermoset and thermoplastic polymer materials, with emphasis on rheological behaviour and optimization of processing conditions. Students will assess product defects and apply troubleshooting methods, analyse experimental data from laboratory investigations, and demonstrate teamwork in solving tasks related to plastic processing.

Course Outcomes:

1. Ability to explain the relationship between processing techniques and rheological behaviours in optimizing processing condition for thermoset and thermoplastic materials.
2. Ability to evaluate product defects and troubleshooting methods of thermoset and thermoplastic materials.

3. Ability to analyse experimental results related to plastic processing techniques through laboratory-based investigations.
4. Ability to demonstrate individual and teamwork in solving the tasks related to plastic processing techniques.

KMJ34404 RUBBER PROCESSING [PEMROSESAN GETAH]

No of Credits: 4

Course Synopsis:

This course equips students with rubber engineering knowledge through different formulations and processing techniques, in line with product requirements. Students are exposed to identifying and analyzing finished product problems in the operation and control of rubber processing machines through specific tests. Next, investigative skills are developed through designing experiments by conducting rubber processing and testing samples according to international standards, analyzing data and synthesizing information. Finally, this course emphasizes individual and collaborative teamwork by fostering effective participation in diverse teams to justify the experiments they conduct. This comprehensive approach equips students to analyze, experiment and collaborate, ensuring that they can apply theoretical knowledge to practical rubber processing challenges and meet industry standards.

Course Outcomes:

1. Ability to recommend rubber formulation and processing techniques based on different product requirements and manufacturing.
2. Ability to evaluate the characteristics and properties of rubber compounds based on final product application and industrial requirements.
3. Ability to conduct experiments associated with rubber processing and testing according to the international standards.
4. Ability to demonstrate individual and teamwork in applying fundamental knowledge in rubber processing.

KMJ34504 LATEX PROCESSING [PEMROSESAN LATEKS]

No of Credits: 4

Course Synopsis:

This course emphasizes on the fundamental characteristics of natural and synthetic lattices, colloid stabilization and destabilization, principles of chemically-modified lattices, design of latex compound, principles to produce latex products, industrial concepts of glove dipping process, mechanism of film formation and related to structure and properties of vulcanized latex, defects and propose trouble shooting of latex products, industrial latex applications, and protein allergic and nitro amines issue in latex products.

Course Outcomes:

1. Ability to explain specific knowledge of latex science and technology based on industrial applications.
2. Ability to formulate different latex ingredients with different types of latex and different types of processing methods based on industrial requirements
3. Ability to assess principles of latex characteristics and processing methods through laboratory experiments.

KMJ34803 POLYMER TESTING & CHARACTERIZATION [PENGUJIAN & PENCIRIAN POLIMER]

No of Credits: 3

Course Synopsis:

This course introduces the basic concepts of testing and characterization, explain the usage of various polymer characterization equipment's, analyse the concept to identify and characterize the polymeric materials.

Course Outcomes:

1. Ability to compare numerous methods in polymer testing and characterization for polymeric materials.
2. Ability to interpret the data and experimental results based on polymeric characterizations.
3. Ability to propose a range of characterization methods to address issues in polymeric materials that related to sustainability, energy efficiency and net zero emission.
4. Ability to analyse polymeric material testing and characterization data through laboratory experimental.

KMJ35203 POLYMER ENGINEERING DESIGN [REKA BENTUK KEJURUTERAAN POLIMER]

No of Credits: 3

Course Synopsis:

The aim of this course is to develop knowledge on the polymer engineering design specifically for mold in injection molding and die for extrusion processes using CAD software based on design consideration in polymer products. In addition, students will be exposed to simulations involved during the production of polymer products using molds and dies. The knowledge generated will provide effective skill to counter and solve the common problem-based approaches in polymer engineering design.

Course Outcomes:

1. Ability to apply the fundamental engineering on design process, mould and die design and design consideration for polymer products.
2. Ability to decide the process and materials required in production of polymer engineering products.
3. Ability to construct the design of polymer products, mould and die using CAD software.
4. Ability to analyse the effect of parameters on failure deformation and flow behavior in cavity/die through simulation.
5. Ability to function effectively as a member or a leader in multidisciplinary task.
6. Ability to evaluate the knowledge of finance in estimating the cost of raw materials, mould and die.

KMJ35304 MASS & HEAT TRANSFER FOR POLYMER ENGINEERING [PEMINDAHAN JISIM & HABA UNTUK KEJURUTERAAN POLIMER]

No of Credits: 4

Course Synopsis:

The aim of this course is to provide knowledge of mass and heat transfer for polymer engineering application. For mass transfer, students will be exposed to the fundamental and laws used during mass transfer. Meanwhile for heat transfer, students will learn on the concept of conduction, convection and radiation. Students will be able to relate the knowledge gained to polymer engineering applications.

Course Outcomes:

1. Ability to apply the knowledge of mass and heat transfer in polymer processing.
2. Ability to analyse mass transfer in molecular diffusion, convection, and mass transfer between phases..
3. Ability to analyse heat transfer in conduction, convection, and radiation.
4. Ability to assess the principles of mass and heat transfer through laboratory experiments.

KMJ35402 POLYMERS IN BIOMEDICAL APPLICATIONS [POLIMER DALAM APLIKASI BIOPERUBATAN]

No of Credits: 2

Course Synopsis:

This course introduces biomaterials focusing on polymers' structure, properties and processing for biomedical applications. These include biodegradable polymers, non-biodegradable polymers, biosynthetic polymers and hybrid polymers for tissue engineering, drug delivery and other biomaterials (metals and ceramics) for implantable devices. This course also highlights methods for producing polymeric biomaterials and techniques for assessing their biocompatibility, biostability and bioactivity. Students are expected to understand the degradation mechanisms of polymeric materials in biological environments (such as under certain pH, ion, and enzymes) and surrounding environment, the interaction between biological materials such as proteins and cells with polymeric materials and how the surface modification could affect such interaction.

Course Outcomes:

1. Ability to analyse polymeric materials based on biomedical applications.

2. Ability to discuss the methods of preparing, testing and characterizing polymeric biomaterials based on biomedical applications.
3. Ability to assess degradation mechanism of polymers in biological and environmental conditions for biomedical applications.

KMJ35502 PHOTOLUMINESCENT POLYMERS [POLIMER PEMANCAR CAHAYA]

No of Credits: 2

Course Synopsis:

This course introduces biomaterials focusing on polymers' structure, properties and processing for biomedical applications. These include biodegradable polymers, non-biodegradable polymers, biosynthetic polymers and hybrid polymers for tissue engineering, drug delivery and other biomaterials (metals and ceramics) for implantable devices. This course also highlights methods for producing polymeric biomaterials and techniques for assessing their biocompatibility, biostability and bioactivity. Students are expected to understand the degradation mechanisms of polymeric materials in biological environments (such as under certain pH, ion, and enzymes) and surrounding environment, the interaction between biological materials such as proteins and cells with polymeric materials and how the surface modification could affect such interaction.

Course Outcomes:

1. Ability to compare the various types of photoluminescent polymers based on their synthesis approaches and emission mechanisms.
2. Ability to analyse the optical properties through UV/Visible and photoluminescent (PL) spectra.
3. Ability to discuss the environmentally friendly applications of photoluminescent polymers based on sustainability goals.

KMJ44003 POLYMER COMPOSITES [KOMPOSIT POLIMER]

No of Credits: 3

Course Synopsis:

This course provides the concepts of polymer composites with several fabrication techniques. This course also provides knowledge on fibres reinforcement of polymer matrices and their corresponding properties. The course includes the mechanics of composites and some composite testing methods.

Course Outcomes:

1. Ability to propose suitable fabrication techniques and applications for polymer composites based on different types of fillers and fibres arrangement.
2. Ability to assess the mechanical properties and defects of polymer composites using destructive and non-destructive testing (NDT) techniques.
3. Ability to develop selective polymer composite products with consideration for environmental sustainability, whole life cost, net zero carbon, and environmental impacts.
4. Ability to demonstrate scientific knowledge in developing polymer composite products for specific applications.

KMJ44104 POLYMER BLENDS [ADUNAN-ADUNAN POLIMER]

No of Credits: 4

Course Synopsis:

The aim of this course is to provide knowledge of polymer blends/alloys. Understanding of their properties relationship and knowledge on testing and characterisation, the concept of reactive blending in high-performance polymer blends and alloys, and engineering application of polymer blends/alloys.

Course Outcomes:

1. Ability to apply the concepts and principles of polymer blending in the formulation and processing of polymer blends.
2. Ability to formulate blending formulations and conditions based on the structure, properties, testing and characterisation of polymer blends.
3. Ability to conduct the experiment associated to polymer blends according to specific applications.

KMJ45203 POLYMER ENGINEERING INTEGRATED DESIGN PROJECT [PROJEK REKA BENTUK BERSEPADU KEJURUTERAAN POLIMER]

No of Credits: 3

Course Synopsis:

This capstone course challenges students to apply polymer science, engineering principles and design methodologies to develop innovative polymer-based products. The course encompasses project management, problem analysis, materials and process selection, design drawing and optimization using modern engineering tools and economic analysis. Considerations for public health and safety, whole-life cost, net zero carbon as well as resource, societal and environmental impact and ethical implications are also required for the design solution. At the end of the course, the students will communicate their design concepts and ideas through proposal and final reports and presentations. Navigating complex design problems and refining solutions would foster lifelong learning ability among the students.

Course Outcomes:

1. Ability to analyze complex engineering problems using the principles of polymer science and engineering with holistic considerations for sustainable development.
2. Ability to design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required..
3. Ability to apply modern engineering tools in designing solutions/ products, performing simulation and analysis to complex engineering problems.
4. Ability to evaluate sustainable development impacts to society, sustainability, health and safety, and the environment, in solving complex engineering problems.
5. Ability to apply ethical principles and responsibilities in engineering practice.
6. Ability to communicate effectively in delivering concepts and ideas of the design solution through reports and presentations.
7. Ability to apply knowledge of engineering management principles and economic evaluation in project management.
8. Ability to evaluate the need for, and have the ability for critical thinking in the broadest context of technological change.

KMJ45403 POLYMER ADHESIVE & COATINGS [PEREKAT & PELITUP POLIMER]

No of Credits: 3

Course Synopsis:

This course intends to introduce the basic knowledge on adhesives and polymer coatings. This course is focus on application of adhesives and coatings products, study working properties, testing, characterization and also applications of them. Students will be exposed to design formulations for different product applications, as well as the adhesion of custom adhesives and coating formulations.

Course Outcomes:

1. Ability to explain specific knowledge and systems of adhesives and coatings based on industrial applications.
2. Ability to formulate different formulation ingredients based on industrial requirements.
3. Ability to discuss the working properties of adhesives and coatings based on specific methods of testing and characterization.

KMJ45503 ENVIRONMENTAL FRIENDLY POLYMER [POLIMER MESRA ALAM]

No of Credits: 3

Course Synopsis:

The aim of this course is to provide the knowledge of environmental issues and their relationship in polymer industrial applications. Explore and discuss the significance of various recycling methods of polymers for the waste reduction. The manufacturing method of biopolymers is also reviewed concerning the industrial demand and environmental protection.

Course Outcomes:

1. Ability to correlate knowledge in polymer recycling by solving environmental issues using 3R (reuse, reduce, recycling) approach.
2. Ability to justify biopolymers structures-properties relationship based on its biodegradability and applications.
3. Ability to communicate effectively in sharing information of environmentally friendly polymers through presentation.

KMJ45603 POLYMER IN ELECTRONIC APPLICATION [POLIMER DALAM APLIKASI ELEKTRONIK]

No of Credits: 3

Course Synopsis:

The aim of this course is to provide the knowledge of environmental issues and their relationship in polymer industrial applications. Explore and discuss the significance of various recycling methods of polymers for the waste reduction. The manufacturing method of biopolymers is also reviewed concerning the industrial demand and environmental protection.

Course Outcomes:

1. Ability to categorize the polymer materials for electronic application based on its specific properties and functions.
2. Ability to select testing and characterization of polymers materials for electronic applications based on specific properties and requirements.
3. Ability to communicate effectively in sharing the information of polymer in electronic applications through presentations.

UR6524004
Bachelor of Chemical Engineering Technology (Food Technology)
with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Engineering technology graduates engaged in the field of chemical engineering technology as demonstrated through career advancement.

PEO 2

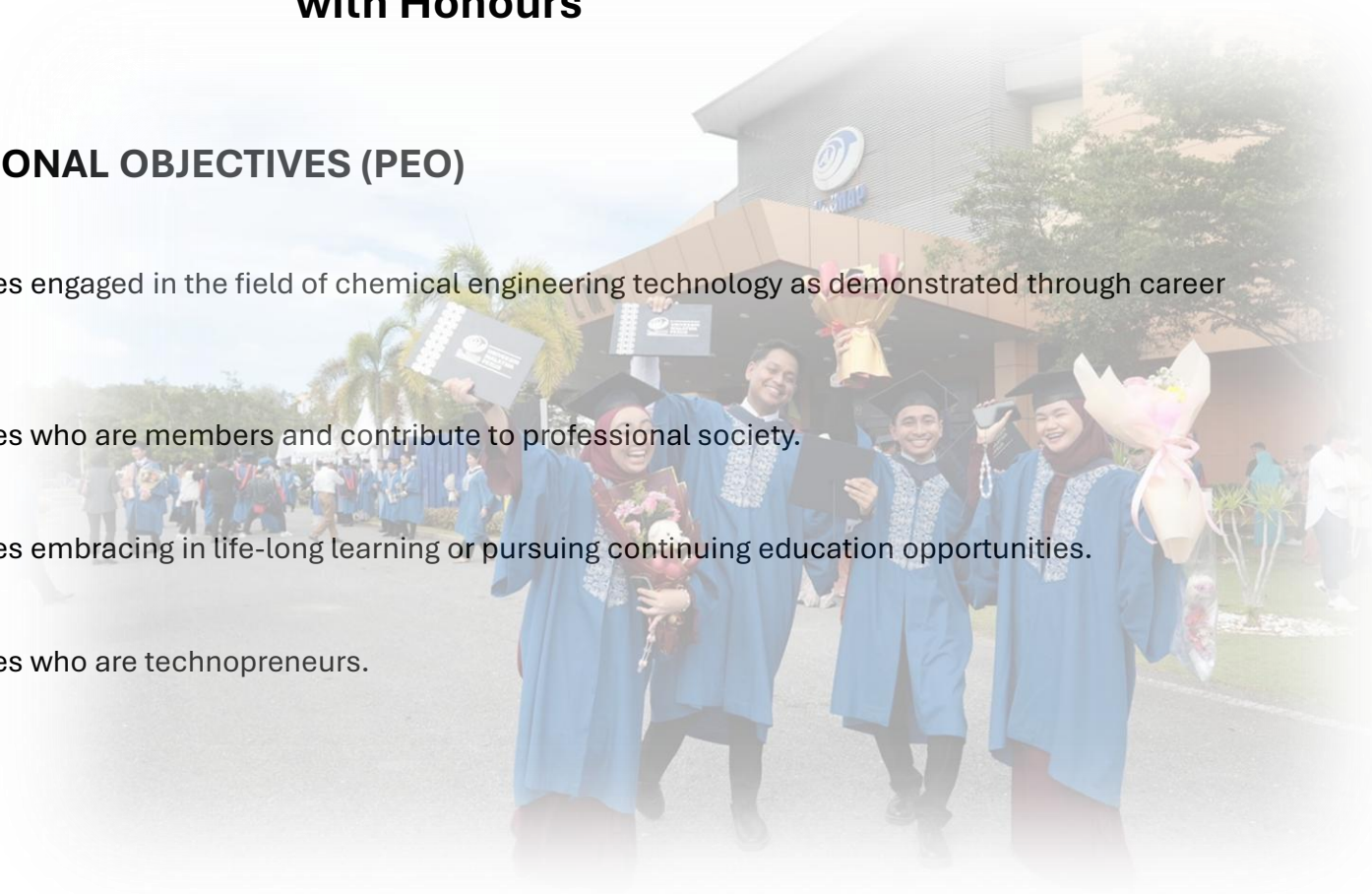
Engineering technology graduates who are members and contribute to professional society.

PEO 3

Engineering technology graduates embracing in life-long learning or pursuing continuing education opportunities.

PEO 4

Engineering technology graduates who are technopreneurs.



PROGRAMME OUTCOMES (PO)

PO 1

Apply knowledge of mathematics, natural science, computing and engineering fundamentals and an engineering specialization to defined and applied engineering procedures, processes, systems or methodologies.

PO 2

Identify, formulate, research literature and analyse broadly-defined engineering problems reaching substantiated conclusions using analytical tools appropriate to their discipline or area of specialisation with considerations for sustainable development.

PO 3

Design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO 4

Conduct investigations of broadly-defined engineering problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions.

PO 5

Select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to broadly-defined engineering problems.

PO 6

Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving broadly-defined engineering problems.

PO 7

Understand and commit to professional ethics and norms of engineering technology practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO 8

Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings.

PO 9

Communicate effectively and inclusively on broadly-defined engineering activities with the engineering community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO 10

Apply knowledge and understanding of engineering management principles and economic decisionmaking to one's own work, as a member and leader in a team and to manage projects in multidisciplinary environments.

PO 11

Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of new specialist technologies.

PO 12

Demonstrate ability to engage effectively in self improvement initiatives for career, professional or educational goals and engage in entrepreneurial activities.

CURRICULUM STRUCTURE UR6524004 BACHELOR OF CHEMICAL ENGINEERING TECHNOLOGY (FOOD TECHNOLOGY) WITH HONOURS INTAKE 2025/2026								
YEAR	FIRST		SECOND		THIRD		FOURTH	
SEMESTER	1	2	3	4	5	6	7	8
DISCIPLINE CORE & ELECTIVE COURSES (109 CREDITS)	KMK10003 Materials Engineering	KMK10502 Physical Chemistry	KMK20003 Thermodynamics for Chemical Engineering	KMK20303 Reaction Engineering	KMK30002 Safety and Loss Prevention	KMK30403 Final Year Project I	KMK40005 Final Year Project II	KMK49912 Industrial Training
	KMK10103 Organic Chemistry	KMK10603 Analytical Chemistry	KMK20103 Fluid Mechanics	KMK20403 Mass Transfer	KMK30103 Process Control and Dynamics	KMK33503 Plant Design for Food Technology I	KMK43503 Plant Design for Food Technology II	
	KMK10202 Engineering Graphics for Chemical Engineering	KMK10704 Principles of Chemical Process	KMK20203 Heat Transfer for Chemical Engineering	KMK23103 Food Biochemistry	KMK30203 Separation Engineering	KMK33403 Food Waste Management and Utilization	KMK43003 Food Product Development and Commercialization	
	KMK10303 Engineering Skills	KMK10802 Introduction to Process Instrumentation	KMK23003 Food Microbiology	KMK23203 Postharvest Technology	KMK33003 Analysis and Instrumentation for Food Technology	KMK33604 Quality and Safety Management System in Food Production		
	KMK10403 Electrical Technology				KMK33104 Food Processing and Preservation			
					Elective I	Elective II	Elective III	
COMMON CORE COURSES (15 CREDITS)	IMQ11103 Mathematics for Engineering Technology 1	IMQ11203 Mathematics for Engineering Technology 2	IMQ21303 Mathematics for Engineering Technology 3			KMK30303 Engineering Technology Management	KMK40103 Engineering Technologist in Society	
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMZXXX01 Co-Curriculum 1	SMB2012 English for General Communication ^[2]	SMB31202 English for Technical Communication	SMU13102 Appreciation of Ethics and Civilization				
		SMU13002 Philosophy and Current Issues	SMB41002 University Malay Language ^[3]	SMU12102 Integrity and Anti- Corruption ^[4]				
		SMZXXX01 Co-Curriculum 2		SMU2242 Engineering Entrepreneurship				
TOTAL CREDITS (140 CREDITS)	18	19	19	18	18	19	17	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]							

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

Elective I : KMK33203 Fats and Oils Technology, KMK33303 Food Ingredients

Elective II : KMK33703 Functional Foods and Nutraceuticals, KMK33803 Dairy and Meat Technology

Elective III : KMK43103 Food Packaging Technology, KMK43202 Poultry and Fish Technology

UR6524005
Bachelor of Chemical Engineering Technology (Industrial Chemical Process)
with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Engineering technology graduates engaged in the field of chemical engineering technology as demonstrated through career advancement.

PEO 2

Engineering technology graduates who are members and contribute to professional society.

PEO 3

Engineering technology graduates embracing in life-long learning or pursuing continuing education opportunities.

PEO 4

Engineering technology graduates who are technopreneurs.

PROGRAMME OUTCOMES (PO)

PO1

Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals and an engineering specialization as specified in SK1 to SK4 respectively to defined and applied engineering procedures, processes, systems or methodologies

PO2

Problem analysis: Identify, formulate, research literature and analyse broadly-defined engineering problems reaching substantiated conclusions using analytical tools appropriate to their discipline or area of specialisation with considerations for sustainable development.

PO3

Design/development of solutions: Design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO4

Investigation: Conduct investigations of broadly-defined engineering problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions.

PO5

Tool Usage: Select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to broadly-defined engineering problems

PO6

The Engineering Technologist and the World: Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving broadly-defined engineering problems

PO7

Ethics: Understand and commit to professional ethics and norms of engineering technology practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO8

Individual and Collaborative Team Work: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings.

PO9

Communications: Communicate effectively and inclusively on broadly defined engineering activities with the engineering community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences

PO10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making to one's own work, as a member and leader in a team and to manage projects in multidisciplinary environments.

PO11

Life Long Learning: Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of new specialist technologies.

PO12

Personal and Entrepreneurial Skills: Demonstrate ability to engage effectively in self-improvement initiatives for career, professional or educational goals and engage in entrepreneurial activities.

CURRICULUM STRUCTURE UR6524005 BACHELOR OF CHEMICAL ENGINEERING TECHNOLOGY (INDUSTRIAL CHEMICAL PROCESS) WITH HONOURS INTAKE 2025/2026								
YEAR	FIRST		SECOND		THIRD		FOURTH	
SEMESTER	1	2	3	4	5	6	7	8
DISCIPLINE CORE & ELECTIVE COURSES (110 CREDITS)	KMK10303 Engineering Skills	KMK10704 Principles of Chemical Process	KMK20003 Thermodynamics for Chemical Engineering	KMK20403 Mass Transfer	KMK30103 Process Control & Dynamics	KMK30403 Final Year Project 1	KMK40005 Final Year Project 2	KMK49912 Industrial Training
	KMK10403 Electrical Technology	KMK10802 Introduction to Process Instrumentation	KMK20103 Fluid Mechanics	KMK20303 Reaction Engineering	KMK30203 Separation Engineering	KMK30002 Safety and Loss Prevention	KMK41903 Plant Design for industrial Chemical Process 2	
	KMK10502 Physical Chemistry	KMK10103 Organic Chemistry	KMK20203 Heat Transfer for Chemical Engineering	KMK21503 Bioresource Processing Technology	KMK31203 Environmental Engineering	KMK31903 Plant Design for Industrial Chemical Process 1	KMK41102 Quality Assurance Control in Chemical Engineering	
	KMK10003 Material Engineering	KMK10603 Analytical Chemistry	KMK21303 Oleochemical Process and Products	KMK21602 Plant Utilities	KMK31303 Petroleum & Gas Processing Technology	KMK31603 Polymer Processing Technology	KMK41203 Particle Processing Technology	
	KMK10202 Engineering Graphics for Chemical Engineering			KMK21703 Renewable Energy		KMK35002 Process Plant Troubleshooting		
					Elective 1/3	Elective 2/3	Elective 3/3	
COMMON CORE COURSES (15 CREDITS)	IMQ11103 Mathematics for Engineering Technology 1	IMQ11203 Mathematics for Engineering Technology 2	IMQ21303 Mathematics for Engineering Technology 3			KMK30303 Engineering Technology Management	KMK40103 Engineering Technologist in Society	
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMB41002 University Malay Language ^[3]	SMU13002 Philosophy & Current Issues	SMU22402 Engineering Entrepreneurship	SMU13102 Appreciation of Ethics and Civilization	SMU12102 Integrity and Anti- Corruption ^[4]			
	SMZXXX01 Co-Curriculum 1	SMB20102 English for General Communication ^[2]		SMB31202 English for Technical Communication				
		SMZXXX01 Co-Curriculum 2						
TOTAL CREDITS (141 CREDITS)	19	20	17	18	17	19	19	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]							

Elective I : A1. KMK31403 Industrial Electrochemistry; A2. KMK31503 Scale Up and Process Optimization

Elective II : B1. KMK31703 Pharmaceutical Processing Technology; B2. KMK31803 Advanced Membrane Technology and Application

Elective III : C1. KMK32703 Bioactive Compounds Extraction Technology; C2. KMK41403 Food Processing Technology

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

UR6524006
Bachelor of Chemical Engineering Technology (Industrial Biotechnology)
with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Engineering technology graduates engaged in the field of chemical engineering technology as demonstrated through career advancement.

PEO 2

Engineering technology graduates who are members and contribute to professional society.

PEO 3

Engineering technology graduates embracing in life-long learning or pursuing continuing education opportunities.

PEO 4

Engineering technology graduates who are technopreneurs.

PROGRAMME OUTCOMES (PO)

PO1

Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals and an engineering specialization as specified in SK1 to SK4 respectively to defined and applied engineering procedures, processes, systems or methodologies

PO2

Problem analysis: Identify, formulate, research literature and analyse broadly-defined engineering problems reaching substantiated conclusions using analytical tools appropriate to their discipline or area of specialisation with considerations for sustainable development.

PO3

Design/development of solutions: Design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO4

Investigation: Conduct investigations of broadly-defined engineering problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions.

PO5

Tool Usage: Select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to broadly-defined engineering problems

PO6

The Engineering Technologist and the World: Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving broadly-defined engineering problems

PO7

Ethics: Understand and commit to professional ethics and norms of engineering technology practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO8

Individual and Collaborative Team Work: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings.

PO9

Communications: Communicate effectively and inclusively on broadly defined engineering activities with the engineering community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences

PO10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making to one's own work, as a member and leader in a team and to manage projects in multidisciplinary environments.

PO11

Life Long Learning: Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of new specialist technologies.

PO12

Personal and Entrepreneurial Skills: Demonstrate ability to engage effectively in self-improvement initiatives for career, professional or educational goals and engage in entrepreneurial activities.

CURRICULUM STRUCTURE
UR6524006 BACHELOR OF CHEMICAL ENGINEERING TECHNOLOGY (INDUSTRIAL BIOTECHNOLOGY) WITH HONOURS SESSION 2025/2026

YEAR	FIRST		SECOND		THIRD		FOURTH	
SEMESTER	1	2	3	4	5	6	7	8
DISCIPLINE CORE & ELECTIVE COURSES (109 CREDITS)	KMK10403 Electrical Technology	KMK10103 Organic Chemistry	KMK20003 Thermodynamics for Chemical Engineering	KMK20103 Fluid Mechanics	KMK30002 Safety & Loss Prevention	KMK30403 Final Year Project I	KMK40005 Final Year Project II	KMK49912 Industrial Training
	KMK10502 Physical Chemistry	KMK10704 Principles of Chemical Process	KMK20303 Reaction Engineering	KMK20203 Heat Transfer for Chemical Engineering	KMK30203 Separation Engineering	KMK32503 Plant Design for Industrial Biotechnology 1	KMK42503 Plant Design for Industrial Biotechnology 2	
	KMK10003 Materials Engineering	KMK10202 Engineering Graphics for Chemical Engineering	KMK20403 Mass Transfer	KMK22104 Biochemistry & Enzyme Technology	KMK32002 Waste Management & Utilization	KMK30103 Process Control & Dynamics	KMK42003 Issues & Commercialization in Biotechnology	
	KMK10802 Introduction to Process Instrumentation	KMK10603 Analytical Chemistry	KMK22004 Industrial Microbiology	KMK22203 Biomolecular & Genetic Engineering	KMK32103 Cell & Tissue Culture Technology	KMK32603 Biopharmaceutical Technology		
	KMK10303 Engineering Skills				KMK32204 Upstream & Downstream Processing Technology			
					Elective 1 (A1 or A2)	Elective 2 (B1 or B2)	Elective 3 (C1 or C2)	
COMMON CORE COURSES (15 CREDITS)	IMQ11103 Mathematics for Engineering Technology I	IMQ11203 Mathematics for Engineering Technology 2	IMQ21303 Mathematics for Engineering Technology 3			KMK30303 Engineering Technology Management	KMK40103 Engineering Technologist in Society	
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMU13002 Philosophy and Current Issues	SMB41002 University Malay Language ^[3]	SMB20102 English for General Communication ^[2]	SMB31202 English for Technical Communication				
	SMZXXX Co-Curriculum 1	SMZXXX Co-Curriculum 2	SMB1XX02 Option Course					
		SMU13102 Appreciation of Ethics and Civilization	SMU12102 Integrity and Anti-Corruption ^[4]	SMU22402 Engineering Entrepreneurship				
TOTAL CREDITS (140 CREDITS)	19	20	20	17	17	18	17	12
AUDIT COURSES		SMB10102 Preparatory English ^[1]						

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

Elective I : KMK32303 Biotechnology Facility Design, KMK31503 Scale up & Process Optimization

Elective II : KMK32703 Bioactive Compounds Extraction Technology, KMK32803 Sustainable Green Technology

Elective III : KMK42103 Bioenergy Production Technology, KMK41403 Food Processing Technology

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
KMK10003	Materials Engineering [Kejuruteraan Bahan]	SDG 09
KMK10103	Organic Chemistry [Kimia Organik]	-
KMK10202	Engineering Graphics for Chemical Engineering [Grafik Kejuruteraan untuk Kejuruteraan Kimia]	-
KMK10303	Engineering Skills [Kemahiran Kejuruteraan]	-
KMK10403	Electrical Technology [Teknologi Elektrik]	-
KMK10502	Physical Chemistry [Kimia Fizikal]	SDG 07
KMK10603	Analytical Chemistry [Kimia Analisis]	-
KMK10704	Principles of Chemical Processes [Prinsip-prinsip Proses Kimia]	SDG 09
KMK10802	Introduction to Process Instrumentation [Pengenalan kepada Proses Instrumentasi]	SDG 09
KMK20003	Thermodynamics for Chemical Engineering [Termodinamik untuk Kejuruteraan Kimia]	SDG 09
KMK20103	Fluid Mechanics [Mekanik Bendalir]	SDG 06
KMK20203	Heat Transfer for Chemical Engineering [Pemindahan Haba untuk Kejuruteraan Kimia]	SDG 07
KMK20303	Reaction Engineering [Kejuruteraan Tindakbalas]	SDG 09
KMK20403	Mass Transfer [Pemindahan Jisim]	SDG 09
KMK30002	Safety & Loss Prevention [Keselamatan & Pencegahan Kehilangan]	SDG 09
KMK30103	Process Control & Dynamics [Kawalan Proses & Dinamik]	SDG 06
KMK30203	Separation Engineering [Kejuruteraan Pemisahan]	SDG 12
KMK30303	Engineering Technology Management [Pengurusan Kejuruteraan Teknologi]	-

COURSE CODE	COURSE NAME	SDG
KMK30403	Final Year Project I [Projek Tahun Akhir I]	SDG 06, SDG 13
KMK40005	Final Year Project II [Projek Tahun Akhir II]	SDG 02, SDG 03, SDG 06
KMK40103	Engineering Technologist In Society [Kejuruteraan Teknologis dalam Masyarakat]	SDG 09
KMK49912	Industrial Training [Latihan Industri]	SDG09
KMK23003	Food Microbiology [Mikrobiologi Makanan]	SDG 02
KMK23103	Food Biochemistry [Biokimia Makanan]	-
KMK23203	Postharvest Technology [Postharvest Technology]	SDG 02
KMK33003	Analysis and Instrumentation for Food Technology [Analisis dan Instrumentasi untuk Teknologi Makanan]	-
KMK33104	Food Processing and Preservation [Pemprosesan dan Pengawetan Makanan]	SDG 02
KMK33403	Food Waste Management and Utilization [Pengurusan dan Penggunaan Sisa Makanan]	SDG 12
KMK33604	Quality and Safety Management System in Food Production [Sistem Pengurusan Kualiti dan Keselamatan dalam Pengeluaran Makanan]	SDG 09
KMK33503	Plant Design for Food Technology I [Reka Bentuk Loji untuk Teknologi Makanan 1]	SDG 09
KMK43003	Food Product Development and Commercialization [Pembangunan dan Pengkomersilan Produk Makanan]	SDG 09
KMK43503	Plant Design for Food Technology 2 [Reka Bentuk Loji untuk Teknologi Makanan 2]	SDG 09, SDG 12
KMK33203	Fats and Oils Technology [Teknologi Lemak dan Minyak]	-
KMK33303	Food Ingredients [Ingredien Makanan]	SDG 03, SDG 12
KMK33703	Functional Foods and Nutraceuticals [Makanan Berfungsi dan Nutrasedutikal]	SDG 12
KMK33803	Dairy and Meat Technology [Teknologi Tenusu dan Daging]	SDG 02

COURSE CODE	COURSE NAME	SDG
KMK43103	Food Packaging Technology [Teknologi Pembungkusan Makanan]	SDG 12
KMK43203	Poultry and Fish Technology [Teknologi Pemprosesan Poltri dan Ikan]	SDG 14
KMK21303	Oleochemical Process & Products [Proses dan Produk Oleokimia]	-
KMK21503	Bioresource Processing Technology [Teknologi Pemprosesan Sumber Bio]	-
KMK21602	Plant Utilities [Utiliti Loji]	SDG 09
KMK21703	Renewable Energy [Tenaga Boleh Baharu]	SDG 07
KMK31203	Environmental Engineering [Kejuruteraan Alam Sekitar]	SDG 11, SDG 12, SDG 13
KMK31303	Petroleum & Gas Processing Technology [Teknologi Pemprosesan Petroleum & Gas]	SDG 09
KMK31903	Plant Design for Industrial Chemical Process 1 [Reka bentuk Loji untuk Proses Kimia Industri 1]	SDG 09
KMK31603	Polymer Processing Technology [Teknologi Pemprosesan Polimer]	SDG 09
KMK35002	Process Plant Troubleshooting [Pencarisilapan Loji Proses]	SDG 09
KMK41903	Plant Design for Industrial Chemical Process 2 [Reka bentuk Loji untuk Proses Kimia Industri 2]	SDG 09, SDG 12
KMK41102	Quality Assurance & Control in Chemical Engineering [Jaminan Kualiti & Kawalan dan Kejuruteraan Kimia]	SDG 09
KMK41203	Particle Processing Technology [Teknologi Pemprosesan Zarah]	-
KMK31403	Industrial Electrochemistry [Elektrokimia Industri]	-
KMK31503	Scale Up & Process Optimization [Peningkatan Skala dan Pengoptimuman Proses]	SDG 09
KMK31703	Pharmaceutical Processing Technology [Teknologi Pemprosesan Farmaseutikal]	SDG 03, SDG 09
KMK31803	Advanced Membrane Technology and Application [Teknologi Membran Termaju dan Aplikasi]	SDG 06, SDG 07

COURSE CODE	COURSE NAME	SDG
KMK32703	Bioactive Compounds Extraction Technology [Teknologi Pengekstrakan Sebatian Bioaktif]	SDG 03, SDG 09
KMK41403	Food Processing Technology [Teknologi Pemprosesan Makanan]	SDG 02, SDG 08, SDG 12
KMK22004	Industrial Microbiology [Mikrobiologi Industri]	-
KMK22104	Biochemistry & Enzyme Technology [Biokimia & Teknologi Enzim]	-
KMK22203	Biomolecular & Genetic Engineering [Biomolekular & Kejuruteraan Genetik]	SDG 03
KMK32002	Waste Management & Utilization [Pengurusan & Penggunaan Bahan Buangan]	SDG 06
KMK32103	Cell & Tissue Culture Technology [Teknologi Kultur Tisu & Sel]	-
KMK32204	Upstream & Downstream Processing Technology [Teknologi Pemprosesan Hulu & Hiliran]	-
KMK32503	Plant Design for Industrial Biotechnology 1 [Rekabentuk Logi untuk Bioteknologi Industri 1]	-
KMK32603	Biopharmaceutical Technology [Teknologi Biofarmaseutikal]	-
KMK42503	Plant Design for Industrial Biotechnology 2 [Rekabentuk Loji untuk Bioteknologi Industri]	SDG 9, SDG 12
KMK42003	Issues & Commercialization in Biotechnology [Isu & Komersialisasi dalam Bioteknologi]	-
KMK32303	Biotechnology Facility Design [Rekabentuk Fasilitas Bioteknologi]	-
KMK31503	Scale Up & Process Optimization [Peningkatan Skala & Pengoptimuman Proses]	SDG 09
KMK32703	Bioactive Compounds Extraction Technology [Teknologi Pengekstrakan Sebatian Bioaktif]	SDG 03, SDG 09
KMK32803	Sustainable Green Technology [Teknologi Kelestarian Hijau]	SDG 07, SDG 11
KMK42103	Bioenergy Production Technology [Teknologi Penghasilan Tenaga-Bio]	SDG 07
KMK41403	Food Processing Technology [Teknologi Pemprosesan Makanan]	SDG 02, SDG 08, SDG 12

KMK10003 MATERIALS ENGINEERING [KEJURUTERAAN BAHAN]

No of Credits: 3

Course Synopsis:

This course covers the introduction to materials science and engineering which emphasizes on different type of material properties, structures, and application. The course encompasses the classification of material properties that determine their applicability and fundamental of material structures. The mechanical characteristics of materials, methods of assessing the mechanical characteristics of materials including the behaviour of material in thermal equilibrium are also embedded in this course. The classification and application of specific material as well as introduction of electrical, magnetic and optical properties of materials are also presented in the course.

Course Outcomes:

1. Ability to apply materials science principles across various classes of materials.
2. Ability to apply principles of material properties in the design and evaluation of metallic and non-metallic engineering materials.
3. Ability to analyze material properties and their suitability for solving fundamental engineering problems in materials selection and design applications.

KMK10103 ORGANIC CHEMISTRY [KIMIA ORGANIK]

No of Credits: 3

Course Synopsis:

This course covers structure, nomenclature, synthesis, physical and chemical properties, reactions of the major classes of organic compounds such as alkanes, alkenes, alkynes, alcohols, ethers, aldehydes and ketones, benzene ring, other aromatic rings, and carboxylic acids. Reaction mechanisms and multisteps organic synthesis involves these organic compounds will also be covered.

Course Outcomes:

1. Ability to identify different classes of organic compounds based on nomenclature, structure, physical and chemical properties.
2. Ability to distinguish types of organic reaction and mechanism involved based on starting materials, functional groups, and reaction condition.
3. Ability to follow standard procedure for handling laboratory equipment and techniques such as distillation and reflux.

KMK10202 ENGINEERING GRAPHICS FOR CHEMICAL ENGINEERING [GRAFIK KEJURUTERAAN UNTUK KEJURUTERAAN KIMIA]

No of Credits: 2

Course Synopsis:

This course offers a fundamental introduction to engineering graphics techniques, with the goal of developing the ability to comprehend, envision, evaluate, create, and produce engineering drawings with proficiency and accuracy. At the end of this course, students will be able to (depict the engineering process / acquire the engineering process drawing skill) using an appropriate software package.

Course Outcomes:

1. Ability to create 2D and 3D drawings of an object based on the technical drawing standards using AutoCAD
2. Ability to construct orthographic projections of 3D models from different perspectives using AutoCAD
3. Ability to apply drafting tools, commands, and workflows to develop design solutions for chemical engineering processes

KMK10303 ENGINEERING SKILLS [KEMAHIRAN KEJURUTERAAN]

No of Credits: 3

Course Synopsis:

This course intends to give students with basic knowledge of engineering skills. The subtopics that will be emphasized are technical drawing with CAD, basic electronics circuit, electrical wiring, GNU Octave, sample preparation and mechanical testing.

Course Outcomes:

1. Ability to perform basic skills and standard practices of sample preparation for microstructural observation and mechanical testing
2. Ability to perform basic skills and standard practices of domestic wiring
3. Ability to apply modern engineering and IT tools /software in analysing the data for engineering problems
4. Ability to apply basic to intermediate data analysis using Microsoft Excel
5. Ability to construct the electronic circuit based on schematic circuit diagram
6. Ability to demonstrate professional ethics in modern engineering and IT tools/software in analysing the data for engineering problems.

KMK10403 ELECTRICAL TECHNOLOGY [TEKNOLOGI ELEKTRIK]

No of Credits: 3

Course Synopsis:

This course covers the international system of measurement, introduction to the electrical systems including characteristics and principles of operation of DC and AC circuits, capacitance, and inductance. The students will also be exposed to the simple magnetic circuit and electromagnetism as well as the application of electrical technology in a variety of sectors.

Course Outcomes:

1. Ability to explain the operation of electrical circuit in designing basic electronic and electrical systems.
2. Ability to analyze the behavior and performance of DC and AC electrical circuits in practical engineering applications.
3. Ability to examine the concept of magnetic circuit, electromagnetism, transformer and DC & AC machine in electrical technology.

KMK10502 PHYSICAL CHEMISTRY [KIMIA FIZIKAL]

No of Credits: 2

Course Synopsis:

The course discusses the concept of physical chemistry in terms of laws of thermodynamics, involving enthalpy and entropy. The course also covers the topics of material equilibrium, standard thermodynamic functions of reactions, reaction equilibrium in a gas mixture, reaction kinetics, phase diagram and equilibrium electrochemistry.

Course Outcomes:

1. Ability to utilize the basic concepts of the first and second laws of thermodynamics which are applied to chemical system
2. Ability to examine the thermodynamic functions such as the Gibbs energy and enthalpy in chemical reaction
3. Ability to analyze the principles related to reaction kinetics, phase diagram and electrochemical cell of chemical system.

KMK10603 ANALYTICAL CHEMISTRY [KIMIA ANALISIS]

No of Credits: 3

Course Synopsis:

This course covers core analytical chemistry concepts and techniques for chemical analysis. Students will apply theoretical knowledge, perform laboratory procedures using standard tools and instruments and collaborate in laboratory teams. Emphasis is placed on calculations, data interpretation, and good laboratory practices.

Course Outcomes:

1. Ability to assess appropriate approaches and calculation methods based on analytical chemistry principles to solve chemical analysis problems
2. Ability to follow standard laboratory procedures and techniques to perform chemical analyses method.
3. Ability to function effectively as an individual and as a team member to carry out analytical chemistry experiments and complete laboratory tasks.

KMK10704 PRINCIPLES OF CHEMICAL PROCESSES [PRINSIP-PRINSIP PROSES KIMIA]

No of Credits: 4

Course Synopsis:

This course emphasizes the underlying concepts of material and energy balance in chemical processes. More fundamentally, it introduces the engineering approach to solving process-related problems. Topics to be covered include basic process calculations, process system variables, material and energy balances on reactive and non-reactive processes. At the end of this course, students will be able to identify and perform material and energy balances on reactive and non-reactive processes.

Course Outcomes:

1. Ability to analyze foundational principles of units and dimensions, process variables, and introductory material and energy balances in chemical engineering technology contexts.
2. Ability to analyze advanced material and energy balance principles for reactive and non-reactive chemical processes in chemical engineering technology contexts.
3. Ability to apply appropriate simulation tools to perform material and energy balances for reactive and non-reactive chemical processes in chemical engineering technology contexts.

KMK10802 INTRODUCTION TO PROCESS INSTRUMENTATION [PENGENALAN KEPADA PROSES INSTRUMENTASI]

No of Credits: 2

Course Synopsis:

This course provides the students the introductory fundamentals and application knowledge of the essential process instruments (including valves, pumps, compressors, blowers and fans) which are commonly used in the process industries. Students are also trained with the ability to examine both process flow diagram (PFD) as well as piping and instrumentation diagram (P&ID) using the Instrumentation Systems and Automation Society (ISA) symbology and tagging systems. Ultimately, the design and development of both PFD and P&ID of both simple and complex systems are studied and practiced.

Course Outcome:

1. Ability to analyze the functions of various industrial instruments in engineering process drawings.
2. Ability to analyze the ISA symbology, identification letters and tag numbering in process diagrams.
3. Ability to construct Process Flow Diagrams (PFDs) and Piping & Instrumentation Diagrams (P&IDs) for process design, system analysis and industrial engineering applications.

KMK20003 THERMODYNAMICS FOR CHEMICAL ENGINEERING [TERMODINAMIK UNTUK KEJURUTERAAN KIMIA]

No of Credits: 3

Course Synopsis:

This course covers the fundamental principles of thermodynamics and their applications in chemical engineering. Topics include thermodynamic properties, energy conservation, phase behavior, and the First and Second Laws of Thermodynamics. Students will learn about heat and work interactions, thermodynamic cycles, gas mixtures, and phase equilibrium. The course emphasizes problem-solving and real-world applications to chemical processes.

Course Outcomes:

1. Ability to evaluate thermodynamic principles to analyze and solve broadly-defined problems in chemical engineering-related disciplines.
2. Ability to perform thermodynamics experiments by effectively operating laboratory equipment and instruments, analyzing experimental data, and

interpreting results

3. Ability to demonstrate inclusive teamwork and professional conduct by actively contributing to discussions and activities while respecting diverse perspectives and backgrounds.

KMK20103 FLUID MECHANICS [MEKANIK BENDALIR]

No of Credits: 3

Course Synopsis:

This course covers all of the basic principles of fluid mechanics, both static and dynamics. This course emphasizes fundamental concepts and problem-solving technique that ties theory directly to real system used in chemical process industries. In the fluid static part, students will be introduced to basic properties of fluid, pressure measurement, buoyancy and stability and also force due to static fluid. In the fluid dynamics, students will be learning general equation of fluid flow, friction loss and separation losses.

Course Outcomes:

1. Ability to analyze fundamental problems related to fluid statics in the pressure distribution, fluid forces on surfaces, and their applications in engineering systems.
2. Ability to evaluate broadly defined engineering problems related to fluid dynamics in the designing and optimizing fluid flow systems.
3. Ability to follow established procedures when conducting fluid mechanics experiments.

KMK20203 HEAT TRANSFER FOR CHEMICAL ENGINEERING [PEMINDAHAN HABA UNTUK KEJURUTERAAN KIMIA]

No of Credits: 3

Course Synopsis:

This course emphasizes the fundamental concepts and problem-solving techniques related to heat transfer in process engineering. The fundamental theoretical concepts and mechanisms of conduction, convection and radiation of heat transfer and the design fundamentals of basic industrial heat exchangers are analyzed. In particular, the fundamental knowledge gained from the single heat exchanger analysis is further applied for designing a heat exchanger network for specific processes towards minimum energy requirement and rejection.

Course Outcomes:

1. Ability to evaluate heat transfer problems involving conduction, convection, and radiation in chemical engineering processes.
2. Ability to demonstrate the use of appropriate techniques and tools in the setup, analysis, and design of heat transfer equipment for chemical engineering applications.
3. Ability to collaborate effectively in a multidisciplinary team to complete assigned tasks related to heat transfer problem-solving activities.

KMK20303 REACTION ENGINEERING [KEJURUTERAAN TINDAKBALAS]

No of Credits: 3

Course Synopsis:

This course highlights the principles of chemical reaction engineering, focusing on the application of knowledge in reactor design. It emphasizes fundamental concepts such as reactor sizing, rate laws, isothermal reactor design, rate data collection and analysis, as well as catalysis and catalytic reaction mechanisms.

Course Outcomes:

1. Ability to analyse chemical reaction processes and reactor performance using engineering fundamentals in solving reaction-related problems.
2. Ability to apply chemical reactors and laboratory techniques in conducting experiments for reaction process evaluation.
3. Ability to demonstrate commitment to collaborative teamwork in preparing laboratory reports on reaction engineering processes.

KMK20403 MASS TRANSFER [PEMINDAHAN JISIM]

No of Credits: 3

Course Synopsis:

Mass transfer operations are essential processes in various industries, involving changes in the composition of solutions. This subject covers the fundamental concepts of mass transfer, equipping students with the knowledge and skills to understand and solve mass transfer-related problems across multiple engineering and industrial applications.

Course Outcomes:

1. Ability to analyse mass transfer principles and industrial mass transfer systems for solving broadly defined engineering problems
2. Ability to apply appropriate engineering tools to solve mass transfer-related problems
3. Ability to function effectively in a group/team to design solutions for mass transfer applications based on engineering principles.

KMK30103 PROCESS CONTROL & DYNAMICS [KAWALAN PROSES & DINAMIK]

No of Credits: 3

Course Synopsis:

The course aims to introduce the concept of process control and dynamics which starts with the introduction to process control, theoretical models of chemical processes, Laplace transform, transfer function and dynamic behaviour of the processes. In addition, complete control system includes the feedback controller, control system instrumentations will be also covered with understanding of dynamics behaviour of the closed loop and apply the PID controller design and tuning.

Course Outcomes:

1. Ability to apply knowledge of basic concepts in process control and theoretical models of chemical processes.
2. Ability to evaluate the dynamic behavior of chemical processes and feedback controller in close-loop control system.
3. Ability to apply and operate control system trainer unit and simulation tools to manipulate models, design and dynamic systems.

KMK30203 SEPARATION ENGINEERING [KEJURUTERAAN PEMISAHAN]

No of Credits: 3

Course Synopsis:

This course provides a comprehensive introduction to the principles and applications of separation processes used in the chemical and process industries. Students will learn both the theoretical and practical aspects of key separation techniques that are vital for product recovery, purification, and waste minimization. The course emphasizes on the separation calculations, equipment selection, and operating principles of each separation method. It also highlights the relevance of these processes to industrial sustainability, environmental protection, and alignment with the UN Sustainable Development Goals (SDGs).

Course Outcomes:

1. Ability to evaluate separation process related problems involving equilibrium stage concepts and mass transfer rates in chemical engineering technology applications.
2. Ability to demonstrate an appropriate technique related to separation process equipment.
3. Ability to work efficiently within a team to accomplish all tasks associated with group activities focused on solving separation process issues in chemical engineering.

KMK30403 FINAL YEAR PROJECT I [PROJEK TAHUN AKHIR I]

No of Credits: 3

Course Synopsis:

Final year project is the culmination of study towards the Bachelor of Chemical Engineering Technology degree that requires the application of knowledge learned throughout the program. This course consists of the combination between guided supervision and independent study focusing on the technique of identification of problem statements, research objectives, conducting literature review and proposing research methodology. This course also covers scientific and technical guidance on proposal writing and preparation. Presentation of the research proposal to internal examiners is conducted.

Course Outcomes:

1. Ability to design an appropriate solution by incorporating fundamental theories and efficient resource use in solving broadly-defined engineering technology problems.

2. Ability to display appropriate selection and use of techniques and resources in developing a research methodology.
3. Ability to develop problem statements and research objectives by using scientific information to address research problems.
4. Ability to practice ethical principles in completing research proposals.
5. Ability to perform effective communication through the presentation in a defence proposal.
6. Ability to demonstrate commitment in planning and managing research activities to meet objectives and deadlines.
7. Ability to engage in independent and lifelong learning to develop structured solutions by integrating theoretical and practical knowledge.

KMK30002 SAFETY & LOSS PREVENTION [KESELAMATAN & PENCEGAHAN KEHILANGAN]

No of Credits: 2

Course Synopsis:

The course offers a detailed study on applications of engineering principles to process safety, hazards analysis and mitigation. It covers issues relevant to chemical process safety which include Occupational Safety and Health laws and regulations, methods and techniques for identifying, assessing and eliminating or controlling hazards to acceptable levels which are required on any process plant to ensure safe and efficient operation. The course also covers principle and guideline on safe design engineering and the concept and design of relief system. The course also emphasizes on maintenance program, emergency response planning, occupational safety and health management system and relevant case studies. The course is concluded with the lesson in accident investigation.

Course Outcomes:

1. Ability to demonstrate occupational safety and health management, planning and legal issues.
2. Ability to evaluate suitable methods for prevention and control in occupational safety and health.
3. Ability to propose safety element in engineering work.

KMK30303 ENGINEERING TECHNOLOGY MANAGEMENT [PENGURUSAN KEJURUTERAAN TEKNOLOGI]

No of Credits: 3

Course Synopsis:

This course aims to teach students how to apply project management skills and economic techniques in evaluating designs. The role of economics is to assess the feasibility of a given project, estimate its value, and justify it from an engineering technology standpoint. By the end of the course, students will be able to engage in entrepreneurial activities and identify and discuss issues and challenges faced by engineering technologists related to project management in current economic scenarios.

Course Outcomes:

1. Ability to evaluate the process of project management, develop work plans, perform project evaluation and engineering economics.
2. Ability to work effectively as an individual and as a member or leader in a team, in person, virtually and remotely for an engineering project.
3. Ability to demonstrate effective and inclusive communication in an engineering project by considering cultural, language and learning differences.
4. Ability to demonstrate engineering management principles and economic decision-making in one's own work, both as a team member and leader, and in managing an engineering project.
5. Ability to demonstrate active involvement in self-improvement initiatives through entrepreneurial activities for an engineering project and a business venture.

KMK40005 FINAL YEAR PROJECT II [PROJEK TAHUN AKHIR II]

No of Credits: 5

Course Synopsis:

Final year project is the culmination of study towards the Bachelor of Chemical Engineering Technology degree that requires the application of knowledge learned throughout the program. This course consists of combination between guided supervision and independent study focusing on the techniques of conducting laboratory and/or field experiments. This course also covers the implementation of research activities based on research plan or gannt chart. The experimental data are analysed and written in a scientific manner and oral presentation on project findings is conducted and assessed by the appointed

internal examiners. Finally, a thesis is submitted indicating the course completion.

Course Outcomes:

1. Ability to propose research problem for the formulation of effective solutions aligned with research objectives.
2. Ability to construct investigation of experimental research to provide valid research conclusion.
3. Ability to demonstrate appropriate technique to solve research problem.
4. Ability to follow ethical principles in completing the proposed project.
5. Ability to display findings effectively through presentations.
6. Ability to integrate project management principles in the effective planning, executing, and evaluation of research projects.
7. Ability to integrate independent and lifelong theoretical and practical learning to support personal and professional growth.

KMK40103 ENGINEERING TECHNOLOGIST IN SOCIETY [KEJURUTERAAN TEKNOLOGIS DALAM MASYARAKAT]

No of Credits: 3

Course of Synopsis:

This course aims to explain the main concepts in engineering and technology ethics, risk management and occupational safety and health as well as to expose the students to basic of law in the engineering and technology context. The course presents the introductory nature to enable engineering technologist to appreciate factors that have to be taken into account in decision making. Examine and assess issues and challenges faced by engineering technologist relating to engineering and technology ethics, risk management and to understand the legal requirement related engineering and technology field.

Course Outcomes:

1. Ability to apply principles of hazard identification, risk management, occupational safety and health, and relevant laws to solve engineering problems.
2. Ability to assess sustainable development impacts to society, health and safety, and procedures of legal related to engineering practice.
3. Ability to evaluate ethical principles and demonstrate responsibility in professional engineering technology practices.
4. Ability to engage in independent and life-long learning on the theory and practical knowledge of engineering and technological issues and challenges.

KMK23003 FOOD MICROBIOLOGY [MIKROBIOLOGI MAKANAN]

No of Credits: 3

Course Synopsis:

This course introduces the role of microorganisms in food safety, quality, and fermentation. Students will apply their knowledge of microbial growth, contamination, and control strategies to ensure food safety and quality while applying laboratory techniques to isolate the microorganisms. Additionally, students will develop effective communication skills to discuss key issues in food microbiology, including food safety, fermentation, and quality control.

Course Outcomes:

1. Ability to apply microbiological concepts to address issues related to food safety, quality, and fermentation processes.
2. Ability to apply appropriate laboratory techniques for the isolation and identification of microorganisms and their role in food fermentation.
3. Ability to communicate effectively on the significance of microorganisms in food microbiology through technical report and presentation.

KMK23103 FOOD BIOCHEMISTRY [BIOKIMIA MAKANAN]

No of Credits: 3

Course Synopsis:

This course highlighted on chemical/biochemical reaction of carbohydrate, lipids, proteins, vitamins, water and minerals in fresh and processed foods with respect to food quality and health. It also covers on biochemical and functional properties of food components, enzymes and food additives (emulsifiers, pigments, colours, flavours, sweeteners, preservatives, etc). Metabolism and processes of nutritive aspect of food constituents are also emphasized.

Course Outcomes:

1. Ability to analyze chemical structures, properties, and interactions of different food components.
2. Ability to apply appropriate techniques for different food components.
3. Ability to function effectively in a group to understand biochemical testing and interactions of food components.

KMK23203 POSTHARVEST TECHNOLOGY [POSTHARVEST TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course provides an overview of the postharvest handling technology of agricultural produce. The course emphasizes the basics of postharvest handling technology, pre-harvest and harvesting factors affecting the postharvest quality, postharvest operations in the packinghouse, and appropriate equipment and/or chemicals that relate to postharvest treatments and storage of agricultural products, quality assurance, preparation of fresh-cuts, and postharvest socioeconomics.

Course Outcomes:

1. Ability to analyse the factors during pre-harvest, harvesting, and post-harvest handling that affect the quality of fresh produce.
2. Ability to perform appropriate postharvest handling technology and analytical procedures in determining the quality of fresh produce.
3. Ability to function effectively in a group/team to complete tasks and assignments related to postharvest handling of fresh produce

KMK33003 ANALYSIS AND INSTRUMENTATION FOR FOOD TECHNOLOGY [ANALISIS DAN INSTRUMENTASI UNTUK TEKNOLOGI MAKANAN]

No of Credits: 3

Course Synopsis:

This course provides students with knowledge in the application of analytical procedures and instrumentations used for the physical and chemical characterization of foods. Physical properties of foods such as rheological properties, texture properties, colour determination, and viscosity are characterized using a rheometer, texture analyser, colour meter, and viscometer. Proximate compositions (moisture, ash, protein, fat content) of food are analyzed using oven, furnace, Kjeldahl, and Soxhlet method. The course also covers analytical techniques using high-end types of equipment such as spectrophotometry (UV-Vis, FTIR), and chromatography (GC and HPLC) for food constituents determination, concentration, characterization, separation, and quantification. These analytical procedures are important to ensure food safety and quality.

Course Outcomes:

1. Ability to evaluate the physical and chemical principles, types of instruments, and methods used for specific food analysis.
2. Ability to apply appropriate instruments and methods used for specific food analysis.
3. Ability to function effectively in a group to construct and evaluate appropriate methods and instruments for different food analyses.

KMK33104 FOOD PROCESSING AND PRESERVATION [PEMROSESAN DAN PENGAWETAN MAKANAN]

No of Credits: 4

Course Synopsis:

This course covers multidisciplinary fields of food processing technology and related industries. Topics covered include physicochemical, sensory, and nutritional properties of foods, food spoilage, food production systems and preservation processes, including thermal and non-thermal processes, chilling and freezing, freeze-drying, irradiation, texturization, extrusion, mechanical separation, packaging, chemical preservation, fermentation, and food biotechnology.

Course Outcomes:

1. Ability to evaluate appropriate food processing and preservation technologies based on underlying principles, and their impact on food quality and shelf life.
2. Ability to perform appropriate processing techniques and analytical procedures to assess the effect of processing on the physicochemical, sensory, and nutritional properties of foods.
3. Ability to communicate effectively on the appropriate solution to the problems and issues involved in food processing and preservation through a technical report and presentation.

KMK33403 FOOD WASTE MANAGEMENT AND UTILIZATION [PENGURUSAN DAN PENGGUNAAN SISA MAKANAN]

No of Credits: 3

Course Synopsis:

This course covers food waste generation, analysis, and utilization techniques, emphasizing ethical, sustainable practices for reducing waste and recovering valuable resources from food industry by-products.

Course Outcomes:

1. Ability to evaluate fundamental concepts and principles of food waste generation, classification, and management strategies for effective waste reduction and resource recovery.
2. Ability to demonstrate appropriate techniques for the analysis and utilization of food waste.
3. Ability to value ethical principles in food waste management practices to ensure sustainable and responsible utilization of food industry by-products.

KMK33604 QUALITY AND SAFETY MANAGEMENT SYSTEM IN FOOD PRODUCTION [SISTEM PENGURUSAN KUALITI DAN KESELAMATAN DALAM PENGLUARAN MAKANAN]

No of Credits: 4

Course Synopsis:

This course provides an overview on food quality and safety in food production such as sources and types of contaminants and toxins in foods, food safety policy and laws, methods of analyses and measurements of the risk of toxicity and methods of detoxification. It also emphasizes on the quality and safety management systems such as sensory, good manufacturing practices (GMP), Good hygiene Practices (GHP) and good distribution practices (GDP) as well as Standards in Malaysia and in advanced countries which compliance with global food safety initiatives (GFSI) including HACCP, Halal and quality and safety requirements for obtaining accreditation from authority by the food manufacturers for export.

Course Outcomes:

1. Ability to evaluate the quality and safety management system in food production.
2. Ability to measure quality and safety of food product with appropriate technique.
3. Ability to explain ethical issues and challenges related to food production practices.

KMK33503 PLANT DESIGN FOR FOOD TECHNOLOGY I [REKA BENTUK LOJI UNTUK TEKNOLOGI MAKANAN 1]

No of Credits: 3

Course Synopsis:

The course synopsis was revised to improve clarity, accurately reflect the course content, and emphasize key components such as simulation, equipment design, and project-based learning. It better aligns with the course outcomes and capstone nature, while highlighting essential skills like teamwork, reporting, and presentation for real-world readiness.

Course Outcomes:

1. Ability to develop flow diagrams of a process synthesis with consideration of process safety and environmental impact for a food product, additive, or

- intermediate production plant.
2. Ability to develop equipment design and engineering drawings for food product, additive, or intermediate production plant.
3. Ability to apply engineering codes, ethics, and heuristics in equipment design decisions.
4. Ability to simulate and validate material and energy balances using process simulation tools for selected unit operations in a food product, additive, or intermediate production plant.
5. Ability to function effectively in a team to complete a plant design project through collaborative engineering practices.
6. Ability to communicate technical concepts, design justifications, and project outcomes through oral presentations.
7. Ability to organize project planning and coordination activities through progress meetings and report submissions.
8. Ability to analyse the need for independent and life-long learning in a plant design project through logbook documentation.

KMK43003 FOOD PRODUCT DEVELOPMENT AND COMMERCIALIZATION [PEMBANGUNAN DAN PENGKOMERSILAN PRODUK MAKANAN]

No of Credits: 3

Course Synopsis:

The course synopsis was revised to improve clarity, accurately reflect the course content, and emphasize key components such as simulation, equipment design, and project-based learning. It better aligns with the course outcomes and capstone nature, while highlighting essential skills like teamwork, reporting, and presentation for real-world readiness.

Course Outcomes:

1. Ability to evaluate the process in the development and commercialization of a new product.
2. Ability to design appropriate in the development of a new food product.
3. Ability to appraise management techniques and apply economic decision-making into the development of a new food product.
4. Ability to employ skills in developing new food products to create innovative career paths in entrepreneurship.

KMK33203 FATS AND OILS TECHNOLOGY [TEKNOLOGI LEMAK DAN MINYAK]

No of Credits: 3

Course Synopsis:

This course covers multidisciplinary fields of food processing technology and related industries. Topics covered include physicochemical, sensory, and nutritional properties of foods, food spoilage, food production systems and preservation processes, including thermal and non-thermal processes, chilling and freezing, freeze-drying, irradiation, texturization, extrusion, mechanical separation, packaging, chemical preservation, fermentation, and food biotechnology.

Course Outcomes:

1. Ability to evaluate appropriate food processing and preservation technologies based on underlying principles, and their impact on food quality and shelf life.
2. Ability to perform appropriate processing techniques and analytical procedures to assess the effect of processing on the physicochemical, sensory, and nutritional properties of foods.
3. Ability to communicate effectively on the appropriate solution to the problems and issues involved in food processing and preservation through a technical report and presentation.

KMK33303 FOOD INGREDIENTS [INGREDIEN MAKANAN]

No of Credits: 3

Course Synopsis:

This course provides the knowledge in major food ingredients in various categories such as food colouring, food flavouring, acidulants, emulsifiers, stabilizers, specialty protein-based ingredients, enzymes and many other ingredients. The course also emphasizes on technical information in the area of ingredient interactions pertaining to foods in order to optimize ingredient performance in food formulations and obtaining high quality food products.

Course Outcomes:

1. Ability to apply the concepts of food ingredients to the development and improvement of food product
2. Ability to evaluate the impact of food ingredients on sustainability, health and safety, and the environment in food product development and processing.
3. Ability to communicate effectively on food ingredients through delivering structured presentations

KMK33703 FUNCTIONAL FOODS AND NUTRACEUTICALS [MAKANAN BERFUNGSI DAN NUTRASEUTIKAL]

No of Credits: 3

Course Synopsis:

This subject explores the science and development of functional foods and nutraceuticals, emphasizing their roles in promoting health, preventing disease, and supporting physiological functions beyond basic nutrition. Students will examine bioactive compounds, sources, mechanisms of action, processing technologies, and product formulation. Key topics include regulatory aspects, health claims, safety assessments, and market trends. The course integrates current research and innovations in food biotechnology, encapsulation techniques, and the application of natural bioactives in functional food design.

Course Outcomes:

1. Ability to apply the concepts of food ingredients to the development and improvement of food product
2. Ability to evaluate the impact of food ingredients on sustainability, health and safety, and the environment in food product development and processing.
3. Ability to communicate effectively on food ingredients through delivering structured presentations.

KMK33803 DIARY AND MEAT TECHNOLOGY [TEKNOLOGI TENUSU DAN DAGING]

No of Credits: 3

Course Synopsis:

This course provides students with knowledge in milk and meat compositions, handling, processing techniques and technologies to preserve various types of dairy and meat products. Methods used to assess the quality of the processed dairy and meat products are also emphasized.

Course Outcomes:

1. Ability to analyze the impact of processing and preservation methods on meat or milk composition, properties, safety, and quality
2. Ability to evaluate the method used to preserve meat and dairy products.
3. Ability to communicate effectively the processing techniques and technology for meat and dairy products.

KMK43103 FOOD PACKAGING TECHNOLOGY [TEKNOLOGI PEMBUNGKUSAN MAKANAN]

No of Credits: 3

Course Synopsis:

The course introduces the basic knowledge on food packaging materials, equipment, design and technology with an overview on the packaging science and technology applied to the preservation and shelf life, distribution and marketing of various food products, different procedures involved and food safety requirements for developing, evaluating and testing of food packages in accordance to international standards.

Course Outcomes:

1. Ability to analyze the impact of processing and preservation methods on meat or milk composition, properties, safety, and quality
2. Ability to evaluate the method used to preserve meat and dairy products.
3. Ability to communicate effectively the processing techniques and technology for meat and dairy products.

KMK43203 POULTRY AND FISH TECHNOLOGY [TEKNOLOGI PEMROSESAN POLTRI DAN IKAN]

No of Credits: 3

Course Synopsis:

This course provides students with the knowledge on the chemical, biochemical and nutritional compositions of poultry and fish including the appropriate handling procedures that bound to the GHP, HACCP, Halal and food regulations standard. It will also cover on the concept of processing techniques, equipment and technologies adopted to produce various types of poultry and fish products. Methods used to assess the quality and safety, handling and preservation of the products originating from poultry and fish will also be emphasized.

Course Outcomes:

1. Ability to examine on the chemical and biochemical constitution of poultry and fish of different species.
2. Ability to propose the processing techniques, equipment and technology adopted including methods used to assess the quality of various types of poultry and fish products.

3. Ability to communicate effectively the appropriate methods of handlings and preservation of poultry and fish-based products.

KMK21303 OLEOCHEMICAL PROCESS & PRODUCTS [PROSES DAN PRODUK OLEOKIMIA]

No of Credits: 3

Course Synopsis:

This course emphasizes the palm oil and oleochemical industries in Malaysia, processes involved in palm oil mills, palm oil refineries and any related process towards the production of oil and fats from different sources. Besides that, this course also discusses the major oleochemical products in the industry and their applications, product formulation and analysis, and the quality management of oleochemical products.

Course Outcomes:

1. Ability to categorize fundamental oleochemical concepts and key processes involved in the oleochemical industry.
2. Ability to perform appropriate techniques for oleochemical analysis by following standard operating procedures in quality control and process optimization within the oleochemical industry.
3. Ability to demonstrate effective leadership, teamwork, and decision-making skills to function successfully in group settings within oleochemical applications.
4. Ability to integrate perseverance and ethical responsibility into self-improvement initiatives, demonstrating effective engagement in entrepreneurial activities related to oleochemical products.

KMK21503 BIORESOURCE PROCESSING TECHNOLOGY [TEKNOLOGI PEMROSESAN SUMBER BIO]

No of Credits: 3

Course Synopsis:

This course aim to enrich students with the knowledge of bioresource utilization. The course include understanding the need and demand of bioresources industries by learning the types of bioresources, highlighting the important role of bioresources as raw material in industrial processing, knowledge on different types of bioresources processing technology, potential application of bioresources and challenges of bioresource in traditional chemical industry.

Course Outcomes:

1. Ability to explain the principles, significance, and classifications of bioresources, as well as the different types of bioresource processing technologies, within the scope of sustainable resource management and utilization.
2. Ability to analyze the environmental impact and technical feasibility of bioresource processing methods, with reference to industrial applications and sustainable development.
3. Ability to conduct bioresource processing and characterization experiments based on standard laboratory procedures, as applied to practical laboratory and research activities.

KMK21602 PLANT UTILITIES [UTILITI LOJI]

No of Credits: 2

Course Synopsis:

This course covers the requirement of different utilities for the process plant, along with its generation and its effective utilization. Main utilities required for process plants are water, steam, air & refrigerants. Steam & non-steam heating media are important for conversion of raw material to products in reactors & to elevate the temperature in the chemical processes. Refrigeration is important to maintain the temperature in the process plant.

Course Outcomes:

1. Ability to analyze the process involving water, steam-heating and inert gas in a chemical plant.
2. Ability to evaluate the principle involving air, refrigerant and vacuum pump compressor, with their applications.
3. Ability to conduct experiments related to plant utilities based on the procedures according to the objectives outlined.

KMK21703 RENEWABLE ENERGY [TENAGA BOLEH BAHARU]

No of Credits: 3

Course Synopsis:

This subject aims to introduce students to renewable energy resources, their technology application and environmental assessments. The course includes renewable energy sources such as solar, wind power, geothermal, hydro and biomass. More emphasis is given to bioenergy technologies to convert biomass into biofuels. The course has been designed to provide students with a knowledge of the renewable energy sources and the engineering skills associated with them.

Course Outcomes:

1. Ability to gain knowledge on the principle and the environmental aspect of renewable energy.
2. Ability to evaluate the different types of renewable energy resources.
3. Ability to follow guided the lab works of biomass energy process in producing biofuels.

KMK31203 ENVIRONMENTAL ENGINEERING [KEJURUTERAAN ALAM SEKITAR]

No of Credits: 3

Course Synopsis:

This course introduces the cause, effect, and method to control pollution from industries. The course covers the three major categories of industrial pollution; water pollution, air pollution and industrial waste management. In the first part, the course includes the source and types of water pollutants, environmental regulations pertaining to wastewater discharge, and techniques to treat wastewater before discharging it to the environment. The second part of the course covers the source and effect of air pollution, regulations requirement for air pollution control, and technology to control air pollution emissions from industries. The third part covers the management of industrial waste that includes the definition of scheduled waste, scheduled waste regulations, and techniques to manage the waste.

Course Outcomes:

1. Ability to analyze the fundamental principles and challenges related to water quality, wastewater, air pollution, and noise pollution in environmental engineering.
2. Ability to organize and integrate values related to sustainable development by prioritizing effective solid and hazardous waste management strategies in compliance with environmental regulations across various industries.
3. Ability to conduct investigations and laboratory data and results in structured environmental engineering settings.

KMK31303 PETROLEUM & GAS PROCESSING TECHNOLOGY [TEKNOLOGI PEMROSESAN PETROLEUM & GAS]

No of Credits: 3

Course Synopsis:

This course introduces the students to process and technology involved in oil and gas production field. Topics covered including history and background of refinery process, separation of produced fluids and treatment of crude oil. Apart from that, this subject also contains the field processing and treatment of natural gas as well as petroleum refinery process.

Course Outcomes:

1. Ability to analyze petroleum geology, reservoir formation, and oil and gas production techniques to solve engineering problems in upstream petroleum operations, resource management, and energy industry practices.

2. Ability to assess separation process of produced fluids and treatment process of crude oil and water in optimizing production efficiency, ensuring product quality, complying environmental and safety regulations in the oil and gas industry.
3. Ability to propose field processing and treatment of natural gas in meeting pipeline specifications, enhancing gas quality, ensuring safe and efficient operations in natural gas production facilities.
4. Ability to perform guided analysis of petroleum products by following standard procedures and using techniques as demonstrated.

KMK31903 PLANT DESIGN FOR INDUSTRIAL CHEMICAL PROCESS 1 [REKA BENTUK LOJI UNTUK PROSES KIMIA INDUSTRI 1]

No of Credits: 3

Course Synopsis:

This course contains the preliminary design of industrial chemical process plant. It focuses on process synthesis of a typical chemical process product. The calculation includes of material and energy balance, and process equipment design. The design project is a team-based approach to provide capstone design experience emphasizing on the application of sciences, mathematics and fundamental chemical engineering knowledge acquired in earlier courses.

Course Outcomes:

1. Ability to integrate awareness of product significance, process safety, and environmental impacts in industrial chemical production.
2. Ability to develop process diagrams and equipment specifications for industrial chemical production.
3. Ability to analyse mass and energy balances using simulation tools for industrial chemical process design.
4. Ability to develop equipment design and engineering drawings for industrial chemical plant operation.
5. Ability to apply engineering codes, ethics, and heuristics in equipment design decisions.
6. Ability to function effectively in a team to complete a plant design project through collaborative engineering practices.
7. Ability to communicate technical concepts, design justifications, and project outcomes through oral presentations.
8. Ability to organize project planning and coordination activities through progress meetings and report submissions.
9. Ability to analyse the need for independent and life-long learning in a plant design project through logbook documentation.

KMK31603 POLYMER PROCESSING TECHNOLOGY [TEKNOLOGI PEMROSESAN POLIMER]

No of Credits: 3

Course Synopsis:

This course intends to give students fair knowledge of fundamental of chemistry, synthesis mechanism of polymer and introduction of polymer composites. Polymer characteristics including chemical, thermal, physical and mechanical properties and rheology of polymer are included in this course. The course also focuses on polymer processing technology which comprises rubber, thermoplastic and thermoset processing such as mixing, extrusion, various types of moulding, hand lay-up, pultrusion etc. The laboratory session consists of polymer synthesis, characterisation of physical and mechanical properties, and polymer processing techniques.

Course Outcomes:

1. Ability to evaluate knowledge of basic concepts of polymer and polymer properties in industrial application.
2. Ability to apply the processing techniques for various polymer applications for chemical industry.
3. Ability to demonstrate analytical techniques and modern engineering tools for polymer characterization and polymer processing in industrial application.
4. Ability to demonstrate effective leadership, teamwork and decision-making in group to carry out polymer processing experiments and complete laboratory tasks.

KMK35002 PROCESS PLANT TROUBLESHOOTING [PENCARISILAPAN LOJI PROSES]

No of Credits: 2

Course Synopsis:

The aim of this course is to expose students to the troubleshooting and maintenance of industrial process plants. Students will be exposed to the concepts of process plant maintenance, assessing equipment reliability, and troubleshooting potential operational issues. Students will also be exposed to troubleshooting knowledge on standard operation management for main unit operations and process control parameters. In addition, assignments related to industrial problems will be assigned to the students to improve their knowledge of the operations of major process equipment and its common operating problems.

Course Outcomes:

1. Ability to apply the concept of process plant maintenance, equipment reliability and troubleshooting potential in operational issues.
2. Ability to assess the problem for main unit operation and process control parameter based on the standard operation management.
3. Ability to communicate for the operations of major process equipment and its common operating problems.

KMK41903 PLANT DESIGN FOR INDUSTRIAL CHEMICAL PROCESS 2 [REKA BENTUK LOJI UNTUK PROSES KIMIA INDUSTRI 2]

No of Credits: 3

Course Synopsis:

This course is a complementary course of Plant Design for Industrial Chemical Process 1. It focused on the Piping and Instrumentation Diagram (P&ID) conjunction with the control system and engineering economic knowledge comprised of estimation of total capital cost investment, cost of manufacture, and profitability analysis. This course also covers waste management systems and safety precautions.

Course Outcomes:

1. Ability to design process control strategies for process equipment in a process plant.
2. Ability to develop Piping and Instrumentation Diagrams (P&ID) with integration of process control systems in a process plant.
3. Ability to demonstrate project management techniques and economic decision-making for plant cost estimation and project completion in a plant design project.
4. Ability to demonstrate responsibility in addressing process safety and environmental sustainability through analysis and documentation of HAZOP and waste management planning.
5. Ability to function effectively in a team to complete a plant design project through collaborative engineering practices.
6. Ability to communicate technical concepts, design justifications, and project outcomes through oral presentations.
7. Ability to analyse the need for independent and life-long learning in a plant design project through logbook documentation.

KMK41102 QUALITY ASSURANCE & CONTROL IN CHEMICAL ENGINEERING [JAMINAN KUALITI & KAWALAN DAN KEJURUTERAAN KIMIA]

No of Credits: 3

Course Synopsis:

This course covers the principles of quality assurance and quality control that can be applied in related fields of chemical engineering. The course covers related process and standard commonly used in industry. The course also discuss on the statistical method and acceptance sampling as tools and techniques that broadly implemented in quality assurance and quality control.

Course Outcomes:

1. Ability to examine the principles for quality assurance, quality control, and management improvement with statistical methods in ensuring product consistency, process optimization, and compliance with industrial standards.
2. Ability to value professional ethics in engineering practice through the application of relevant standards in quality assurance and quality control.
3. Ability to propose suitable sampling and testing procedures in quality assurance and quality control for chemical process.
4. Ability to communicate effectively on addressing quality-related problems through presentation, in identifying and organizing continuous improvement initiatives and maintaining compliance with quality standards in industry.

KMK41203 PARTICLE PROCESSING TECHNOLOGY [TEKNOLOGI PEMROSESAN ZARAH]

No of Credits: 3

Course Synopsis:

This course emphasizes the fundamental concepts and problem-solving techniques on particle processing technology. This course covers many of the aspects related to particle processing and handling, including particle analysis, particle separation, storage and transporting of particles, mixing and segregation, as well as particle size reduction and enlargement.

Course Outcomes:

1. Ability to analyse particle systems, processes, and equipment design using engineering fundamentals in solving particle-related problems.
2. Ability to apply particle equipment and laboratory techniques in conducting experiments for particle process evaluation.
3. Ability to demonstrate commitment to collaborative teamwork in preparing laboratory reports on particle-related processes.

KMK31503 SCALE UP & PROCESS OPTIMIZATION [PENINGKATAN SKALA DAN PENGOPTIMUMAN PROSES]

No of Credits: 3

Course Synopsis:

This course covers introduction to scale-up methods, pilot plants, models and principles used in chemical/biotechnological processes. The content of the course also consists of theory and applications of optimization techniques. The knowledge of scale up and optimization techniques are applied to solve problems related to chemical/biotechnological processes.

Course Outcomes:

1. Ability to analyze principles and scale up methods in related chemical/biotechnological processes.
2. Ability to analyze theories of optimization methods in related chemical/biotechnological processes.
3. Ability to present a solution to chemical/biotechnological related problems using selected scale up and optimization methods.

KMK32703 BIOACTIVE COMPOUNDS EXTRACTION TECHNOLOGY [TEKNOLOGI PENGEKSTRAKAN SEBATHIAN BIOAKTIF]

No of Credits: 3

Course Synopsis:

The course discusses various sources of natural bioactive compound as well as their extraction methods. The methods are steam distillation, distillation, low-pressure solvent extraction (solid to liquid), high-pressure extraction, liquid to liquid extraction and adsorption besides its applications in related industries. Several analyses to obtain high-quality bioactive extracts and purified compounds are also discussed.

Course Outcomes:

1. Ability to analyze the variability of bioactive compounds.
2. Ability to evaluate different types of extraction methods for solving related problems.
3. Ability to communicate effectively through presentations in explaining various analyses to obtain high-quality and purified bioactive compounds.

KMK41403 FOOD PROCESSING TECHNOLOGY [TEKNOLOGI PEMROSESAN MAKANAN]

No of Credits: 3

Course Synopsis:

This course covers multidisciplinary fields of food processing technology and related industries. Topics covered include food science, sensory and nutritional properties of foods, material handling, food spoilage, food preservation processes including thermal and non-thermal processes, chilling and freezing, freeze-drying, irradiation, and extrusion. The course also explores current advancement in food technology through genetically modified foods and discuss challenges in food processing such as food safety, food security, sustainability, and the use of advanced technologies in production, packaging, and distribution systems.

Course Outcomes:

1. Ability to apply basic concepts and principles of food processing technology.
2. Ability to evaluate the effects of food processing on the sensory and nutritional properties of food.
3. Ability to evaluate the advancement and challenges in modern food processing technology.
4. Ability to communicate effectively on solving challenges related to food processing technology through presentations.

KMK31403 INDUSTRIAL ELECTROCHEMISTRY [ELEKTROKIMIA INDUSTRI]

No of Credits: 3

Course Synopsis:

This subject aims to provide students with the fundamental concepts of electrochemistry and electrode processes. This course will integrate the fundamental concepts with electrochemical applications such as metallurgy, electroplating, batteries, fuel cells, corrosion and electroanalysis. Examples of applications of electrochemistry are also presented.

Course Outcomes:

1. Ability to analyze the importance of fundamental electrochemical theory in the context of applications such as chloralkali production, electrometallurgy, metal finishing, corrosion prevention, and the development of fuel cells, batteries, and sensors.
2. Ability to evaluate the fundamental concepts of electrochemical processes

and applications, including electrometallurgy, metal finishing, and electroanalysis in electrochemical processes.

3. Ability to design corrosion prevention methods and modern electrochemical applications, including batteries, fuel cells, electrochemical sensors, and related technologies, in industrial practices.
4. Ability to communicate effectively through clear and professional presentations on hydrometallurgy and electrometallurgy issues, with consideration of environmental and economic values.

KMK31703 PHARMACEUTICAL PROCESSING TECHNOLOGY [TEKNOLOGI PEMROSESAN FARMASEUTIKAL]

No of Credits: 3

Course Synopsis:

This course provides an overview of the essential principles of pharmaceutical processing technology, emphasising the formulation, manufacturing, and quality assurance of various pharmaceutical dosage forms, including solids, liquids, semisolids, and parenteral. The essential unit operations addressed include mixing, milling, granulation, drying, tableting, coating, and packaging. This course also covers the phases of the drug development process, regulatory requirements, pre-formulation studies, and principles of absorption, distribution, metabolism, and excretion (ADME). The course emphasises the analysis of formulation and processing operations, evaluation of pharmaceutical data to ensure product quality, safety, and compliance, as well as design of pharmaceutical production processes and facility layouts. Upon completing the course, students should be able to apply scientific and engineering principles to design various drug formulations and develop pharmaceutical processing solutions that meet industry requirements, while considering public health, safety, sustainability, and cost-effectiveness.

Course Outcomes:

1. Ability to analyse drug formulation and pharmaceutical processing operations within pharmaceutical manufacturing processes.
2. Ability to evaluate formulation and manufacturing data to address product quality, safety, and regulatory issues in pharmaceutical processing.
3. Ability to design processing methods and facility layout for pharmaceutical dosage form production.

KMK31803 ADVANCED MEMBRANE TECHNOLOGY AND APPLICATION [TEKNOLOGI MEMBRAN TERMAJU DAN APLIKASI]

No of Credits: 3

Course Synopsis:

This course emphasizes the fundamental concepts of membrane science which are the membrane materials and characterization, transport theory which are Fick's Law Diffusion and solution diffusion model. Evaluation on the idea of concentration polarizations in the membrane are been emphasized. The fundamental concept is applied in membrane applications that are used in industries such as reverse osmosis, micro and ultrafiltration, gas separation and pervaporation and also for medical application such as hemodialysis, drug delivery and blood oxygenators.

Course Outcomes:

1. Ability to differentiate membrane types, membrane materials and membrane surface characterization.
2. Ability to evaluate the transport theory, concentration polarization in membrane processes and fundamental concept of membrane application processes.
3. Ability to present the fundamental concept of membrane application processes in various industrial application.

KMK49912 INDUSTRIAL TRAINING [LATIHAN INDUSTRI]

No of Credits: 12

Course of Synopsis:

This practical-based course exposes students to a company technical functions and organizational structure and operation such as departmental function, work procedure, safety procedure, communication, technical skills and project management. During this course, the students will apply knowledge learned in the university and increased the related skills required in their future profession.

Course Outcomes:

1. Ability to investigate technical functions, work procedures, and safety protocols in an industrial setting.
2. Ability to operate appropriate tools and resources for altering industry-related problems in improving operational efficiency and solving technical challenges in engineering and technology environments.
3. Ability to assess hazard, risk management, occupational safety & health,

legal, and cultural issues in the working environment.

4. Ability to apply ethical principles and professional responsibility in industrial practices.
5. Ability to demonstrate effective and efficient teamwork as a member or leader in the workplace.
6. Ability to communicate effectively through technical reports, documentation, and presentations in conveying clear and structured information on industrial training.
7. Ability to determine independent and lifelong learning on the theory and practical knowledge of specialist technologies in keeping pace with technological advancements, enhancing professional competencies, and supporting continuous career development in the engineering field.

KMK22004 INDUSTRIAL MICROBIOLOGY [MIKROBIOLOGI INDUSTRI]

No of Credits: 4

Course Synopsis:

The course refreshes microbial fundamentals which include characterization of micro-organisms; aseptic techniques, microscopy, microbial structure, nutrition, energy generation, reproduction, control of microbial populations, and microbial diversity as well as strain improvement for new products and productivity improvement. This course also emphasizes the microbiological industry development, the scope of microbiological industries, microbes in microbiological industries, biomass and metabolite production, microbes in bioremediation, and in waste treatment industries.

Course Outcomes:

1. Ability to evaluate microbiological processes involved in fundamental microbiological methods.
2. Ability to evaluate applications production for industrial products and bioprocessing systems for industrial products by applying fundamentals of microbial classification, physiology and metabolisms.
3. Ability to demonstrate awareness of professional ethical principles and norms related to microbial-based applications.

KMK22104 BIOCHEMISTRY & ENZYME TECHNOLOGY [BIOKIMIA & TEKNOLOGI ENZIM]

No of Credits: 4

Course Synopsis:

This course covers the properties and structure of water, classification and function of biomolecules such as carbohydrates, lipids and amino acids, role of proteins and enzymes in biochemistry, metabolism and photosynthesis. Also covering advance topics in production, isolation, purification, immobilization, and application of enzymes in a various reaction systems, together with examples of specific applications for immobilized enzymes. The course also covers applications of free and immobilized enzymes in the food, chemical and pharmaceutical industries, as well as probable future trends in enzyme technology.

Course Outcomes:

1. Ability to analyze the structure, properties, classification, and functions of major biomolecules, and relate these characteristics to their roles in metabolic pathways and cellular processes.
2. Ability to analyze the principles and applications of enzyme technology, including enzyme kinetics, mechanisms of action, isolation, purification, and immobilization methods, as well as their relevance in industrial and biotechnological contexts.
3. Ability to perform practical skills for qualitative and quantitative analysis of biomolecules and enzymes.
4. Ability to conduct investigation on biomolecules or enzymes production, including communicate findings and recommendations effectively.

KMK22203 BIOMOLECULAR & GENETIC ENGINEERING [BIOMOLEKULAR & KEJURUTERAAN GENETIK]

No of Credits: 3

Course Synopsis:

This course provides fundamental knowledge of molecular biology processes, including DNA replication, transcription, and translation. It also covers the basic principles of genetic engineering, which involve the manipulation of genetic material, the regulation of their interactions, and the techniques used in gene cloning and recombinant DNA technology. Students will be expected to perform simple DNA sequence analysis using the National Center for Biotechnology Information (NCBI) platform.

Course Outcomes:

1. Ability to perform fundamental molecular biology laboratory techniques.
2. Ability to distinguish between the mechanisms of bacterial and eukaryotic DNA replication, DNA repair, transcription, and translation.
3. Ability to assess the techniques used in the isolation, manipulation, and cloning of heterologous DNA.
4. Ability to explain and contribute as an individual and as a member of a team to complete the given task.

KMK32002 WASTE MANAGEMENT & UTILIZATION [PENGURUSAN & PENGGUNAAN BAHAN BUANGAN]

No of Credits: 2

Course Synopsis:

This course introduces the types of waste material, such as wastewater, solid waste, and hazardous waste generated by various industries, and discusses the utilization of the bioprocessing industrial waste and the treatments required before discharge to the environment. Topic cover includes classification of hazardous waste, physical, chemical and biological properties of waste and its toxicology, treatment and disposal methods, current management practices as well as specific degradation of solid wastes including their direct practical applicability.

Course Outcomes:

1. Ability to assess the concepts and principles regarding the physical, chemical, and biological aspects of waste, together with waste treatment and management strategies employed in bioprocessing industries.
2. Ability to apply appropriate techniques for treatment, disposal, and utilization of waste.
3. Ability to demonstrate a commitment to responsible waste management by recognizing the significance of hazard assessment, risk control, and legal compliance.

KMK32103 CELL & TISSUE CULTURE TECHNOLOGY [TEKNOLOGI KULTUR TISU & SEL]

No of Credits: 3

Course Synopsis:

This course introduces the basic knowledge and principle of mammalian cell culture as well as plant tissue culture with the incorporation of cutting-edge technology. The topics that are covered in this course include aseptic techniques, media preparation and sterilisation methods pertaining to cell and tissue culture, and applications of the mammalian cell culture and plant tissue culture in various fields.

Course Outcomes:

1. Ability to evaluate the basic units of life, laboratory equipment, various culture techniques, and the importance of mammalian cell culture and plant tissue culture
2. Ability to apply appropriate techniques and modern tools to perform culture on mammalian cell and plant tissue
3. Ability to collaborate effectively with team members in maintaining mammalian cell culture and plant tissue culture during group projects.

KMK32204 UPSTREAM & DOWNSTREAM PROCESSING TECHNOLOGY [TEKNOLOGI PEMROSESAN HULUAN & HILIRAN]

No of Credits: 4

Course Synopsis:

The course covers the upstream processes on the media formulation, modes of fermentation, basic principle of bioreactor design, sterilization techniques, fermenter instrumentation and control. This course also emphasizes on the downstream strategies which can be generalized to four primary functions as follows: separation of insoluble products and other solids, concentration of products, purification followed by product preparation.

Course Outcomes:

1. Ability to analyze the effect of media formulation on microbial growth kinetics, cultivation operations, fermenter design, instrumentation, and control
2. Ability to assess a suitable integrated recovery and purification system based on the product.
3. Ability to conduct practical skills in basic fermentation and downstream processes experiments
4. Ability to contribute effectively within a group/team during basic fermentation and downstream processes experiments.

KMK32503 PLANT DESIGN FOR INDUSTRIAL BIOTECHNOLOGY 1 [REKABENTUK LOGI UNTUK BIOTEKNOLOGI INDUSTRI 1]

No of Credits: 3

Course Synopsis:

This course contains the preliminary design of a biotechnology industrial process plant. It focuses on process synthesis of a typical product with material balance analysis and process equipment design. The design project is a team-based approach to provide capstone design experience emphasizing the application of science, mathematics, and fundamental chemical engineering knowledge gained in earlier courses.

Course Outcomes:

1. Ability to explain the process and product of industrial biotechnology and examine the key steps of a process synthesis by taking sustainability consideration.
2. Ability to propose engineering equipment design with appropriate engineering codes.
3. Ability to demonstrate a process simulation of the propose plant using appropriate process simulator tools.
4. Ability to organize teamwork and develop communication skill.
5. Ability to monitor project management, and appraise the needs and life-long learning in industrial biotechnology project design.

KMK32603 BIOPHARMACEUTICAL TECHNOLOGY [TEKNOLOGI BIOFARMASEUTIKAL]

No of Credits: 3

Course Synopsis:

This course is designed to provide the students with the knowledge in the field of biopharmaceutical technology, its importance, the corresponding techniques and technologies in drug development, regulatory aspects for biopharmaceutical production and registration as well as manufacturing process and applications of important biopharmaceuticals in the current world.

Course Outcomes:

1. Ability to evaluate biopharmaceutical regulatory compliance and biopharmaceutical delivery.
2. Ability to design and evaluate different biopharmaceutical formulations and production.
3. Ability to appropriate techniques and modern tools and assist team members in processing, manufacturing, and evaluating biopharmaceuticals in a group project.

KMK42503 PLANT DESIGN FOR INDUSTRIAL BIOTECHNOLOGY 2 [REKABENTUK LOJI UNTUK BIOTEKNOLOGI INDUSTRI]

No of Credits: 3

Course Synopsis:

This course is a complementary component to the Plant Design Project for Industrial Biotechnology I. It focuses on the design of piping and instrumentation diagrams (P&IDs) and control systems for a process plant, as well as the estimation of total capital investment, manufacturing costs, and profitability analysis. In addition, the course covers waste management systems and safety precautions in a process plant.

Course Outcomes:

1. Ability to design process control strategies for process equipment in a process plant.
2. Ability to develop Piping and Instrumentation Diagrams (P&ID) with integration of process control systems in a process plant.
3. Ability to demonstrate project management techniques and economic decision-making for plant cost estimation and project completion in a plant design project.
4. Ability to demonstrate responsibility in addressing process safety and environmental sustainability through analysis and documentation of HAZOP and waste management planning.
5. Ability to function effectively in a team to complete a plant design project through collaborative engineering practices.
6. Ability to communicate technical concepts, design justifications, and project outcomes through oral presentations.
7. Ability to analyse the need for independent and life-long learning in a plant design project through logbook documentation.

KMK42003 ISSUES & COMMERCIALIZATION IN BIOTECHNOLOGY [ISU & KOMERSIALISASI DALAM BIOTEKNOLOGI]

No of Credits: 3

Course Synopsis:

The course covers the current status in biotechnology research and commercialization aspects of biotechnology products. There also information on patenting, intellectual property and licensing of biotechnology products as well as developing business plans to meet the market needs. There also guidelines, agreements and policy in commercialization networking as well as the

preparation of pre-commercialization phase and technopreneurial skills that should be possesses by the students.

Course Outcomes:

1. Ability to value in independent and life-long learning through assessment of the commercial aspects of biotechnology products
2. Ability to critically appraise technopreneurial principles and cultural values in developing successful technopreneurial ventures.
3. Ability to develop a potential product and its business plan using appropriate IT tools or technique
4. Ability to formulate technopreneurial strategies for the commercialization of biotechnology-based products.

KMK32303 BIOTECHNOLOGY FACILITY DESIGN [REKABENTUK FASILITI BIOTEKNOLOGI]

No of Credits: 3

Course Synopsis:

This course exposes an overview of biotechnology facilities design which parallel to the regulatory compliance in manufacturing process. The topics emphasized on the general equipments design involves in producing and processing biological products, instrumentation and controls in bioprocess, aseptic processing and sanitary design, as well as utilities system. This course also covers on regulatory compliance according to current Good Manufacturing Practices (GMP), and documentation for validation of biotechnology facilities.

Course Outcomes:

1. Ability to analyze the biotechnology process facility design based on industrial regulatory demand
2. Ability to evaluate the basic instrumentations and utilities system design in the biotechnology industry
3. Ability to propose the validation scheme for systems and equipment facilities to meet regulatory compliance.
4. Ability to communicate effectively on biotechnology facility design problems through technical reports and presentations.

KMK31503 SCALE UP & PROCESS OPTIMIZATION [PENINGKATAN SKALA & PENGOPTIMUMAN PROSES]

No of Credits: 3

Course Synopsis:

This course covers introduction to scale-up methods, pilot plants, models and principles used in chemical/biotechnological processes. The content of the course also consists of theory and applications of optimization techniques. The knowledge of scale up and optimization techniques are applied to solve problems related to chemical/biotechnological processes.

Course Outcomes:

1. Ability to analyze principles and scale up methods in related chemical/biotechnological processes.
2. Ability to analyze theories of optimization methods in related chemical/biotechnological processes.
3. Ability to present a solution to chemical/biotechnological related problems using selected scale up and optimization methods.

KMK32703 BIOACTIVE COMPOUNDS EXTRACTION TECHNOLOGY [TEKNOLOGI PENGEKSTRAKAN SEBATIAN BIOAKTIF]

No of Credits: 3

Course Synopsis:

The course discusses various sources of natural bioactive compound as well as their extraction methods. The methods are steam distillation, distillation, low-pressure solvent extraction (solid to liquid), high-pressure extraction, liquid to liquid extraction and adsorption besides its applications in related industries. Several analyses to obtain high-quality bioactive extracts and purified compounds are also discussed.

Course Outcomes:

1. Ability to analyze the variability of bioactive compounds.
2. Ability to evaluate different types of extraction methods for solving related problems.
3. Ability to communicate effectively through presentations in explaining various analyses to obtain high-quality and purified bioactive compounds.

KMK32803 SUSTAINABLE GREEN TECHNOLOGY [TEKNOLOGI KELESTARIAN HIJAU]

No of Credits: 3

Course Synopsis:

The course provides students with various aspects of green technology and its application of products, equipment, and system to conserve the natural resources and environment, as well as to minimize or mitigate the negative impacts on the environment. This course includes renewable energy, energy efficiency, waste management, remediation, and pollution control. Green technology should meet the needs of society in ways that can continue indefinitely into the future without damaging or depleting natural resources. As the demand for global energy increases, alternative energy sources are needed to address the growing interest in how energy is produced, provided, and transported in sustainable ways. At the same time, a focus also lies on bioenergy technologies to convert waste biomass into biofuels, which also covers green solutions in the area of the biotechnology industry.

Course Outcomes:

1. Ability to analyse the concepts and principles of different types of green technologies and understand their role as alternative technologies.
2. Ability to appraise the various aspects of green technologies and their application of products, equipment, and system to conserve natural resources and the environment.
3. Ability to solve the issues about green technologies development and explain their potential impacts as green steps towards a sustainable environment.

KMK42103 BIOENERGY PRODUCTION TECHNOLOGY [TEKNOLOGI PENGHASILAN TENAGA-BIO]

No of Credits: 3

Course Synopsis:

This course is designed to provide the students with the principles of bioenergy production technology, its importance, and the current advancement. The students will be exposed to the potential of different bioenergy sources that have been developed in recent years as future sustainable and renewable energy sources, their limitations, and the required technologies for commercialization. Other issues related to bioenergy production including economics and environmental policy will also be discussed in this course to enhance students' awareness.

Course Outcomes:

1. Ability to assess the advantages of renewable and sustainable bioenergy.
2. Ability to appraise different bioenergy technologies, the process, principles and application of each technology.
3. Ability to explain the feasibility of bioenergy technologies within the context of economic and environmental policies through presentation.

KMK41403 FOOD PROCESSING TECHNOLOGY [TEKNOLOGI PEMROSESAN MAKANAN]

No of Credits: 3

Course Synopsis:

This course covers multidisciplinary fields of food processing technology and related industries. Topics covered include food science, sensory and nutritional properties of foods, material handling, food spoilage, food preservation processes including thermal and non-thermal processes, chilling and freezing, freeze-drying, irradiation, and extrusion. The course also explores current advancement in food technology through genetically modified foods and discuss challenges in food processing such as food safety, food security, sustainability, and the use of advanced technologies in production, packaging, and distribution systems.

Course Outcomes:

Ability to apply basic concepts and principles of food processing technology.

1. Ability to evaluate the effects of food processing on the sensory and nutritional properties of food.

2. Ability to evaluate the advancement and challenges in modern food processing technology.
3. Ability to communicate effectively on solving challenges related to food processing technology through presentations.

UR6521007

Bachelor of Applied Science (Materials and Metallurgical Technology) with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates who provide the knowledge and skill gained in solving real and complex problems in their successful career or professional practice in materials and metallurgical technology fields.

PEO 2

Graduates who demonstrate professional and personal leadership related to materials and metallurgical technology fields, as well as commitment towards sustainable development for the benefit of society and the environment.

PEO 3

Graduates who are engaging in formal or non-formal learning opportunities in order to maintain and enhance their technical competencies and professional growth in materials and metallurgical technology fields and related areas.

PROGRAMME OUTCOMES (PO)

PO1

Apply theoretical, and technical knowledge, and demonstrate relevant skills in a specialised field, or of a multidisciplinary nature related to the field of Materials and Metallurgical Technology.

PO2

Apply critical, analytical and evaluation skills to resolve complex applications and handle unpredictable issues with creative and innovative solutions in the field of Materials and Metallurgical Technology.

PO3

Perform a range of essential methods and procedures to solve a broad range of problems in the field of Materials and Metallurgical Technology

PO4

Work together with different people in diverse learning and working communities in the field of Materials and Metallurgical Technology as well as other groups locally and internationally.

PO5

Convey ideas both in written and/or oral forms using appropriate and different forms of presentation, confidently, accurately, and coherently in an appropriate context in a well-structured manner to a diversity of audiences

PO6

Use a broad range of information, media, and technology applications to support study and/or work

PO7

Use and combine numerical and graphical/visual data for study/work

PO8

Work autonomously and show leadership and professionalism in managing responsibilities within broad organisational parameters.

PO9

Integrate effectively in self-directed lifelong learning and professional pathways

PO10

Demonstrate entrepreneurial competency with selected project(s)

PO11

Identify ethical issues, make decisions ethically, and act professionally within the varied social and professional environment and practice as well as local and global issues relating to science, technology, business, society and environment.

CURRICULUM STRUCTURE UR6521007 BACHELOR OF APPLIED SCIENCE (MATERIALS AND METALLURGICAL TECHNOLOGY) WITH HONOURS INTAKE 2025/2026							
YEAR	FIRST		SECOND			THIRD	
SEMESTER	1	2	3	4	SHORT SEM	5	6
DISCIPLINE CORE & ELECTIVE COURSES (105 CREDITS)	KMG10003 Basic Physics	KMG10603 Mechanics of Materials	KMG20003 Materials Characterization	KMG20503 Corrosion & Degradation	KMG21204 Project I	KMG30006 Project II	KMG30612 Industrial Training
	KMG10103 Chemistry	KMG10703 Introduction to Metallurgy	KMG20103 Metal Processing Technology	KMG20603 Alloy Technology	KMG21303 Materials Lab	KMG30103 Materials Selection & Processing	
	KMG10203 Materials Science	KMG10803 Introduction to Ceramic	KMG20203 Ceramic in Electronic Applications	KMG20703 Extractive Metallurgy	KMG21402 Materials Testing & Commissioning Lab	KMG30203 Materials Failure Analysis	
	KMG10302 Physical Chemistry Lab	KMG10903 Introduction to Polymer	KMG20303 Polymer in Electronic Applications	KMG20803 Composite Technology		KMG30303 Smart Materials	
	KMG10403 Technology Skills	KMG11002 Computer Applications Technology	KMG20402 Quality Control	KMG20903 Non-Destructive Testing		KMG30403 / KMG30503 Elective II	
	KMG10503 Mathematics for Materials Technology	KMG11103 Introduction to Materials Thermodynamic		KMG21003 / KMG21103 Elective I			
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMB20102 English for General Communication ^[2]	SMB31202 English for Technical Communication	SMU13102 Appreciation of Ethics and Civilization				
	SMZXXX Co-Curriculum 1	SMZXXX Co-Curriculum 2	SMB41002 University Malay Language ^[3]	SMU12102 Integrity and Anti- Corruption ^[4]			
			SMU13002 Philosophy and Current Issues			SMU22402 Engineering Entrepreneurship	
TOTAL CREDITS (121 CREDITS)	20	20	20	20	9	20	12
AUDIT COURSES							

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

Elective 1	Elective 2
A1. KMG21003 Additive Manufacturing	B1. KMG30403 Electronics Materials
A2. KMG21103 Renewable Energy Materials	B2. KMG30503 Materials Joining Technology

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
KMG10003	Basic Physics	-
KMG10103	Chemistry	-
KMG10203	Materials Science	-
KMG10302	Physical Chemistry Lab	-
KMG10403	Technology Skills	-
KMG10503	Mathematics for Materials Technology	-
KMG10603	Mechanics of Materials	-
KMG10703	Introduction to Metallurgy	-
KMG10803	Introduction to Ceramic	-
KMG10903	Introduction to Polymer	-
KMG11002	Computer Applications Technology	-
KMG11103	Introduction to Materials Thermodynamic	-
KMG20003	Materials Characterization	-
KMG20103	Metal Processing Technology	-
KMG20203	Ceramic in Electronic Applications	-
KMG20303	Polymer in Electronic Applications	-
KMG20402	Quality Control	-
KMG20603	Alloy Technology	-

COURSE CODE	COURSE NAME	SDG
KMG20703	Extractive Metallurgy	-
KMG20803	Composite Technology	-
KMG20903	Non-Destructive Testing	-
KMG21003	Additive Manufacturing	-
KMG21103	Renewable Energy Materials	-
KMG21204	Project I	-
KMG21303	Materials Lab	-
KMG21402	Materials Testing & Commissioning Lab	-
KMG30006	Project II	-
KMG30103	Materials Selection & Processing	-
KMG30203	Materials Failure Analysis	-
KMG30303	Smart Materials	-
KMG30403	Electronics Materials	-
KMG30503	Materials Joining Technology	-
KMG30612	Industrial Training	-

KMG10003 BASIC PHYSICS [ASAS FIZIK]

No of Credits: 3

Course Synopsis:

This course provides students with both theoretical knowledge and practical insights into basic physics. It covers the basic overview of a natural science that involves the study of matter and its motion through space and time, along with related concepts such as energy and force. Matter is generally considered to be anything that has a mass and volume. Students will be able to work in a group efficiently and develop practical and communication skills by using various tools and technologies to support their learning process.

Course Outcomes:

1. Ability to analyze physical phenomena based on fundamental principle and knowledge of basic physics.
2. Ability to perform experiments using method and procedure based on physical phenomena related to motion, force, energy, and stability.
3. Ability to share ideas in basic physics through written and oral form using appropriate techniques in learning sessions.
4. Ability to respond to team-based tasks for basic physics laboratories.

KMG10103 CHEMISTRY [KIMIA]

No of Credits: 3

Course Synopsis:

This course covers the fundamental of chemistry. Students are exposed to the introduction and basic concepts of chemistry including measurement, atoms, molecules, and ions, chemical reaction and chemical bonding. Students will also develop practical, interpersonal and communication skills by using various tools and technologies to support their learning process.

Course Outcomes:

1. Ability to analyze atomic structure, chemical bonding and reaction mechanisms based on fundamental knowledge of chemistry.
2. Ability to perform experiments using method and procedure based on chemical reactions and bonding.
3. Ability to work collaboratively and effectively with others during chemistry laboratory sessions.
4. Ability to share ideas in written and oral form using effective presentation and reporting method during chemistry laboratory sessions.

KMG10203 MATERIALS SCIENCE [SAINS BAHAN]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental concepts of materials science, with emphasis on atomic structure, bonding, and crystal structures as the foundation for understanding material properties.

Students will study the classification, structure, and applications of metals, polymers, ceramics, composites, electronic, and advanced materials. Through learning sessions and hands-on activities, students will also develop practical, communication, and personal skills by utilizing various tools and technologies to support and enhance their learning experience.

Course Outcomes:

1. Ability to analyze classes of materials based on fundamental knowledge in materials science technology.
2. Ability to perform experiments using method and procedure based on material science technology.
3. Ability to communicate ideas related to material science in both written and oral forms.
4. Ability to respond to knowledge of materials science through self-directed learning and personal development planning tasks.

KMG10302 PHYSICAL CHEMISTRY LAB [MAKMAL KIMIA FIZIKAL]

No of Credits: 2

Course Synopsis:

This course develops students' skills in applying physical chemistry techniques for materials characterisation. Emphasising hands-on experiments, data analysis, teamwork, and scientific communication, it fosters technical competence, leadership, and accountability. Students learn to work collaboratively, present findings effectively, and solve practical problems using standardised laboratory methods.

Course Outcomes:

1. Ability to perform practical skills with guidance to characterize materials through laboratory experiments.
2. Ability to share ideas in written and oral form using effective presentation and reporting method during physical chemistry laboratory session.
3. Ability to respond to team-based tasks during physical chemistry laboratories activities

KMG10403 TECHNOLOGY SKILLS [KEMAHIRAN TEKNOLOGI]

No of Credits: 3

Course Synopsis:

This course introduces students to essential technological skills, emphasizing hands-on competencies through laboratory and workshop sessions. It provides foundational knowledge in applying relevant scientific concepts to evaluate material properties and behaviour. The course also fosters ethical and responsible task execution, while developing professionalism, teamwork, and digital competency.

Course Outcomes:

1. Ability to perform technical and practical task with guidance in a laboratory or workshop environment.
2. Ability to apply appropriate digital tools and software using suitable procedures to perform technology-related tasks.
3. Ability to respond appropriately to ethical issues arising from the use of digital tools in executing technology-related tasks.

KMG10503 MATHEMATICS FOR MATERIALS TECHNOLOGY [MATEMATIK UNTUK TEKNOLOGI BAHAN]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental principles and concepts in algebra, calculus and statistics which are the essential tools in technology. The topics discussed in algebra are the basics of complex numbers, matrices and vectors. In the calculus topic, several techniques will be introduced to solve the differentiation and integration. Regression and correlation techniques will be introduced in the statistics topic for investigating the relationship between two variables. Students will also develop numeracy skills by using various tools and technologies to support learning process.

Course Outcomes:

1. Ability to apply concepts of complex numbers, matrices and vectors in solving broad technology problems.
2. Ability to apply methods of differentiation and integration in broad technology problems.
3. Ability to apply statistical data analysis to support numeracy skills.

KMG10603 MECHANICS OF MATERIALS

No of Credits: 3

Course Synopsis:

This course covers the basic knowledge of static and strength of materials. The course exposes the students about basic concepts of forces and resultant force through the concepts of free body diagram in two and three dimensions and apply the knowledge to solve problems related to the concepts of equilibrium, the concepts of a particle and rigid body. The course also exposes the student to the basic concept of strength of materials which deal with stress, strain, axial load, mechanical properties of materials, torsion and bending.

Course Outcomes:

1. Ability to apply fundamental knowledge of mechanics of materials technology.
2. Ability to perform mechanics of materials technology laboratory
3. Ability to work in a group and work efficiently in teams in mechanics of materials technology laboratory

KMG10703 INTRODUCTION TO METALLURGY

No of Credits: 3

Course Synopsis:

This course provides an overview of the fundamental principles and applications of metal. Topics include the composition, structure, properties, processing techniques, and applications of metallic materials in various industries.

Course Outcomes:

1. Ability to apply the fundamental knowledge of ferrous and non-ferrous metals.
2. Ability to perform metallurgy laboratory
3. Ability to function effectively as an individual, and/or as a member or leader during practical sessions.

KMG10803 INTRODUCTION TO CERAMIC

No of Credits: 3

Course Synopsis:

This course provides an overview of the fundamental principles and applications of ceramics. Topics include the composition, structure, properties, processing techniques, and applications of ceramic materials in various industries.

Course Outcomes:

1. Ability to apply the fundamental knowledge of various ceramic materials.
2. Ability to evaluate the processing techniques for various ceramic applications.
3. Ability to function effectively as an individual, and/or as a member or leader during practical sessions.

KMG10903 INTRODUCTION TO POLYMER

No of Credits: 3

Course Synopsis:

This course covers the basic knowledge of the structure, synthesis, properties and processing of polymer materials, starting with a review of molecular structure and processing through basic elements of the chemical synthesis, structure, mechanical properties and processing of polymer. This course intends to give students fair knowledge of polymer characteristics including chemical, thermal, physical and mechanical properties of polymer are included in this course. The course also focuses on the processing technology of the polymer which comprises mixing, extrusion and various types of moulding. The laboratory session consists of polymer synthesis, characterisation of physical and mechanical properties as well as polymer processing techniques.

Course Outcomes:

1. Ability to apply knowledge of basic concepts of polymer chemistry and polymer properties.
2. Ability to evaluate the processing techniques for various polymer applications.
3. Ability to follow analytical techniques and modern technology tools for polymer characterization and polymer processing and works in a group.

KMG11002 COMPUTER APPLICATIONS TECHNOLOGY

No of Credits: 2

Course Synopsis:

This course covers the introduction of computer systems, problem solving analysis and programming concepts including variables, operators, control structures, functions, arrays and pointers. These crucial knowledge and skills allow students to innovate, create solutions for the global problems, automate, collect, manage, calculate, analyse processing of data and information accurately

Course Outcomes:

1. Ability to apply computer programming concepts and principles
2. Ability to formulate solution for engineering related problems using computer programming techniques.
3. Ability to work in a group and work efficiently in teams in mechanics of computer applications technology to solve technology-related problem.

KMG11103 MATERIALS THERMODYNAMIC

No of Credits: 3

Course Synopsis:

Materials thermodynamics introduces the laws of thermodynamics including first law of thermodynamics, second law of thermodynamics and the combined law. The concept of thermodynamic variables and relations as well as equilibrium in thermodynamic system and statistical thermodynamics are introduced to assist in its application towards unary heterogeneous systems and multicomponent homogeneous nonreacting systems. From thermodynamic properties analysis, students are expected to be able developing phase diagrams.

Course Outcomes:

1. Ability to derive the knowledge of mathematics, science, engineering fundamentals and engineering application to the solution of complex materials thermodynamics problems
2. Ability to assess complex materials thermodynamics problems reaching substantiated conclusions using first principles of mathematics, natural science and engineering sciences.
3. Ability to work in groups and work efficiently in teams for basic physics laboratory.

KMG20003 MATERIALS CHARACTERIZATION

No of Credits: 3

Course Synopsis:

This course covers the process of materials characterization by analyzing and understanding the properties and structure of materials at various scales, ranging from macroscopic to atomic levels. This field is crucial for understanding the behavior, performance, and potential applications of materials in various industries, including electronics, aerospace, automotive, biomedical, and many others.

Course Outcomes:

1. Ability to understand various characterization techniques used in materials science.
2. Ability to choose and perform appropriate technique based on the material properties under investigation, sample requirements, and research objectives
3. Ability to interpret the characterization data obtained from characterization techniques and correlating them with material behaviour and performance with effective presentation skills.

KMG20103 METAL PROCESSING TECHNOLOGY

No of Credits: 3

Course Synopsis:

This course covers the various techniques and methods used in metal processing technology to manipulate metals into desired shapes, sizes, and forms for industrial, commercial, or artistic purposes. It encompasses a wide range of processes, including casting, forging, machining, welding, powder metallurgy and surface treatment. Each of these processes serves specific purposes and is chosen based on factors such as the type of metal being processed, desired properties of the final product, cost-effectiveness, and production volume.

Course Outcomes:

1. Ability to understand metal properties and able to explain the properties of various metals, including mechanical properties such as strength, hardness, and ductility, as well as thermal and electrical conductivity.
2. Ability to understand metal processing techniques and capable to describe the principles behind each process.
3. Ability to make selection of processing methods by analysing the characteristics of a given metal component or product and select

appropriate metal processing methods based on factors such as material properties, desired geometry, production volume, and cost-effectiveness with effective presentation skills.

KMG20203 CERAMIC IN ELECTRONIC APPLICATIONS

No of Credits: 3

Course Synopsis:

This course covers the basic science, fundamentals and concepts of ceramic materials used in various fields such as telecommunications, medical and health care, automotive, consumer applications, transportations, etc. The solid state science involving material chemistry, crystal structure, models of atoms and ions and their arrangements, microstructure, defect state etc. discussed in detail in this course. The relationship between chemical compositions, microstructure, crystal defects and other important material properties towards the establishment of electrical and electronic properties of ceramics will be thoroughly discussed and explained with examples. The course focuses on the utilisation of the basic principles and properties of ceramics such as conductive, dielectric, piezoelectric, ferroelectric, electro-optic and magnetic in the design/fabrication of electroceramic applications in variety of application domains like electronics and communications, power engineering, energy storage and conversion devices, sensors, transportations and others. Understanding the fundamental structure-property processing conditions is of utmost importance for the development of ceramic with tailored properties mentioned.

Course Outcomes:

1. Ability to appraise the basic science, principle and concepts of ceramic materials used for electronic applications and other wide application domains.
2. Ability to apply and relate the importance and relationship between materials chemistry, crystal structure and microstructure towards the electroceramic material properties.
3. Ability to communicate effectively as an individual or a member or leader during practical sessions.

KMG20303 POLYMER IN ELECTRONICS APPLICATIONS

No of Credits: 3

Course Synopsis:

The purpose of this course is to expose students to the overview of various polymer used in electronic packaging and conductive polymer applications as well as highlight on the production processes in this application. Students should also learn the influence of different designs and properties of the polymer used in this application as well as the principles of testing and characterization and also technical specifications of various polymer used.

Course Outcomes:

1. Ability to apply the basic knowledge and to categorize the materials involved in polymer in electronic application requirements
2. Ability to identify the importance of polymers and select testing and characterization of some polymers for electronic application.
3. Ability to communicate effectively in sharing information of electronic application in polymer

KMG20403 QUALITY CONTROL

No of Credits: 3

Course Synopsis:

This course covers an overview of quality studies that take into account the philosophical, managerial and technical issues of quality. The managerial aspects include TQM, ISO 9000. The technical aspects include statistical tools and techniques used in many industrial applications. Topics covered include: Introduction to Quality, TQM, ISO standard, design of experiment, six sigma, basic statistics, fundamentals of probability, control charts for variable and attribute, process capability, acceptance sampling plan, acceptance sampling system and reliability.

Course Outcomes:

1. Ability to analyse engineering fundamentals to solve problems related to quality management systems, quality management tools and quality management philosophy
2. Ability to evaluate engineering problems related to quality management systems and quality control tools.
3. Ability to perform the appropriate modern engineering quality control tool to the solution of complex engineering quality control problem

KMG20503 CORROSION & DEGRADATION

No of Credits: 3

Course Synopsis:

This course covers the fundamentals of corrosion and deterioration of materials due to chemical or electrochemical reactions with their environment. This course provides students with a comprehensive understanding of the mechanisms, types, and consequences of corrosion in various materials. The subject covers the key topics such as introduction to corrosion and degradation, electrochemistry, factors influencing corrosion, corrosion prevention and also their practical applications. By the end of the course, students will develop a solid foundation in corrosion science, enabling them to identify, assess, and mitigate corrosion-related issues in materials and metallurgical applications. This knowledge will be essential for their future careers in industries such as manufacturing, infrastructure, energy, and transportation, where the prevention of corrosion is crucial for ensuring the longevity and reliability of engineered components and structures.

Course Outcomes:

1. Able to assess the value of materials for corrosion and degradation through the knowledge of science to find the solution for complex materials science problem
2. Able to facilitate, judge and conduct investigations of complex corrosion and degradation problem using research methods.
3. Able to design solutions for complex corrosion and degradation problems with effective presentation skills.

KMG20603 ALLOY TECHNOLOGY

No of Credits: 3

Course Synopsis:

This course covers various types of engineering alloys and their apparent microstructure, physical and mechanical properties as well as the heat treatment designs for different alloys. Understand the failure analysis and the concept of strengthening in metals and alloys

Course Outcomes:

1. Enable students to evaluate different types of engineering alloys, testing and evaluation of the effect of alloying element additions.
2. To consider and implement the governing factors in designing alloys for certain applications.
3. Ability to correlate the properties of engineering alloys to their application, analyze and solve some problems.
4. Ability to use and combine numerical and graphical/visual data for study/work (Numeracy skills).

KMG20703 EXTRACTIVE METALLURGY

No of Credits: 3

Course Synopsis:

This course covers the extraction of metals from their ores and refining them to obtain pure metals or alloys. This course will provide students with a comprehensive understanding of the principles, processes, and technologies involved in extracting metals from their ores and refining them to meet industrial requirements

Course Outcomes:

1. Ability to learn fundamental principles and techniques used in mineral processing
2. Ability to differentiate various techniques of extraction such as hydrometallurgy, pyrometallurgy and electrometallurgy to extract ore.
3. Ability to use and combine numerical and graphical/visual data for study/work.
4. Ability to consider economical impacts, environmental consideration and sustainability practices.

KMG20903 NON-DESTRUCTIVE TESTING

No of Credits: 3

Course Synopsis:

Non-destructive testing (NDT) is a method used for inspection of a material's surface and internal part. Testing implies for finding defective parts inside or on the surface of a material and does not damage or ruined tested part/specimen. Identifying defects and flaws in material which could not be seen using our naked eyes is absolutely important in determining the material life span and the material performance. The effective method of NDT is almost depending on the knowledge and skill of the person incharge. Because of that reason, this course offered several topics which is covering the general NDT methods that are normally used in engineering field such as visual testing, liquid penetrant, magnetic particle, eddy current, ultrasonic, and radiography technique. This course also introduces to other NDT techniques such as optical inspection probes, neutron radiography, laser-induced ultrasonics, acoustic emission inspection gauges and thermography.

Course Outcomes:

1. Ability to demonstrate engineering knowledge of science and engineering specialization of non-destructive testing (NDT).
2. Ability to evaluate engineering problems/defects and propose NDT tools for inspection.
3. Ability to present laboratory findings related to NDT tools.

KMG21003 ADDITIVE MANUFACTURING

No of Credits: 3

Course Synopsis:

This course introduces students to the principles, processes, materials, and applications of additive manufacturing within the context of materials science and metallurgy. It covers topics such as Introduction to additive manufacturing, Additive manufacturing process, Materials & Design for Additive Manufacturing and Quality Control.

Course Learning Outcomes:

1. Able to gain a comprehensive understanding of additive manufacturing technology and its applications in materials science and metallurgy
2. Able to develop practical skills in designing, processing, and evaluating additively manufactured components, preparing them for careers in industries.

KMG21103 RENEWABLE ENERGY MATERIALS

No of Credits: 3

Course Synopsis:

The subject aims to introduce students to renewable energy scenarios, energy sources, availability and their diverse utilizations and applications worldwide. The principles involved in the renewable energy harvesting and conversion systems (solar, hydropower, geothermal, wind, tidal, biomass etc.) will be covered in the syllabus. The basic characteristics and properties of biomass derived from agricultural waste and the principles and processes associated with the conversion of biomass as potential energy source will be explained in detail. The syllabus also will cover the sustainability and environmental aspects of renewable energy.

Course Outcomes:

1. Ability to explain the need, principle and demand of renewable energy and to distinguish different types of renewable energies.
2. Ability to evaluate the characteristics and properties of renewable energy biomass and the related processing/conversion techniques with environmental and economic factor considerations.

KMG21204 PROJECT I

No of Credits: 4

Course Synopsis:

Students are expected to apply their knowledge on conducting research. In this course, students are to carry out independent studies on a selected research topic. The topic chosen is supposed to be within the scope of related engineering practice. Each student is assigned with a supervisor. The supervisor will assist student in planning and conducting their research. For this course, students are compulsory to attend seminars, prepare Introductory Chapter, Literature Review, proposed method of study and report the preliminary results.

Course Outcomes:

1. Ability to propose research problem, objective and methodology incorporating clear fundamentals and theories
2. Ability to propose a design or solution based on current project
3. Ability to develop decisions and practices related to the engineers and society
4. Ability to perform methods with ethics and professionalism

Ability to value the ethical principle to professional ethics in research activities

KMG21303 MATERIALS LAB

No of Credits: 3

Course Synopsis:

This course provides a comprehensive understanding of material properties, performance, and limitations, equipping students with essential skills for designing and constructing innovative solutions in their future careers.

Course Outcomes:

1. Ability to perform materials lab
2. Ability to analyze problems related to materials lab
3. Ability to employ independent continuing learning in materials technology

KMG21402 MATERIALS TESTING & COMMISSIONING LAB

No of Credits: 3

Course Synopsis:

This course covers the testing and commissioning laboratory to be carried out on installations to ensure that they are safe and meet the design requirements. The witnessing of tests on and off site shall be defined by: Design specifications. Requirements of the validation process.

Course Outcomes:

1. Ability to perform various types of material tests to confirm findings from laboratory work
2. Ability to understand the principles of material testing and be able to commission findings from laboratory work
3. Ability to perform various types of material testing with ethical awareness and professionalism

KMG30006 PROJECT II

No of Credits: 3

Course Synopsis:

Research project will be conducted by final year students. The objective of the project is to familiarise the students to the research method, problem solving, research publication and presentation of the effective results.

Course Outcomes:

1. Ability to value research findings in the project
2. Ability to apply critical thinking in research activities
3. Ability to conduct experiments including data interpretation and analysis to provide valid discussion in research projects.
4. Ability to develop decisions and practices related to the engineers and society

KMG30103 MATERIALS SELECTION & PROCESSING

No of Credits: 3

Course Synopsis:

This course contains a foundation of knowledge on materials selection and processing and the role of materials in it. Knowledge and understanding on materials and their properties, material property charts, principles of materials and processing selection and sustainability of material are required to reinforce the foundation of knowledge. Practical knowledge in understanding of processing and selection of material will be assessed through a project.

Course Outcomes:

1. Ability to understand and provide solutions for materials selection and designing processing for systems, components or processes that meet specified needs with appropriate consideration for materials technology.
2. Ability to apply and evaluate reasoning information by contextual knowledge to assess consequent responsibilities relevant to professional technical practice and solutions to technical problems in selecting and designing of materials.
3. Ability to assess the sustainability and impact of professional technical work in the solution of materials problems including ability to have management and technopreneurship skills
4. Ability to perform various types of material selection which entrepreneurial skills

KMG30103 MATERIALS SELECTION & PROCESSING

No of Credits: 3

Course Synopsis:

This course contains a foundation of knowledge on materials selection and processing and the role of materials in it. Knowledge and understanding on materials and their properties, material property charts, principles of materials and processing selection and sustainability of material are required to reinforce the foundation of knowledge. Practical knowledge in understanding of processing and selection of material will be assessed through a project.

Course Outcomes:

1. Ability to understand and provide solutions for materials selection and designing processing for systems, components or processes that meet specified needs with appropriate consideration for materials technology.
2. Ability to apply and evaluate reasoning information by contextual knowledge to assess consequent responsibilities relevant to professional technical practice and solutions to technical problems in selecting and designing of materials.
3. Ability to assess the sustainability and impact of professional technical work in the solution of materials problems including ability to have management and technopreneurship skills
4. Ability to perform various types of material selection which entrepreneurial skills

KMG30203 MATERIALS FAILURE ANALYSIS

No of Credits: 3

Course Synopsis:

This course focusing on the investigation and understanding of the mechanisms underlying the failure of engineering materials. It provides students with essential knowledge and practical skills to identify, analyze, and prevent material failures in various industrial applications. The key topics for this course are including Introduction of Failure Analysis, Mechanism of Materials Failure, Failure analysis techniques & investigation and Preventive Measures and Failure Prevention.

Course Outcomes:

1. Ability to apply the knowledge and fundamentals of metallurgical science & engineering to investigate and overcome the complex metal component failure problems.
2. Ability to apply appropriate testing & analysis techniques, modern engineering tools to find out the failure mechanism.
3. Ability to function effectively as an individual, and/ or as a member or leader in a forensic team.

KMG30303 SMART MATERIALS

No of Credits: 3

Course Synopsis:

This course covers the introduction to smart materials, principles, properties, and their applications. Smart materials are materials engineered to have properties that react to changes in their environment, allowing them to respond dynamically to external stimuli. The course covers various types of smart materials including shape memory alloys, piezoelectric materials, magnetostrictive materials, self-healing materials, etc. Students will explore the underlying physics and emerging trends in smart materials applications.

Course Outcomes:

1. Ability to evaluate the fundamentals of smart materials in assessing their principle, properties and mechanism.
2. Ability to relate the smart materials principle, properties and mechanism in technological applications.

KMG30403 ELECTRONICS MATERIALS

No of Credits: 3

Course Synopsis:

This course is designed to introduce the student's various aspect of electronics materials such as elementary materials science concept, electrical and thermal conduction in solids semiconductors and devices, dielectrics materials and insulators, magnetic properties, superconductivity and optical properties of materials

Course Outcomes:

1. Ability to apply knowledge of engineering fundamentals (materials science) and engineering specialisation (materials engineering) to the solution of engineering problems in semiconductor and any electronic devices.
2. Ability to evaluate engineering problems using principles of mathematics, materials science and/or engineering materials.
3. Ability to use computer software to perform electronic structure calculations.

KMG30503 MATERIALS JOINING TECHNOLOGY

No of Credits: 3

Course Synopsis:

This course delves into the techniques and principles of joining materials to create robust structures and components. It covers a wide array of joining methods including welding, brazing, soldering, adhesive bonding, mechanical fastening, and emerging technologies like additive manufacturing.

Course Outcomes:

1. Ability to analyse knowledge of science and materials technology to join various materials.
2. Ability to propose solutions for joining materials in relation to scientific principles.
3. Ability to communicate effectively technical knowledge regarding materials integration and joining technologies in an effective manner

KMG30612 INDUSTRIAL TRAINING

No of Credits: 3

Course Synopsis:

This practical-based course exposes students to a company's technical functions and organisational structure and operation such as departmental function, work procedure, safety procedure, communication, technical skills, and project management. During this course, the students will apply knowledge learned in the university and increase the related skills required in their future profession.

Course Outcomes:

1. Ability to apply tools in solving technical problems effectively in the organisation.
2. Ability to communicate effectively in both oral and written within the organisation
3. Ability to practise independent and life-long learning in specialist technologies.

FACULTY OF CIVIL ENGINEERING & TECHNOLOGY (FKTA)

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Programmes Offered:

- Bachelor of Civil Engineering with Honours
- Bachelor of Environmental Engineering with Honours
- Bachelor of Civil Engineering Technology (Construction) with Honours
- Bachelor of Technology in Building Construction with Honours

EXCO DIRECTORY



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UR6526001

Bachelor of Civil Engineering with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates who have demonstrated career advancement in the field of Civil Engineering or related engineering field.

PEO 2

Graduates who are involved in a professional body or society.

PEO 3

Graduates who pursue life-long learning.



PROGRAMME OUTCOMES (PO)

PO1

Engineering Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization as specified in WK1 to WK4 respectively to develop solutions to complex engineering problems.

PO2

Problem Analysis: Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development (WK1 to WK4).

PO3

Design/ development of solutions: Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required (WK5).

PO4

Investigation: Conduct investigation of complex engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions (WK8).

PO5

Tool Usage: Create, select and apply, and recognize limitation of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, (WK2 and WK6).

PO6

The Engineer and the World: Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving complex engineering problems (WK1, WK5, and WK7).

PO7

Ethics: Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion (WK9).

PO8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings (WK9).

PO9

Communication: Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments.

PO11

Life Long learning: Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change (WK8).

CURRICULUM STRUCTURE
UR6526001 BACHELOR OF CIVIL ENGINEERING WITH HONOURS INTAKE 2025/2026

YEAR	FIRST		SECOND		THIRD			FOURTH	
SEMESTER	1	2	3	4	5	6	BREAK	7	8
DISCIPLINE CORE & ELECTIVE COURSES (107 CREDITS)	AMJ11004 Statics & Dynamics ^a	AMJ10404 Strength of Materials ^b	AMJ20103 Structural Theory ^c	AMJ20504 Soil Mechanics ^e	AMJ30104 Geotechnical Engineering ^f	AMJ30604 Highway & Transportation Engineering	AMJ39905 Industrial Training	AMJ40002 Final Year Project ¹	AMJ40004 Final Year Project ²
	AMJ10202 Engineering Geology	AMJ10503 Civil Engineering Skills	AMJ20204 Fluid Mechanics Engineering	AMJ20603 Water Supply Engineering	AMJ30203 Reinforced Concrete Structures Design ¹	AMJ30703 Steel Structure Design		AMJ47103 Integrated Design Project ^{1g}	AMJ48103 Integrated Design Project ^{2h}
	AMJ10304 Geomatic Engineering	AMJ10903 Computer Programming	AMJ20303 Building Material Engineering	AMJ20703 Structural Analysis ^{1d}	AMJ30303 Structural Analysis ²	AMJ30804 Wastewater Engineering		AMJ4XX03 Elective 1	AMJ4XX03 Elective 2
			AMJ20403 Engineering Drawing	AMJ20803 Hydraulics	AMJ30403 Construction Management	AMJ30903 Reinforced Concrete Structures Design 2		AMJ40103 Industrialized Building System	AMJ40302 Professional Engineers
					AMJ30503 Hydrology & Water Resources Engineering			AMJ40203 Construction Contract, Estimating & Finance	
COMMON CORE COURSES (12 CREDITS)	IMQ10103 Engineering Mathematics 1	IMQ10203 Engineering Mathematics 2	IMQ20303 Engineering Mathematics 3	IMQ27103 Engineering Statistics					
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMZ1XX01 Co-Curriculum 1	SMZ2XX01 Co-Curriculum 2	SMU22402 Engineering Entrepreneurship	SMB31202 English for Technical Communication		SMU12102 Integrity and Anti-Corruption ^[4]		SMU13002 Philosophy and Current Issues	SMU13102 Appreciation of Ethics & Civilization
		SMB41002 University Malay Language ^[3]							
		SMB20102 English for General Communication ^[2]							
TOTAL CREDITS (135 CREDITS)	14	18	18	18	16	16	5	16	14
AUDIT COURSES	SMB10102 Preparatory English ^[1]								

Elective 1 : AMJ40603 Advanced Reinforced Concrete Structures Design, AMJ40703 Foundation Engineering, AMJ40903 Building Maintenance Information System, AMJ41703 Advanced Wastewater Engineering, AMJ42203 Geographic Information System in Civil Engineering, AMJ42303 Transportation Planning and Management

Elective 2 : AMJ40803 Urban Stormwater Management, AMJ41003 Advanced Structural Analysis, AMJ41103 Advanced Steel Design, AMJ41203 Construction Contract and Law, AMJ41303 Building Information Modelling, AMJ41403 Engineers for Society

COURSE ^a IS A PRE-REQUISITE TO COURSE ^b
 COURSE ^c IS A PRE-REQUISITE TO COURSE ^d
 COURSE ^e IS A PRE-REQUISITE TO COURSE ^f
 COURSE ^g IS A PRE-REQUISITE TO COURSE ^h
 COURSE ⁱ IS A PRE-REQUISITE TO COURSE ^j

- [1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.
- [2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.
- [3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.
- [4] International students should register SMU13202 Malaysian Studies.

UR6526002

Bachelor of Environmental Engineering with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

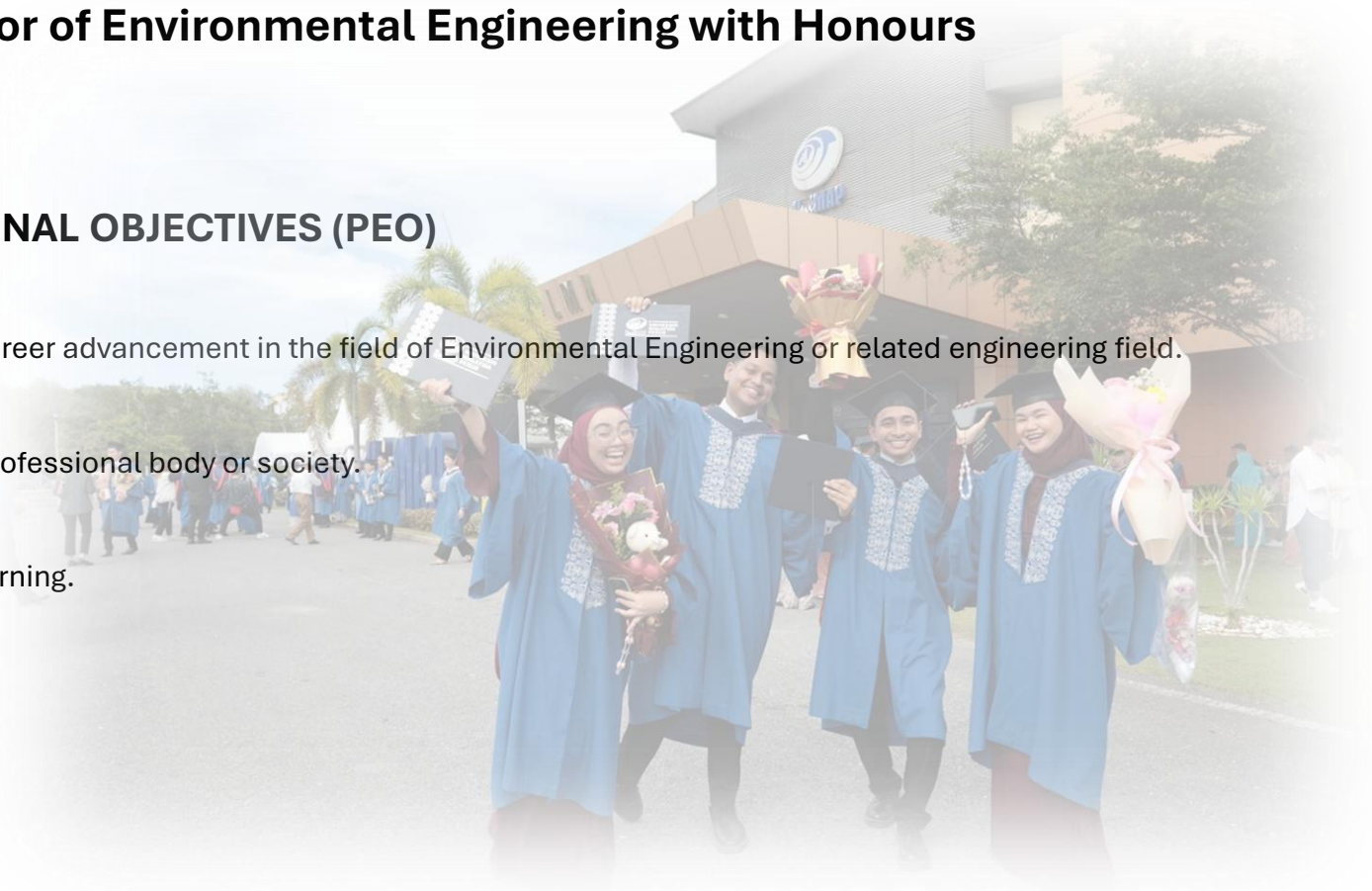
Graduates who have developed career advancement in the field of Environmental Engineering or related engineering field.

PEO 2

Graduates who are involved in a professional body or society.

PEO 3

Graduates who pursue lifelong learning.



PROGRAMME OUTCOMES (PO)

PO1

Engineering Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialisation to develop solutions to complex engineering problems.

PO2

Problem Analysis: Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development.

PO3

Design/ development of solutions: Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO4

Investigation: Conduct investigation of complex engineering problems using research methods including research- based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5

Tool Usage: Create, select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems.

PO6

The Engineer and The World: Analyse and evaluate sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving complex engineering problems.

PO7

Ethics: Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings.

PO9

Communication: Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision- making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments.

PO11

Lifelong learning: Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change.

CURRICULUM STRUCTURE UR6526002 BACHELOR OF ENVIRONMENTAL ENGINEERING WITH HONOURS INTAKE 2025/2026									
YEAR	FIRST		SECOND		THIRD			FOURTH	
SEMESTER	1	2	3	4	5	6	BREAK	7	8
DISCIPLINE CORE & ELECTIVE COURSES (107 CREDITS)	AMJ10604 Environmental Chemistry	AMJ10903 Computer Programming	AMJ20904 Fluid Mechanics and Hydraulics	AMJ21303 Hydrology	AMJ31903 Structural Design	AMJ31503 Public Health and Occupational Hygiene	AMJ39905 Industrial Training	AMJ40002 ^a Final Year Project 1	AMJ40004 ^b Final Year Project 2
	AMJ11104 Statics and Dynamics	AMJ10703 Basic Ecology	AMJ21003 Thermodynamics	AMJ21703 Theory of Structure	AMJ31103 Water Supply Engineering	AMJ31603 Environmental Management System		AMJ47203 ^c Integrated Environmental Engineering Design Project 1	AMJ48203 ^a Integrated Environmental Engineering Design Project 2
	AMJ11103 Environmental Engineering Skills	AMJ11304 Strength of Material	AMJ21402 Environmental Law, Health and Safety	AMJ21603 Environmental Transport Processes	AMJ31203 Solid and Hazardous Waste Engineering	AMJ31704 Wastewater Engineering		AMJ40503 Environmental Remediation	AMJ40302 Professional Engineers
	AMJ11202 Fundamental of Environmental Engineering	AMJ10803 Fundamental of Chemical Processes	AMJ21503 Geoenvironmental Engineering		AMJ32003 Environmental Impact and Risk Assessment	AMJ31804 Air Pollution Control Engineering		AMJ4XXX03 Elective 1	AMJ4XXX03 Elective 2
					AMJ31403 Noise Pollution Engineering			AMJ40403 Engineering Project Management	
COMMON CORE COURSES (12 CREDITS)	IMQ10103 Engineering Mathematics 1	IMQ10203 Engineering Mathematics 2	IMQ20303 Engineering Mathematics 3	IMQ27103 Engineering Statistics					
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMZXX01 Co-Curriculum 1	SMZ2XX01 Co-Curriculum 2		SMB31202 English for Technical Communication		SMU12102 Integrity and Anti - Corruption ^[4]		SMU13002 Philosophy and Current Issues	SMU13102 Appreciation of Ethic and Civilization
	SMB41002 University Malay Language ^[3]	SMB20102 English for General Communication ^[2]		SMU22402 Engineering Entrepreneurship					
TOTAL CREDITS (135 CREDITS)	19	17	15	16	15	16	5	16	14
AUDIT COURSES	SMB10102 Preparatory English ^[1]								

ELECTIVE COURSES:

Elective 1 : AMJ41503 Remote Sensing, AMJ40803 Urban Stormwater Management, AMJ41703 Advanced Wastewater Engineering AMJ42403 Advanced Waste Management
 Elective 2 : AMJ42003 Sustainable Energy, AMJ41403 Engineer for Society, AMJ42503 Traffic and Highway

COURSE ^a IS A PRE-REQUISITE TO COURSE ^b
 COURSE ^c IS A PRE-REQUISITE TO COURSE ^d

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).

SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
AMJ11004	Statik & Dinamik [Statics and Dynamics]	SDG 09
AMJ10202	Geologi Kejuruteraan [Engineering Geology]	SDG 13
AMJ10304	Kejuruteraan Geomatik [Geomatic Engineering]	SDG 09
AMJ10404	Kekuatan Bahan [Strength of Materials]	SDG 09
AMJ10503	Kemahiran Kejuruteraan Awam [Civil Engineering Skills]	SDG 9, SDG 11
AMJ10903	Pengaturcaraan Komputer [Computer Programming]	SDG 09
AMJ20103	Teori Struktur [Structural Theory]	SDG 09,SDG 04
AMJ20204	Kejuruteraan Mekanik Bendalir [Fluid Mechanics Engineering]	SDG 06
AMJ20303	Kejuruteraan Bahan Bangunan [Building Materials Engineering]	SDG 11
AMJ20403	Lukisan Kejuruteraan [Engineering Drawing]	SDG 09
AMJ20504	Mekanik Tanah [Soil Mechanics]	SDG 13
AMJ20603	Kejuruteraan Bekalan Air [Water Supply Engineering]	SDG 06
AMJ20703	Analisis Struktur 1 [Structural Analysis 1]	SDG 11
AMJ20803	Hidraulik [Hydraulics]	SDG 06
AMJ30104	Kejuruteraan Geoteknik [Geotechnical Engineering]	SDG 09,SDG 11,SDG 13
AMJ30203	Rekabentuk Struktur Konkrit Bertetulang 1 [Reinforced Concrete Structures Design 1]	SDG 11
AMJ30303	Analisis Struktur 2 [Structural Analysis 2]	SDG 11
AMJ30403	Pengurusan Pembinaan [Construction Management]	SDG 11

COURSE CODE	COURSE NAME	SDG
AMJ30503	Hidrologi dan Kejuruteraan Sumber Air [Hydrology and Water Resources Engineering]	SDG 06
AMJ30604	Kejuruteraan Lebuhraya dan Pengangkutan [Highway & Transportation Engineering]	SDG 09,SDG 11
AMJ30703	Rekabentuk Struktur Keluli [Steel Structure Design]	SDG 11
AMJ30804	Kejuruteraan Air Sisa [Wastewater Engineering]	SDG 06
AMJ30903	Rekabentuk Struktur Konkrit Bertetulang 2 [Reinforced Concrete Structure Design 2]	SDG 11
AMJ39905	Latihan Industri [Industrial Training]	SDG 09,SDG 11
AMJ40002	Projek Tahun Akhir 1 [Final Year Project 1]	SDG 06,SDG 07,SDG 09, SDG 11,SDG 12
AMJ40004	Projek Tahun Akhir 2 [Final Year Project 2]	SDG 06,SDG 07,SDG 09, SDG 11,SDG 12
AMJ40103	Sistem Bangunan Berindustri [Industrialised Building System]	SDG 09,SDG 11
AMJ40203	Kontrak, Taksiran dan Kewangan Pembinaan [Construction Contract, Estimating & Finance]	SDG 12
AMJ40302	Jurutera Profesional [Professional Engineers]	SDG 07,SDG 09, SDG 11
AMJ40603	Rekabentuk Struktur Konkrit Bertetulang Lanjutan [Advanced Reinforced Concrete Structures Design]	SDG 11
AMJ40703	Kejuruteraan Asas [Foundation Engineering]	SDG 09
AMJ40803	Pengurusan Air Ribut Bandar [Urban Storm Water Management]	SDG 06
AMJ40903	Sistem Maklumat Penyelenggaraan Bangunan [Building Maintenance Information System]	SDG 09
AMJ41003	Analisis Struktur Lanjutan [Advanced Structural Analysis]	SDG 11
AMJ41103	Rekabentuk Keluli Lanjutan [Advanced Steel Design]	SDG 11
AMJ41203	Kontrak & Perundangan Pembinaan [Construction Contract & Law]	SDG 11

COURSE CODE	COURSE NAME	SDG
AMJ41303	Pemodelan Maklumat Bangunan [Building Information Modelling]	SDG 09
AMJ41403	Jurutera Untuk Masyarakat [Engineers for Society]	SDG 04, SDG11
AMJ41703	Kejuruteraan Air Sisa Termaju [Advanced Wastewater Engineering]	SDG 06
AMJ42203	Sistem Maklumat Geografi dalam Kejuruteraan Awam [Geographic Information Systems in Civil Engineering]	SDG 09, SDG 11
AMJ42303	Perancangan dan Pengurusan Pengangkutan [Transportation Planning and Management]	SDG 09, SDG 11
AMJ47103	Reka Bentuk Projek Berintegrasi 1 [Integrated Design Project 1]	SDG 09
AMJ48103	Reka Bentuk Projek Berintegrasi 2 [Integrated Design Project 2]	SDG 11
AMJ10604	Kimia Sekitaran [Environmental Chemistry]	SDG 6
AMJ10703	Ekologi Asas [Basic Ecology]	SDG 6, SDG 13, SDG 14
AMJ10803	Asas Proses Kimia [Fundamental of Chemical Processes]	SDG 7, SDG 9, SDG 12
AMJ11103	Kemahiran Kejuruteraan Alam Sekitar [Environmental Engineering Skills]	SDG 9, SDG 11, SDG 13
AMJ11202	Asas Kejuruteraan Alam Sekitar [Fundamental of Environmental Engineering]	SDG 3, SDG 6, SDG 11
AMJ11304	Kekuatan Bahan [Strength of Material]	SDG 9,SDG 11,SDG 12
AMJ20904	Mekanik Bendalir dan Hidraulik [Fluid Mechanics and Hydraulic]	SDG 6, SDG 9, SDG 13
AMJ21003	Termodinamik [Thermodynamics]	SDG 7
AMJ11004	Statik & Dinamik [Statics and Dynamics]	SDG 9
AMJ21303	Hidrologi [Hydrology]	SDG 6
AMJ21402	Perundangan Kesihatan dan Keselamatan Persekitaran [Environmental Law, Health and Safety]	SDG 6, SDG 8, SDG 12

COURSE CODE	COURSE NAME	SDG
AMJ21503	Kejuruteraan Geopersekitaran [Geoenvironmental Engineering]	SDG 15
AMJ21603	Proses Pengangkutan Alam Sekitar [Environmental Transport Processes]	SDG 11, SDG 13
AMJ21703	Teori Struktur [Theory of Structure]	SDG 9, SDG 11
AMJ31103	Kejuruteraan Bekalan Air [Water Supply Engineering]	SDG 6
AMJ31203	Kejuruteraan Sisa Pepejal dan Sisa Berbahaya [Solid and Hazardous Waste Engineering]	SDG 11, SDG 12
AMJ31403	Kejuruteraan Pencemaran Hingar [Noise Pollution engineering]	SDG 3, SDG 11
AMJ31503	Kesihatan Awam Dan Higin Pekerjaan [Public Health and Occupational Hygiene]	SDG 3,SDG 6,SDG 8, SDG 9,SDG 11
AMJ31603	Sistem Pengurusan Alam Sekitar [Environmental Management System]	SDG 9, SDG 12
AMJ31704	Kejuruteraan Air Sisa [Wastewater Engineering]	SDG 6
AMJ31804	Kejuruteraan Kawalan Pencemaran Udara [Air Pollution Control Engineering]	SDG 3,SDG 9,SDG 11, SDG 13
AMJ31903	Reka Bentuk Struktur [Structural Design]	SDG 9,SDG 11
AMJ32003	Penilaian Kesan Dan Risiko Alam Sekitar [Environmental Impact and Risk Assessment]	SDG 3,SDG 6,SDG 11, SDG 12
AMJ40403	Pengurusan Projek Kejuruteraan [Engineering Project Manangement]	SDG 8,SDG 9,SDG 12
AMJ40503	Remediasi Sekitaran [Environmental Remediation]	SDG 6
AMJ41503	Penderiaan Jauh [Remote Sensing]	SDG 13, SDG 14, SDG 15
AMJ41703	Kejuruteraan Air Sisa Termaju [Advanced Wastewater Engineering]	SDG 6
AMJ41803	Informatik Sekitaran [Environmental Informatics]	SDG 9,SDG 11,SDG 13
AMJ42003	Tenaga Lestari [Sustainable Energy]	SDG 7, SDG 12
AMJ42503	Kejuruteraan Pengangkutan And Lebuhraya [Highway And Transportation]	SDG 9,SDG 11,SDG 13

COURSE CODE	COURSE NAME	SDG
AMJ42403	Pengurusan Sisa Termaju [Advanced Waste Management]	SDG 11, SDG 12,SDG 13
AMJ47203	Reka Bentuk Projek Kejuruteraan Alam Sekitar Berintegrasi 1 [Integrated Environmental Engineering Design Project 1]	SDG 6,SDG 9, SDG 11
AMJ48203	Reka Bentuk Projek Kejuruteraan Alam Sekitar Berintegrasi 2 [Integrated Environmental Engineering Design Project 2]	SDG 6,SDG 9, SDG 11

AMJ11004 STATIK & DINAMIK [STATICS & DYNAMICS]

No of Credits: 4

Course Synopsis:

This course introduces engineering students to the analysis of basic static and dynamic objects and systems encountered in engineering practice. It introduces force systems, simple structural elements and principles of work and energy. Scope of the study includes center of gravity, moment of inertia of a body and impulse and momentum of a rigid body. At the end of the course, students should be able to apply theory and practical to solve problems related to the scope of static and dynamic.

Course Outcomes:

1. Ability to apply the knowledge of statics and dynamics.
2. Ability to analyse statics and dynamics engineering problems.
3. Ability to analyse the principles of statics and dynamics engineering through laboratory.

AMJ10202 GEOLOGI KEJURUTERAAN [ENGINEERING GEOLOGY]

No of Credits: 2

Course Synopsis:

This course introduces the basic knowledge of the geology engineering. The anatomy of the earth, the plate movement that caused the volcanoes and earthquakes, rock classification, weathering process, geological structure and strength, stresses and stabilization of rock mass were discussed in this course. At the end of the course, the students are expected to be able to understand the relationship between the behaviour of earth and the geological process.

Course Outcomes:

1. Ability to apply principles of engineering geology to assess earth materials, geological processes, and their implications in engineering practice
2. Ability to analyse engineering geology concepts and geological information in engineering contexts.

AMJ10304 KEJURUTERAAN GEOMATIK [GEOMATIC ENGINEERING]

No of Credits: 4

Course Synopsis:

In this course, student will be introduce basic surveying involved in engineering. Starting from linear measurement on plane. Student will do levelling after they learn two different data logging. With their knowledge in tapping and levelling, they have to do traversing and tachymetry. Lastly, student will be test in real work in geomatic camp.

Course Outcomes:

1. Ability to explain the fundamental concepts and principles of geomatic engineering.
2. Ability to analyse data for surveying in geomatic engineering.
3. Ability to examine the technique and procedure through integration of surveying data under some supervision.

AMJ10404 KEKUATAN BAHAN [STRENGTH OF MATERIALS]

No of Credits: 4

Course Synopsis:

This course focus on the strengths of the materials which begins with the concept of stress and strain, axial load, torsion, and bending. The stress results from combined loadings also will be covered, as well as the concepts for transforming multiaxial states of stress and in a similar manner, the methods for strain transformation. Besides that, the buckling of the column also will be exposed to the student.

Course Outcomes:

1. Ability to apply the fundamental knowledge and theory of structural mechanics of deformable solids.
2. Ability to analyse engineering problems in strength of materials.
3. Ability to apply stress caused by combined loadings and buckling of column.
4. Ability to relate the principles of strength of materials through laboratory experiments.

AMJ10503 KEMAHIRAN KEJURUTERAAN AWAM [CIVIL ENGINEERING SKILLS]

No of Credits: 3

Course Synopsis:

This course is 100% coursework. This course contains modules which are architectural and engineering plans, a basic workshop for brickwork and reinforced concrete work, electrical wiring, aircond and lift, basic fire fighting and plumbing system, sampling and also safety and health at site. This course will expose students to the basic skills that will be used in the Civil and Environmental Engineering Program. This course requires an emphasis on practical training and teamwork where students can easily understand the course content effectively.

Course Outcomes:

1. Ability to analyse the fundamental theories and principles for different civil engineering applications.
2. Ability to perform the basic principles and theories in civil engineering practices through practical training.
3. Ability to work effectively in a group during the civil engineering practical works.

AMJ10903 PENGATURCARAAN KOMPUTER [COMPUTER PROGRAMMING]

No of Credits: 3

Course Synopsis:

This course is designed to expose students to the basic programming concept using computer programming language, which is suitable for the current computer operating system. It emphasises the general idea of computer programming, including problem-solving analysis and programming concept including variables, operators, control structures, function, arrays and pointers.

Course Outcomes:

1. Ability to apply computer programming concepts and principles.
2. Ability to use GNU/LINUX compiler for coding, compiling, executing and debugging computer programs.
3. Ability to analyse solution for engineering related problems using computer programming techniques.

AMJ20103 TEORI STRUKTUR [STRUCTURAL THEORY]

No of Credits: 3

Course Synopsis:

This course provides students with a clear and thorough presentation of the theory and application of structural analysis as it applies to beams, trusses and frames. It introduces an analysis of statically determinate structures for beams, trusses, and frames. Besides that, it also introduces deflections using the geometrical method for the beams and also the virtual work method for trusses, beams and frames. Cable and arches also will be discussed at the end of this course.

Course Outcomes:

1. Ability to apply structural theory principles in structural engineering.
2. Ability to analyse the structure component using various methods in structural theory.
3. Ability to include independent and lifelong learning in the analysis of the truss system using engineering methods.

AMJ20204 KEJURUTERAAN MEKANIK BENDALIR [FLUID MECHANICS ENGINEERING]

No of Credits: 4

Course Synopsis:

This course provides student knowledge in the patterns of movement of fluid particles. By the end of this subject, the students will be expected to understand the basic characteristics of fluid mechanics and fluid statics, and to analyse the hydrostatics and basic hydrodynamics in the fluid. The students will also be able to analyse the flow in the pipe: Bernoulli's equation, Darcy-Weisbach equation, Moody diagram, and energy losses in pipelines.

Course Outcomes:

1. Ability to apply fluid mechanics principles in the field of civil engineering.
2. Ability to evaluate civil engineering problems using fluid mechanics principles.
3. Ability to analyse experimental results and theories related to fluid mechanics engineering.

AMJ20303 KEJURUTERAAN BAHAN BANGUNAN [BUILDING MATERIAL ENGINEERING]

No of Credits: 3

Course Synopsis:

This course introduces the students to the materials used in building construction. It covers four main engineering materials such as cementitious, metallic, organic and inorganic materials. The students also learn about compositions, properties, and modification of some of their properties with respect to environmental effects and their behaviour in service.

Course Outcomes:

1. Ability to apply various building materials used in construction.
2. Ability to discuss the materials used to make concrete and properties.
3. Ability to propose new applications and/or new construction material for sustainable development.
4. Ability to analyse the laboratory associated with concrete and/or other building materials for building construction.

AMJ20403 LUKISAN KEJURUTERAAN [ENGINEERING DRAWING]

No of Credits: 3

Course Synopsis:

This course introduces student to the use of technical drawing in an effective way for communicating and integrating with engineering concepts. This course will also enlighten the student on the significant changes in the engineering and technical graphic due to the use of computer and Computer Aided Design (CAD) software. At the end of the course, student should be able to apply the skill and knowledge of engineering drawing to interpret design, using graphics method such as geometric drawing, isometric, detailed drawing and basic CAD software.

Course Outcomes:

1. Ability to apply engineering drawing and bill of quantity.
2. Ability to analyse bill of quantity problems.
3. Ability to use techniques, skills and tools for the activities.
4. Ability to presents effectively on the activities.

AMJ20504 MEKANIK TANAH [SOIL MECHANICS]

No of Credits: 4

Course Synopsis:

The course introduces the students with the basic and background of the properties and behavior of soil deposits and the applications of soil mechanics theory. It includes brief introduction on geological and physical characteristics of soils. Also includes identification, classification and description of soil for engineering purposes. Application of mechanics on soil such as phase relationship, compaction, permeability and seepage, stresses and effective stresses, shear strength and consolidation are also covered.

Course Outcomes:

1. Ability to categories the knowledge of soil mechanics.
2. Ability to assess problems and theoretical aspects relevant to soil mechanics problems.
3. Ability to propose the experiments associated with soil classification and parameters.

AMJ20603 KEJURUTERAAN BEKALAN AIR [WATER SUPPLY ENGINEERING]

No of Credits: 3

Course Synopsis:

This course focuses on water sources and usage, method on estimating water demand, water quality characteristics and legislations, water treatment processes as well as water distribution and reticulation system. Special focus will be given on the design of raw water treatment comprising pre-treatment and primary treatment. Students will also be exposed to the design criteria for water supply systems used in Malaysia as part of the course.

Course Outcomes:

1. Ability to elucidate water sources and quality required in water supply system.
2. Ability to calculate water consumption and water demand.
3. Ability to design water treatment unit and water distribution system.
4. Ability to construct water distribution system using modern engineering tool.

AMJ20703 ANALISIS STRUKTUR I [STRUCTURAL ANALYSIS I]

No of Credits: 3

Course Synopsis:

This course provides students with an understanding of influence lines for statically determinate structures and approximate analysis of statically indeterminate structures. Students also will be introduced to beam, trusses, and plane frame analysis using slope deflection and moment distribution methods.

Course Outcomes:

1. Ability to analyse statically determinate or indeterminate structures.
2. Ability to analyse structures using the displacement method of analysis.

AMJ20803 HIDRAULIK [HYDRAULICS]

No of Credits: 3

Course Synopsis:

Hydraulics builds on the fundamentals given in Fluid Mechanics Engineering. It reinforces students' understanding of the behaviour of fluids through the study of the flow of water in typical civil engineering applications. The course covers the study of uniform and non-uniform flow in open channels, steady incompressible flow in pipelines and pipe networks, dimensional analysis and similitude, and hydraulics machinery.

Course Outcomes:

1. Ability to apply the knowledge of hydraulics in a civil engineering field.
2. Ability to evaluate civil engineering problems using hydraulics theories and principles.
3. Ability to analyse the experimental results and theories associated with hydraulics in civil engineering.

AMJ30104 KEJURUTERAAN GEOTEKNIK [GEOTECHNICAL ENGINEERING]

No of Credits: 4

Course Synopsis:

This course provides further discussion and explanation related to geotechnical engineering. The topics cover in this course includes site investigation, bearing capacity and design of shallow foundation and pile foundation, lateral earth

pressure and slope stability. At the end of the course, students should be able to apply the theory and practical to solve problem related to geotechnical engineering.

Course Outcomes:

1. Ability to analyze geotechnical problems using soil behaviour principles.
2. Ability to evaluate geotechnical solutions for foundation systems, slope stabilization, and ground improvement in support of sustainable development.
3. Ability to examine the geotechnical engineering elements according to basic theories of geotechnical engineering.
4. Ability to apply geotechnical tools to model and interpret soil behaviour mechanisms.

AMJ30203 REKA BENTUK STRUKTUR KONKRIT BERTETULANG 1 [REINFORCED CONCRETE STRUCTURE DESIGN 1]

No of Credits: 3

Course Synopsis:

This course is designed to provide the student with a understanding of the limit state design concept and analysis of sections for bending; to provide a basic understanding of standard methods of analysis and design of reinforced concrete behaviour (including an understanding of capabilities and limitations); and to ability to analyze and design reinforces concrete structural elements. Among the topics discussed are objectives and methods of design, code of practice, analysis and design of sections for moment, design for shear, checking for deflection and cracking, durability and detailing requirements. Design of simply supported, continuous beams and cantilever beams, design of one way and two way restrained and simply supported slab, design staircase and design a column. The syllabus is cover ultimate and serviceability limit state. Design resistance typical structural element and detailing.

Course Outcomes:

1. Ability to design reinforced concrete structural element.
2. Ability to evaluate the reinforced concrete structural designs.

AMJ30303 ANALISIS STRUKTUR 2 [STRUCTURAL ANALYSIS 2]

No of Credits: 3

Course Synopsis:

This course is offered to provide an understanding of the methods of structural analysis for statically indeterminate structures using force (flexibility) and stiffness (displacement) matrix approaches. Non-prismatic members are also included in the analysis. Students will be introduced to the principles of basic understanding of civil engineering to solve realistic problems using the finite element method. Structural modelling and analysis using commercial structural analysis software are emphasized.

Course Outcomes:

1. Ability to analyse engineering problems using basic theories and concepts of structural analysis, including fundamental principles of the finite element method.
2. Ability to use appropriate computer software to analyse structures.

AMJ30403 PENGURUSAN PEMBINAAN [CONSTRUCTION MANAGEMENT]

No of Credits: 3

Course Synopsis:

This course introduces civil engineering students to the fundamental principles and practices of construction management, with a focus on the Malaysian construction industry context. It covers the complete lifecycle of a construction project, including the key phases: initiation, planning, execution, monitoring & control, and closure. Key topics include project initiation and feasibility, construction planning and scheduling, cost estimation and budgeting, resource management, project monitoring techniques, and control measures. The course emphasizes the importance of project cost tracking, quality assurance, and compliance with standard procedures and documentation, especially during commissioning and hand-over stages. Additionally, students will learn about payment processes, and handling variation orders, using the relevant forms and guidelines in Malaysia. By the end of the course, students will be equipped with practical knowledge and tools to effectively manage construction projects in accordance with local industry practices and standards.

Course Outcomes:

1. Ability to explain general construction management principles.
2. Ability to formulate construction management planning and scheduling.
3. Ability to justify engineering management principles and economic decision-making in project monitoring, hand-over and closing.
4. Ability to integrate effectively the complex construction management process.

AMJ30503 HIDROLOGI DAN KEJURUTERAAN SUMBER AIR [HYDROLOGY AND WATER RESOURCES ENGINEERING]

No of Credits: 3

Course Synopsis:

This course is designed to expose students to the engineering principles involved in analysing and managing the quantity of water in natural and developed systems. This course consists of the hydrological cycle, water resources management and planning, precipitation, infiltration, flood routing, surface water, ground water and storm water management. The students also will be exposed to the Urban Storm Water Management Manual for Malaysia (MSMA).

Course Outcomes:

1. Ability to demonstrate the scenario of hydrology and water resources engineering.
2. Ability to assess problems and theoretical aspects relevant to hydrology and water resources engineering.
3. Ability to design basic stormwater management using prescribed manual.

AMJ30604 KEJURUTERAAN LEBUHRAYA DAN PENGANGKUTAN [HIGHWAY AND TRANSPORTATION ENGINEERING]

No of Credits: 4

Course Synopsis:

This course intends to give students fair knowledge of transportation engineering, which includes traffic and highway engineering. The traffic part will cover the topics of road user characteristics, traffic operation, transportation planning, location, geometrics, and drainage. The highway part covers the pavement material, the design of flexible and rigid pavement, and pavement maintenance.

Course Outcomes:

1. Ability to apply the fundamental knowledge of traffic and highway engineering.
2. Ability to analyse the traffic and highway engineering process and engineering problems.
3. Ability to design the geometric highway facilities, pavement mix design, flexible pavement, and rigid pavement.
4. Ability to evaluate the experimental results based on fundamental principles of traffic flow and flexible pavement.

AMJ30703 REKA BENTUK STRUKTUR KELULI [STEEL STRUCTURE DESIGN]

No of Credits: 3

Course Synopsis:

This course provides a basic understanding of behaviour and design of steel members, connections and structures. At the end of this unit, students should be familiar with the behaviour of steel structures; in particular the various forms of buckling and failure, particularly those associated with tension, bending, shear, compression, combined actions and connections; have a working knowledge of Eurocode and be competent in designing a simple structure to Eurocode. The syllabus comprises the behaviour of steel members and structures - properties of cross-sections, local buckling, elastic beams, plastic beams, tension members, compression members, effective lengths and elastic in-plane frame buckling, local lateral buckling of beams, in-plane bending of beam columns, lateral buckling of beam-columns, biaxial bending of beam-columns, bolted and welded connections.

Course Outcomes:

1. Ability to analyse complex engineering problem axially loaded member, flexural members and joints for steel structures.
2. Ability to design axially loaded member, flexural members and joints for steel structures.

AMJ30804 KEJURUTERAAN AIR SISA [WASTEWATER ENGINEERING]

No of Credits: 4

Course Synopsis:

This course is designed to expose students to the characteristics of water and wastewater. Student also will be explained about urban water cycle that involved water and wastewater treatment particularly the engineering principles involved in designing the component and treatment system of sewage specifically domestic sewage. Design will involve from the starting point of sewerage collection at service area until the discharge point at wastewater treatment plant. Preliminary, physical and biological treatment will be teaching in this course. The students also will be exposed to the Malaysian Sewerage Industry Guidelines (MSIG) Volume III, IV & V. published by Suruhanjaya Perkhidmatan Air Negara (SPAN).

Course Outcomes:

1. Ability to demonstrate the scenario of wastewater engineering.
2. Ability to assess problems and theoretical aspects associated with wastewater for physical and biological parameter.
3. Ability to design component and system of sewage treatment.

4. Ability to examine the experiment associated with wastewater for physical and biological parameter.

AMJ30903 REKA BENTUK STRUKTUR KONKRIT BERTETULANG 2 [REINFORCED CONCRETE STRUCTURE DESIGN 2]

No of Credits: 3

Course Synopsis:

This course is designed to provide the student with ability to analyze and design advanced reinforces concrete structural elements. Among the topics discussed are objectives and methods of design, code of practice, analysis and design of sections for moment, checking for shear, deflection and cracking, durability and detailing requirements. Calculation for design includes retaining wall, foundation, reinforced concrete frame and prestressed concrete.

Course Outcomes:

1. Ability to design reinforced concrete structures.
2. Ability to check shear and cracking.

AMJ39905 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]

No of Credits: 5

Course Synopsis:

The course will expose students to technical and practical application as well as other aspect such as the operation of the company, work culture, safety procedure, project management, communication, technical skills and presentation. Students are required to submit their logbook and written report at the end of the industrial training.

Course Outcomes:

1. Ability to perform technical knowledge and practical skills.
2. Ability to practice in accordance with health, safety, legal, and cultural requirements in the working environment
3. Ability to complete tasks with professional ethics and responsibilities.
4. Ability to perform tasks independently and collaboratively, demonstrating effective teamwork and communication with co-workers.
5. Ability to communicate effectively in both verbal and written forms

AMJ40002 PROJEK TAHUN AKHIR 1 [FINAL YEAR PROJECT 1]

No of Credits: 2

Course Synopsis:

The Final Year Project (FYP) is a major component of the undergraduate degree course in Civil and Environmental Engineering Programs. The main objective is to develop problem solving, mathematical analysis, experimental tests, synthesis and evaluation skills, computer simulation, hard and/or software development in the field of Civil and Environmental Engineering. This is an individual research project in connection with a special engineering problem and under the academic staff guidance. While working on the project, the student would be able to develop personal and soft skills such as instance time management, self-confidence and interaction. The evaluation of the FYP indirectly provides the student with training in technical and communication skills.

Course Outcomes:

1. Ability to assess theoretical and practical knowledge in addressing complex engineering research problem.
2. Ability to evaluate complex research problem using knowledge of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development.
3. Ability to propose solution for complex research problem using research-based knowledge and research methods.
4. Ability to value ethics and professional responsibility, adhere to legal requirements and understand the need for diversity and inclusion in conducting research activities.
5. Ability to commit to effective and inclusive communication skills in dissemination of research findings across diverse audiences.
6. Ability to construct research activities based on engagement with relevant information from various sources for application in independent and continuous learning, enhancing adaptability to new technologies and promoting critical thinking.

AMJ40004 PROJEK TAHUN AKHIR 2 [FINAL YEAR PROJECT 2]

No of Credits: 4

Course Synopsis:

The course is an extension of AMJ40002 Final Year Project I course. The goal of this course is to prepare students to conduct research and present the findings verbally and in writing. The student is expected to be able to conduct research activities independently with supervision from their supervisor. By the end of the course, students should be able to conduct research in a methodical manner,

gather project-related data, solve and analyse data to achieve results, write a solid project report, and present project findings.

Course Outcomes:

1. Ability to assess theoretical and practical knowledge in addressing complex engineering research problem.
2. Ability to evaluate complex research problem using knowledge of mathematics, natural sciences and engineering sciences.
3. Ability to synthesise information for complex research problem using research-based knowledge and research methods.
4. Ability to value ethics and professional responsibility in conducting research activities.
5. Ability to practice effective communication skills in dissemination of research work with engineering community.
6. Ability to develop research activities based on engagement with relevant information from various sources for application in independent and continuous learning.

AMJ40103 SISTEM BANGUNAN BERINDUSTRI [INDUSTRIALISED BUILDING SYSTEM]

No of Credits: 3

Course Synopsis:

This course is designed to give exposure to the students on the Industrialised Building System (IBS) concepts, which include the advantages and disadvantages of using IBS in construction, IBS roadmap and the applications of IBS. It also highlighted the principle of score calculation and submission, the principle of modular coordination in IBS and concepts of buildability.

Course Outcomes:

1. Ability to apply the concept of IBS modern construction technology.
2. Ability to suggest the principle of score calculation, submissions, and concept of modular coordination in IBS.
3. Ability to design a building using the concept of IBS according to Malaysian Standard.
4. Ability to present the building's design using IBS.

AMJ40203 KONTRAK, TAKSIRAN DAN KEWANGAN PEMBINAAN [CONSTRUCTION CONTRACT, ESTIMATING AND FINANCE]

No of Credits: 3

Course Synopsis:

This course consists of three parts. The first part exposes student to the introduction to construction contract; preparation of tender document and strategy in tendering. The second part covers introduction to cost estimating based on the Standard Method of Measurement (SMM) for building works and Civil Engineering Standard Method of Measurement (CESMM), method of cost estimating and quantity measurement and build-up rate calculation. Finally, the third part covers economic and financial, including introduction to engineering economics, foundation of decision making in engineering economics and comparing alternative proposals; business financing and financial performance measurement.

Course Outcomes:

1. Ability to apply principles of construction tender and contract.
2. Ability to evaluate the quantity and cost of building elements and civil engineering works.
3. Ability to evaluate critical reasoning and make informed judgment in addressing economic and financial issues in construction practice.

AMJ40302 JURUTERA PROFESIONAL [PROFESSIONAL ENGINEERS]

No of Credits: 2

Course Synopsis:

This course aims to explain the main concepts in engineering ethics, risk management and occupational safety and health as well as to expose the students to basic of law in the engineering context. The materials will be of introductory nature to enable engineers to appreciate factors that have to be taken into account in decision-making. At the end of the course, students will be able to identify and discuss issues and challenges faced by engineers relating to engineering ethics, risk management and to understand the legal requirements related to engineering field.

Course Outcomes:

1. Ability to assess and discuss the issues and challenges of engineering ethics.
2. Ability to assess the sustainability issues and its impact in society and environmental context.

3. Ability to revise hazards and compile the function of risk management, occupational safety, health (OSHA) and procedures of legal on engineering issues.

AMJ40603 REKA BENTUK STRUKTUR KONKRIT BERTETULANG LANJUTAN [ADVANCED REINFORCED CONCRETE STRUCTURES DESIGN]

No of Credits: 3

Course Synopsis:

The syllabus comprises the additional knowledge on the aspect of reinforced concrete structural elements. As a continuation to the Reinforced Concrete Structures Design I and II, the topics discussed include analysis and design of ribbed, waffle and flat slabs, water retaining structures and reinforced concrete wall. As well as design of elements for torsion and analysis and design of raft foundation are also covered.

Course Outcomes:

1. Ability to design reinforced concrete structural element.
2. Ability to evaluate the reinforced concrete structural designs.

AMJ40703 KEJURUTERAAN ASAS [FOUNDATION ENGINEERING]

No of Credits: 3

Course Synopsis:

This course intends to provide further discussion and explanation related to foundation engineering. The topics cover in this course includes mat foundations, drilled-shaft foundations, retaining walls, foundations on difficult soils and soil improvement. At the end of the course, students should be able to apply theory and practical to solve problems related to foundation engineering.

Course Outcomes:

1. Ability to analyze sub-structure engineering and difficult soil problems.
2. Ability to design the foundations and retaining walls.
3. Ability to explain the proposed solutions to the foundation engineering problems.

AMJ40803 PENGURUSAN AIR RIBUT BANDAR [URBAN STORM WATER MANAGEMENT]

No of Credits: 3

Course Synopsis:

This course aims to equip students with in-depth knowledge in urban stormwater design and management. This course highlights the aspects of urban drainage management. The students are also exposed to environmentally friendly drainage systems, hydrological analysis, Best Management Practices (BMPs), and quantity and quality controls. Upon completing this course, the students should be able to analyse and determine viable project options, propose appropriate management strategies, and apply the proper techniques in urban stormwater planning and design.

Course Outcomes:

1. Ability to apply the aspects of urban drainage scheme which applies the concept of environmentally friendly drainage in civil engineering.
2. Ability to evaluate urban drainage design alternative solutions based on the practices of the relevant authorities.
3. Ability to design urban drainage systems with regard to sustainable development.

AMJ40903 SISTEM MAKLUMAT PENYELENGGARAAN BANGUNAN [BUILDING MAINTENANCE INFORMATION SYSTEM]

No of Credits: 3

Course Synopsis:

This course is designed to introduce students to building maintenance and enhance their knowledge on management method that seems to become mislaid from time to time due to poor service delivery, inadequate finance, poor maintenance planning and maintenance backlogs. It will emphasize on the principles and practices relating to maintenance management in facilitating the assessment, planning and execution processes in relation to building facility. At the end of the course students should be able to apply, evaluate and develop the information system (i.e. database management) suitable for the building maintenance work on defect report and information transfer techniques with the aid of building information modelling technology.

Course Outcomes:

1. Ability to apply principles and practices relating to maintenance of building in construction engineering.
2. Ability to evaluate effective method for building maintenance information system.
3. Ability to construct complex maintenance information system with the aid of modern engineering tools.

AMJ41003 ANALISIS STRUKTUR LANJUTAN [ADVANCED STRUCTURAL ANALYSIS]

No of Credits: 3

Course Synopsis:

This course provides students with basic knowledge of the finite element method (FEM) in structural analysis and response of the systems under dynamic excitation. For the finite element method this course explains the fundamental of the FEM and procedure to develop FEM equation. The fundamental of the FE will be utilized in the development of FEM equation for 2 dimensional solid models. The plasticity of the structural member also discussed and analysed in this course. Moreover, the students will be introduced and exposed to the structural dynamic. For that purpose, two basic topics in structural dynamic (i.e. equation of motion and response of single degree of freedom system under free vibration) will be covered in this course.

Course Outcomes:

1. Ability to analyse the advanced structural analysis knowledge in-depth of technical competence to the solution of engineering problem.
2. Ability to conduct structural engineering problem using modern engineering tools.

AMJ41103 REKA BENTUK KELULI LANJUTAN [ADVANCED STEEL DESIGN]

No of Credits: 3

Course Synopsis:

This course is to prepare Civil Engineering students with additional knowledge on the design aspect of steel structural elements using EUROCODE 3. This module is a continuation of steel building design by enhancing the fundamental approach in designing steel components. The aim of this subject is to develop professional engineering skills with special emphasis on analysis, and reliability of design approaches.

Course Outcomes:

1. Ability to integrate the advanced steel knowledge design in depth of technical competence to the solution of engineering problems.
2. Ability to design the advanced complex steel design in engineering problems.
3. Ability to measure the engineering problems systems using technique, skills and modern engineering tools.

AMJ41203 KONTRAK AND PERUNDANGAN PEMBINAAN [CONSTRUCTION CONTRACT AND LAW]

No of Credits: 3

Course Synopsis:

This course introduces students to Malaysian laws, which will focus on the sources, and branches of law in Malaysia. The course will emphasize on private laws related to construction practice, torts, law of contract and construction contract administration. Students will be exposed to construction contract administration which covers the Standard Forms of Contract, disputes in construction and dispute resolutions. At the end of the course, students should possess a sound knowledge of the Malaysian legal framework and familiar with legislative and legal constraints applicable to the practise of construction. More importantly, the students should be able to use their knowledge to promote ethical and better image of the construction industry.

Course Outcomes:

1. Ability to apply construction law and contracts in construction practice.
2. Ability to propose problem-solving skill and integration knowledge gained in other core subject to problem emerged.
3. Ability to evaluate in laws and regulations related to the professional and ethical responsibilities and commitment to community.
4. Ability to explain critical reasoning and informed judgement in addressing construction law and contract issues in construction practise.

AMJ41303 PEMODELAN MAKLUMAT BANGUNAN [BUILDING INFORMATION MODELLING]

No of Credits: 3

Course Synopsis:

The main objective of this course is to give an insight into Building Information Modelling (BIM), defining the parametric modelling process involving BIM technology to improve the building construction. This course will also assist the students in understanding the BIM software function and conceptual design of construction management in the building projects. The BIM practice will further deliberate an overview on design services and practices as a major potential in improving the management of buildings primarily for simulation, analysis and Level of Information (LOI) techniques.

Course Outcomes:

1. Ability to discuss contributions of BIM to civil engineering.
2. Ability to perform complex database of architecture and structure models for modelling libraries in BIM.
3. Ability to explain complex BIM model through integration of civil engineering database under some supervision.

AMJ41403 JURUTERA UNTUK MASYARAKAT [ENGINEERS FOR SOCIETY]

No of Credits: 3

Course Synopsis:

The objective of this course is to improve student learning by integrating theory with practice in the society. This course is embedded SULAM element align with KPM inspiration. Student will be placed in community to hear their problem and then choose a problem related to their engineering field to be resolved. From this engagement, it will increase students' soft skills as well as creating collaborative environment students, lecturers and communities. In addition, this course will be providing opportunities for agencies, corporate and NGOs to contribute to the community through volunteering. At the end of the course, communities involved will get the benefit that will be maps based on Sustainable Development Goals (SDG) by UNESCO.

Course Outcomes:

1. Ability to combine theory and practice in the society and the consequent responsibilities relevant to Civil/Environmental engineering practice and solution to complex engineering problems.
2. Ability to perform effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.
3. Ability to display effective communication strategies with society for engineers

AMJ41703 KEJURUTERAAN AIR SISA TERMAJU [ADVANCED WASTEWATER ENGINEERING]

No of Credits: 3

Course Synopsis:

This course focuses on the design aspect of secondary and tertiary treatment units in wastewater treatment plant. The student will be learned on the process analysis and reactor design for various suspended growth and attached growth biological treatment processes. In addition, the student will be exposed to the design of the advanced wastewater treatment unit such as membrane filter, adsorber, ion exchanger and advanced oxidation process unit. By the end of the course, the student is expected to be able to design in detail the specific unit processes of secondary and tertiary treatment units in wastewater treatment plant.

Course Outcomes:

1. Ability to analyse process analysis and reactor design toward in-depth understanding in wastewater treatment plant design.
2. Ability to propose the biological reactor for the secondary treatment unit in wastewater treatment plant.
3. Ability to propose the design of tertiary treatment unit in wastewater treatment plant.

AMJ42203 SISTEM MAKLUMAT GEOGRAFI DALAM KEJURUTERAAN AWAM [GEOGRAPHIC INFORMATION SYSTEMS IN CIVIL ENGINEERING]

No of Credits: 3

Course Synopsis:

This course introduces Geographic Information Systems (GIS) as a powerful tool for civil engineering applications. Students will learn GIS concepts, spatial data management, analysis techniques, and practical applications in infrastructure planning, transportation, water resources, and urban development. The course includes hands-on experience with GIS software and real-world civil engineering case studies.

Course Outcomes:

1. Ability to analyse complex spatial problems using the GIS concept.
2. Ability to display spatial data visualisation using GIS software.
3. Ability to demonstrate proficiency in verbal communication within technical and professional contexts.

AMJ42303 PERANCANGAN DAN PENGURUSAN PENGANGKUTAN [TRANSPORTATION PLANNING AND MANAGEMENT]

No of Credits: 3

Course Synopsis:

This is an advanced course to encourage students to conduct feasibility studies on the entire transportation system. Also, it discusses the basic principles and ideas of transportation planning, and other problems such as transportation infrastructure, multimodal transport, parking, and the evaluation of intelligent transport systems. All students are required to plan and manage their assignments under the supervision. Solving the problems using proper knowledge and skills will help the student understand the need for life-long learning.

Course Outcomes:

1. Ability to apply the inter-relationships between transport planning, land use and urban development.
2. Ability to discuss for transport problems in planning and management.
3. Ability to demonstrate communication effectively and verbal on transport planning activities

AMJ47103 REKA BENTUK PROJEK BERINTEGRASI 1 [INTEGRATED DESIGN PROJECT 1]

No of Credits: 3

Course Synopsis:

AMJ47103 Integrated Design Project I is an engineering capstone course for the civil engineering programme. This course enables students to design a real civil engineering project. In this course, students are required to integrate their knowledge of civil engineering disciplines such as geotechnical engineering, structural engineering, water supply engineering, and highway engineering. This course also emphasizes project management and economic evaluation in the conceptual design phase. This course is an actual example of the implementation of complex problem solving and complex engineering activities, which incorporate various disciplines and consist of all phases of work, for example, project briefing, designing, sketching, and drawings. At the end of the semester, students are required to submit a project report and present their findings.

Course Outcomes:

1. Ability to design creative solutions for complex civil engineering problems and design systems, components, or processes that meet specified needs.
2. Ability to use appropriate design software(s) to assist in complex civil engineering design projects.
3. Ability to demonstrate the sustainable development impacts in solving complex engineering problems.
4. Ability to demonstrate effectively as an individual and as a member or leader in team.
5. Ability to demonstrate effective communication, verbal and written, in civil engineering design projects.
6. Ability to evaluate engineering management principles and economics to manage civil engineering design project.

AMJ48103 REKA BENTUK PROJEK BERINTEGRASI 2 [INTEGRATED DESIGN PROJECT 2]

No of Credits: 3

Course Synopsis:

The AMJ48103 Integrated Design Project (IDP) 2 is a team based project undertaken by all final year students. It is a continual project from AMJ47103 in semester 1. The engineering capstone course aims to give students experience of the type of multi-disciplinary projects that are now common in industry. Students are expected to implement knowledge and skills obtained throughout the programme in solving specific engineering problem. Students are also required to practice proper ethics, professional responsibilities and entrepreneurship skills in providing a sustainable solution via functioning in a multidisciplinary team. Every student is required to plan and manage their project through the supervision of the IDP team. Solving the problem using proper knowledge and skills shall help the student to understand the need for life-long learning. Students also required to demonstrate their project during viva/presentation.

Course Outcomes:

1. Ability to compose complex engineering problems reaching substantial conclusions using first principles of natural sciences and mathematics, fundamental and civil engineering specialist.
2. Ability to analyze the societal, health, safety, legal and cultural issues as well as the responsibilities of professional engineering in solving the complex civil engineering design.
3. Ability to extend ethical principles and commit to professional ethics as well responsibilities and norms of complex civil engineering practice.
4. Ability to function effectively as an individual and as a member or leader in

teams.

5. Ability to demonstrate communication effectively, verbal and written on complex civil engineering activities.
6. Ability to evaluate knowledge and understanding of engineering management principles and economics evaluation to manage complex civil engineering design project.
7. Ability to determine the need for and to engage in independent and life-long learning of the complex technological change in civil engineering.

AMJ10604 KIMIA PERSEKITARAN [ENVIRONMENTAL CHEMISTRY]

No of Credits: 4

Course Synopsis:

The study of environmental chemistry is fundamental to an understanding of the natural and anthropogenic processes occurring on our planet. The course aimed to familiarize the students with qualitative and quantitative aspects of chemical and biological principles of environmental engineering and their application to pollution control. The syllabus focuses on the fundamentals of chemistry, water chemistry, atmospheric chemistry and soil chemistry.

Course Outcomes:

1. Ability to evaluate the knowledge related to fundamental chemistry involving water, soil and atmospheres.
2. Ability to solve problems related to fundamental chemistry involving water, soil and atmospheres
3. Ability to analyze experiments associated with appropriate methods related to water, soil and atmospheres

AMJ10703 EKOLOGI ASAS [BASIC ECOLOGY]

No of Credits: 3

Course Synopsis:

The study of basic ecology in understanding nature and environment, and the relationship between the organism and environment. Students will understand the effect of global environmental changes to the environment and how to preserve the environment. The syllabus covers on ecology, ecosystems, population, community, biogeochemical cycles, global environmental changes and microbiology.

Course Outcomes:

1. Ability to evaluate the knowledge related basic concept of ecology, environment and the relationship among the organism/ microorganisms in ecosystems.
2. Ability to determine energy flow of ecosystems, biochemistry and metabolism pathways of microorganisms in soil, water and wastewater treatment.
3. Ability to analyse the population of organism and microorganisms' growth.

AMJ10803 ASAS PROSES KIMIA [FUNDAMENTAL OF CHEMICAL PROCESS]

No of Credits: 3

Course Synopsis:

This course aims to introduce students on how to solve problems on basic process calculations and process system variables. Then, student will be taught on how to analyse and solve material balances on nonreactive and reactive process units. Furthermore, the students will be familiarized with solving problems on material and energy balances on reactive and nonreactive processes.

Course Outcomes:

1. Able to analyse the basic process calculation and process system variables.
2. Able to evaluate material and energy balances on nonreactive processes and reactive multiple-unit processes.

AMJ11103 KEMAHIRAN KEJURUTERAAN ALAM SEKITAR [ENVIRONMENTAL ENGINEERING SKILLS]

No of Credits: 3

Course Synopsis:

This course encompasses three topics: the fundamentals of drafting surveying engineering drawings, geographical information systems (GIS), and the principles of land surveying. The initial topic presents the fundamentals of engineering drawing utilizing AutoCAD software, encompassing both two-dimensional and three-dimensional designs. The second topic delineates the principles of GIS, emphasizing data acquisition, geographical analysis, and cartographic creation utilizing pertinent software. This topic incorporates artificial intelligence (AI) methodologies, including image classification and pattern recognition, to improve geographic data analysis and decision-making. Students will be introduced to AI-enhanced GIS tools that enhance the efficiency and precision of spatial information processing. In the final topic, students will acquire skills in fundamental surveying techniques, encompassing leveling, tachymetry, and traversing. The majority of this course will take place in the laboratory to familiarize students with the equipment and software, while theoretical components will be presented in the classroom.

Course Outcomes:

1. Ability to apply the basic knowledge of surveying, mapping, and drawing to produce spatial maps and engineering drawings
2. Ability to examine appropriate surveying, mapping, and engineering drawing methods to address environment-related problems
3. Ability to demonstrate proficiency in the use of appropriate equipment and software for surveying, mapping, and engineering drawing tasks

AMJ11202 ASAS KEPADA KEJURUTERAAN ALAM SEKITAR [FUNDAMENTAL OF ENVIRONMENTAL ENGINEERING]

No of Credits: 2

Course Synopsis:

This course focuses on the fundamental concept of environmental engineering. Students will be exposed to the main components in environmental engineering that are air, water, noise, solid and hazardous waste. The basic principles, theories and brief legislation that related to air pollution, water pollution, solid and hazardous waste, noise pollution will be covered in this course.

Course Outcomes:

1. Ability to apply the basic principles, theories and legislation related to air pollution, water pollution, solid and hazardous waste, and noise pollution.
2. Ability to analyze the problems related to air pollution, water pollution, solid and hazardous waste, and noise pollution.

AMJ11304 KEKUATAN BAHAN [STRENGTH OF MATERIAL]

No of Credits: 4

Course Synopsis:

This course is divided into two main topic which are strength of materials and construction materials. The first topic focuses on the study of the chemical and mechanical properties of materials which include the structure of crystalline solid, the concept of stress and strain, axial load, torsion, bending and transverse shear. The second topic introduces the various materials used in constructions such as cementitious, metallic, organic and inorganic materials. This includes study on the compositions, properties and modifications of the properties with respect to environmental effects and behaviour in service.

Course Outcomes:

1. Ability to apply the fundamental knowledge of strength of materials to solve common problems in construction materials.
2. Ability to differentiate various concept of strength of materials and analyse complex engineering problems related to construction materials.
3. Ability to relate the basic principles of strength of construction materials through laboratory investigation.

AMJ20904 MEKANIK BENDALIR DAN HIDRAULIK [FLUIDS MECHANIC AND HYDRAULICS]

No of Credits: 4

Course Synopsis:

This course provides student knowledge in the patterns of movement of fluid particles. By the end of this subject students will be expected to understand the basic characteristics of fluid mechanics and fluid statics, be able to analyze the hydrostatics and basic hydrodynamics in fluid. Students also will be able to analyze and differentiate between the flow in pipe and flow in open channels.

Course Outcomes:

1. Ability to apply the knowledge of fluid mechanics and hydraulic engineering
2. Ability to solve environmental engineering problems using fluid mechanics and hydraulic principles
3. Ability to analyze experiments associated with fluid mechanics and hydraulic engineering

AMJ21003 TERMODINAMIK [THERMODYNAMICS]

No of Credits: 3

Course Synopsis:

Thermodynamics is a study related to the science of energy and their relation to heat and work. This course will discuss the basic concepts and properties of thermodynamics and the forms of energy and energy transfer. The first and second law of thermodynamics are useful in performing energy analysis and measuring thermal efficiency of a system.

Course Outcomes:

1. Able to use thermodynamic tables, charts and equation of state to obtain appropriate property data in solving thermodynamics problems.
2. Able to evaluate fundamental engineering problems in thermodynamics involving closed systems, open systems under steady state and transient conditions by applying the first and second laws of thermodynamics.
3. Able to apply second law analysis methods for thermodynamic systems.

AMJ21303 HYDROLOGI [HIDROLOGY]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental of hydrological process such as hydrologic cycle, precipitation, evaporation, transpiration, evapotranspiration and infiltration. Students will be introduced to equations to calculate, and equipments to measure many important hydrologic data including rainfall amount, evaporation rate and infiltration rate. Analysis will be done to look at the relationship between these values especially between rainfall, land use, and streamflow values. Emphasis will be given for measurement technique of flowrate in river, and usage of Rating Curve to find the relationship between water level and streamflow values. Usage and derivation of Unit Hydrograph will also be included.

Course Outcomes:

1. Ability to examine the scenario of hydrological cycle.
2. Ability to analyze the problem related to hydrology.
3. Ability to design basic stormwater management using prescribed manual.

AMJ21402 PERUNDANGAN ALAM SEKITAR, KESIHATAN DAN KESELAMATAN [ENVIRONMENTAL LAW, HEALTH AND SAFETY]

No of Credits: 2

Course Synopsis:

In the promotion of environmentally sound and sustainable development, our country has established the necessary legal and institutional arrangements such that environmental factors are considered for the establishment of business/industry in the country. In this course, the student will be exposed to the knowledge and ethical principles of Environmental, Health, and Safety Legislation in Malaysia. The student will be able to evaluate the issues and the need for Environmental, Health, and Safety Legislation related to occupational safety and health management.

Course Outcomes:

1. Ability to analyse the knowledge and ethical principles of Environmental, Health and Safety legislation in Malaysia
2. Ability to evaluate independently the knowledge by using the broadest context of technological change and recognize the need for Environmental, Health, and Safety Legislation.

AMJ21503 KEJURUTERAAN GEOPERSEKITARAN [GEOENVIRONMENTAL ENGINEERING]

No of Credits: 3

Course Synopsis:

This course presents the principles of geoenvironmental engineering. It covers the chemical and geo-chemistry background of soil, rock classification and groundwater flow. This course also discusses the sources of contaminants and available remediation technologies, which are widely used for groundwater treatment. Global environmental problems pose a challenge to the geoenvironmental engineering profession. In particular, the safe disposal of hazardous solid waste. Concerns should be focused on the requirements and criteria should be established for the safety of public health and the environment.

Course Outcomes:

1. Ability to determine basic principle of geoenvironmental engineering.
2. Ability to evaluate the basic principle of remediation technologies for contaminated land.

AMJ21603 PROSES PENGANGKUTAN PERSEKITARAN [ENVIRONMENTAL TRANSPORT PROCESS]

No of Credits: 3

Course Synopsis:

The objective of this course is to introduce Environmental Engineering student on natural transport processes in the environment. Basic concept on mass balance, physical, chemical and biological transport process will be covered. Chemical and biological Kinetics will be introduced by applying Gibbs free energy concept. Similarly, phase equilibrium and partitioning in the environment will be introduced. By the end of the course, the student is expected to be able to understand the related driving forces in the process of advection, diffusion, and the combination of the two phases in air, water, and soil media.

Course Outcomes:

1. Ability to analyse basic concept of transport phenomena toward in depth understanding in environmental transport processes
2. Ability to evaluate models of physical, chemical and biological transport process in the environment
3. Ability to display model of environmental transport process using modern tools

AMJ21703 TEORI STRUKTUR [THEORY OF STRUCTURE]

No of Credits: 3

Course Synopsis:

This course covers various structural types and the forces applied to specific types of structures. Trusses and beams were assessed for determinacy and stability, as well as shear forces and bending moments. This course also includes the theory of elastic curves and elastic beams in structural deflections, as well as the analysis of deformation using geometric and double integration methods.

Course Outcomes:

1. Ability to apply the knowledge of structural theories in structural engineering.
2. Ability to analyze the structure component using various methods in the structural theory.
3. Ability to perform the basic theory on equilibrium and reaction of beams.

AMJ31103 KEJURUTERAAN SUMBER AIR [WATER SUPPLY ENGINEERING]

No of Credits: 3

Course Synopsis:

This course will be focused on water sources and usage, method on estimating water demand, water quality characteristics and legislation, conventional and advanced water treatment processes, water distributions and reticulation systems. Special focus will be given on the design water treatment unit, applying the design guidelines of water supply system which is applied in Malaysia.

Course Outcomes:

1. Ability to analyse water sources, consumption and water demand, and classification of technology of water treatment processes.
2. Ability to evaluate water distribution system.
3. Ability to design water treatment unit and water distribution system.
4. Ability to construct water distribution system using modern engineering tool.

AMJ31203 KEJURUTERAAN SISA PEPEJAL DAN SISA BERBAHAYA [SOLID AND HAZARDOUS WASTE ENGINEERING]

No of Credits: 3

Course Synopsis:

Students will be introduced to elements of solid waste engineering, which is municipal solid waste characterization, waste handling, generation rate, waste storage, collection and transport, waste treatment and disposal methods; including biological and chemical treatment, incineration, pyrolysis, landfill and site remediation, and waste minimization. Then, students will be enriched with characteristics of hazardous waste, waste handling, storage and collection, treatments and disposal methods, physicochemical and biological methods, stabilization and other disposal option such as solidification, incineration and secured landfill. Finally, student will be able to design engineered final disposal facilities for solid and hazardous waste and analyse the sustainability in societal and environmental context.

Course Outcomes:

1. Ability to analyze the integrated solid and hazardous waste management and engineering.
2. Ability to analyse hazardous waste management and the concept of risk assessment.
3. Ability to design the engineered final disposal facilities for solid and hazardous waste.
4. Ability to analyse the sustainability in societal and environmental contexts and to have entrepreneurship skills.

AMJ31403 KEJURUTERAAN PENCEMARAN HINGAR [NOISE POLLUTION ENGINEERING]

No of Credits: 3

Course Synopsis:

This course presents the basic principle and concepts of the noise pollution engineering. It covers how to tackle noise pollution problems, solutions available for noise control, how to determine noise, and how noise generated and radiated, and how it can be reduced. From the course, students will also be exposed to laws and codes governing noise and its control Environmental Quality Act 1974, OSHA, Factories and Machinery Act 1967.

Course Outcomes:

1. Ability to evaluate the basic principle and concept of noise pollution and noise control.
2. Ability to analyse the problems on noise pollution.
3. Ability to demonstrate and function effectively as an individual, and as a member or leader in the project on a noise pollution.

AMJ31503 KESIHATAN AWAM DAN HIGIN PEKERJAAN [PUBLIC HEALTH AND OCCUPATIONAL HYGIENE]

No of Credits: 3

Course Synopsis:

Public health and occupational hygiene are two interrelated studies. This course is divided into two sections that covers both public health and occupational hygiene. The first section is devoted to the fundamentals of health in the tropics, water supply and sanitation, diseases transmitted by microbes, vectors, and other agents. This includes introduction to pollutants and other hazards in nature and indoors. The second section is on occupational hygiene, and the topics covers in this section includes introduction to safety and health of workers and public. Malaysian occupational Safety and Health Act, Environmental, quality, health and safety management.

Course Outcomes:

1. Ability to evaluate a base of knowledge in the hazards related to public health
2. Ability to discuss the theoretical, engineering and control aspects for the prevention of occupational hygiene related issues
3. Ability to present the outcome of group work on related issues in public health /occupational hygiene
4. Ability to function effectively as an individual, and as a member or leader in group work on specific scope of public health /occupational hygiene.

AMJ31603 SISTEM PENGURUSAN ALAM SEKITAR [ENVIRONMENTAL MANAGEMENT SYSTEM]

No of Credits: 3

Course Synopsis:

This course aims to develop an understanding of the role and implementation for ISO 14001 or Environmental Management System (EMS). The course focuses on the processes involved in ISO 14001/EMS, with a particular emphasis on technical requirements of the system, regulatory and community issues. Students will be able to interpret the requirements of ISO 14001/EMS and suggest the appropriate measures to reduce environmental degradation. Students will also be exposed to corporate environmental reporting which reflect the company commitment towards environmental conservation.

Course Outcomes:

1. Ability to assess the requirements for environmental management, monitoring and auditing.
2. Ability to evaluate the environmental aspect and impact of human work processes that may result in adverse effects on the environment
3. Ability to distinguish suitable tools and methods in making an ethical and responsible environmental decision

AMJ31704 KEJURUTERAAN AIR SISA [WASTEWATER ENGINEERING]

No of Credits: 4

Course Synopsis:

The aim of this course is to enable the students to have the comprehensive understanding on wastewater treatment processes, including preliminary, primary, secondary and tertiary treatments. In the first part of the course, student will be introduced to the wastewater sources, flow rate, treatment standard, location and plant hydraulics. The second part will be dealing with unit processes in primary treatment such as bar rack, screen, grit removal and sedimentation basin. The following part of the course containing the biological and chemical treatment processes of wastewater. By the end of the course, the student is expected to be familiarizing with the design principles of unit processes in wastewater treatment plant, applying all the basic knowledge in wastewater treatment theory.

Course Outcomes:

1. Ability to analyse the suitable unit process in wastewater engineering
2. Ability to design unit process applied in wastewater treatment
3. Ability to propose on engineering management principles and cost evaluation of the wastewater treatment plant/unit
4. Ability to conduct experiment associated with wastewater treatment process.

AMJ31804 KEJURUTERAAN KAWALAN PENCEMARAN UDARA [AIR POLLUTION CONTROL ENGINEERING]

No of Credits: 4

Course Synopsis:

Air pollution damages human health, ecosystems and vegetation, and is expected to worsen in many regions. Because Malaysia, an industrialising country, is developing quickly, it has to contend with increasing air pollution generated predominantly by transport and industry. Therefore, the Regulations of the Environmental Quality (Clean Air) Regulation 2014 was gazetted on June 2014, further make provisions for: monitoring of air pollution control system, maintenance of records, license required to contravene acceptable conditions for emitting emissions into atmosphere, offences and penalties. The regulation also highlighted that every premises shall be equipped with an air pollution control system in accordance with the specifications and ensure that all components of the air pollution control system are in good working condition. Thus, this course is developed to provide a comprehensive understanding of the causes and effects of air pollution, and the management measures and engineering technologies available for its control. In addition, meteorological aspects which control the transport of air pollutants will also be discussed in this course. The laboratory activities will be also incorporated to enhance the understanding on the key parameters that influence the air pollution control system and design.

Course Outcomes:

1. Ability to assess the behaviour of meteorological conditions and their influence in modelling the air dispersion via the Gaussian Plume Model
2. Ability to suggest key parameters that affect the collection efficiency and operating cost from the collection/removal efficiency calculation for a given pollutant (particulates and gases).
3. Ability to design the appropriate air pollution control system for a particular industrial air pollution problem
4. Ability to conclude the effect of key parameters that may influence air pollution control systems efficiencies for a particular application supported by research-based knowledge and research methodologies

AMJ31903 REKA BENTUK STRUKTUR [STRUCTURAL DESIGN]

No of Credits: 3

Course Synopsis:

This course covers the design process employing Eurocodes, particularly the Code of Practice for the Design of Concrete Structures (EC2), to facilitate the design of beams, columns, slabs, and foundations. Additionally, the roof truss design employs the Code of Practice for the Design of Steel Structures (EC3) procedure, specifically following the guidelines outlined.

Course Outcomes:

1. Ability to analyse the structure components for design purposes.
2. Ability to design the beam, column, slab, and foundations using Eurocode 2 and the roof truss using Eurocode 3

AMJ32003 PENILAIAN KESAN DAN RISIKO ALAM SEKITAR [ENVIRONMENTAL IMPACT AND RISK ASSESSMENT]

No of Credits: 3

Course Synopsis:

Upon completion of this course, students will be able to identify human activities that may generate adverse impacts on the environment, define the scope of environmental components involved, and evaluate the magnitude of these impacts in relation to their potential consequences on human well-being and the natural ecosystem.

Course Outcomes:

1. Ability to suggest and describe environmental scoping that reflect the prescribed activities
2. Ability to assess environmental and health impact and evaluate the magnitude of risks.

AMJ40403 PENGURUSAN PROJEK KEJURUTERAAN [ENGINEERING PROJECT MANAGEMENT]

No of Credits: 4

Course Synopsis:

This course will give exposure to project management knowledge from project management concept to project management process including project management skills together with exposure to decision making process involving engineering economics.

Course Outcomes:

1. Ability to analyze the process of engineering project management.
2. Ability to analyze engineering economic scenarios.
3. Ability to analyze and evaluate the process of project management and finance principle.

AMJ40503 REMEDIASI SEKITARAN [ENVIRONMENTAL REMEDIATION]

No of Credits: 3

Course Synopsis:

This course provides a general overview of the environmental remediation with emphasis on soil, groundwater and aquifer contaminants. The student will be taught about the source and behaviour of subsurface contaminants, analysis of contaminants and remediation planning. Student will also be enriched with bioremediation technologies to recover the contaminants.

Course Outcomes:

1. Ability to apply the concepts of bioremediation in different states of environment.
2. Ability to compose the appropriate strategies in soil and groundwater remediation techniques
3. Able to construct the planning solutions for the environmental remediation.

AMJ41503 REMOTE SENSING [PENDERIAAN JAUH]

No of Credits: 3

Course Synopsis:

The course introduces the principle of remote sensing for earth observation. Remote sensing is the acquisition of information about an object or phenomenon,

without making physical contact with the object. Space-based observation usually consists of measurements of electromagnetic (EM) radiation made by sensors at times and locations by the mechanics of satellite orbits. This course emphasizes the understanding of the remote sensing foundation and principle as well as the use of remote sensor data, image interpretation and processing techniques. Specifically, this includes introduction to electromagnetic energy, platforms and sensors also its applications. There are many applications of remote sensing in the domains of environmental science, policy and treaty verification, military applications, meteorology, oceanography, agriculture and ecology. The characteristic of various system in particular: passive and active remote sensing (physical principles of the visible, infrared and microwave section of the electromagnetic spectrum).

Course Outcomes:

1. Ability to evaluate the basic concept of remote sensing.
2. Ability to justify the various system of remote sensing.
3. Ability to manipulate environmental data by using digital image processing.

AMJ41703 KEJURUTERAAN AIR SISA TERMAJU [ADVANCED WASTEWATER ENGINEERING]

No of Credits: 3

Course Synopsis:

This course focuses on the design aspect of secondary and tertiary treatment units in wastewater treatment plant. The student will be learned on the process analysis and reactor design for various suspended growth and attached growth biological treatment processes. In addition, the student will be exposed to the design of the advanced wastewater treatment unit such as membrane filter, adsorber, ion exchanger and advanced oxidation process unit. By the end of the course, the student is expected to be able to design in detail the specific unit processes of secondary and tertiary treatment units in wastewater treatment plant.

Course Outcomes:

1. Ability to analyse basic knowledge of process analysis and reactor design toward in-depth understanding in wastewater treatment plant design.
2. Ability to propose the biological reactor for the secondary treatment unit in wastewater treatment plant.
3. Ability to propose the design of tertiary treatment unit in wastewater treatment plant.

AMJ42003 TENAGA LESTARI [SUSTAINABLE ENERGY]

No of Credits: 3

Course Synopsis:

This course assesses current and potential future energy systems, covering resources, extraction, conversion and end-use technologies, with emphasis on meeting regional and global energy needs in the 21st century in a sustainable manner. Various conventional and renewable energy production technologies, energy end-use practices and alternatives as well as consumption practices are also discussed. This includes the current usage of fossil fuels, solar and biomass energy. This course also assesses the current storage technology, which include fuel cells and batteries.

Course Outcomes:

1. Ability to analyse the concept of sustainable energy and relate to a real-world project
2. Ability to assess the potential of different renewable energy approaches as alternative energy
3. Ability to evaluate the present and future energy needs and options for alternative energy sources.

AMJ42403 PENGURUSAN SISA TERMAJU [ADVANCED WASTE MANAGEMENT]

No of Credits: 3

Course Synopsis:

This course aims to create awareness of advanced solid waste management and its role in mitigating environmental impacts. Students will learn green supply chain, eco-labelling, life-cycle assessment, and carbon credit, conduct waste audits, and explore minimization, recovery, and clean technologies for sustainable solid and scheduled waste management.

Course Outcomes:

1. Ability to explain the concept of green supply chain towards zero waste discharge, life-cycle assessment, carbon credit, and eco-labelling.
2. Ability to develop waste audits to identify the sources of wastes in a manufacturing industry.
3. Ability to propose clean technologies in process plants to meet sustainable development goals (SDGs).

AMJ42503 KEJURUTERAAN PENGANGKUTAN AND LEBUHRAYA [HIGHWAY AND TRANSPORTATION]

No of Credits: 3

Course Synopsis:

The course introduces the student with the basic and background of transportation which include traffic and highway engineering. The sub-topic discussed in traffic included The traffic part will cover the topics of road user characteristics, traffic operation, transportation planning, road geometrics, drainage and traffic impact assessment. The highway part covers the pavement material, the design of pavement and road & highway construction.

Course Outcomes:

1. Ability to apply the fundamental knowledge of traffic and highway engineering and construction.
2. Ability to analyse the traffic and highway engineering process and problems.
3. Ability to design the geometric highway facilities, pavement design.

AMJ47203 REKA BENTUK PROJEK KEJURUTERAAN ALAM SEKITAR BERINTEGRASI 1 [INTEGRATED ENVIRONMENTAL ENGINEERING DESIGN PROJECT 1]

No of Credits: 3

Course Synopsis:

AMJ47203 Integrated Environmental Engineering Design I is a capstone course designed to encourage students to conduct feasibility studies and preliminary design for real-world environmental engineering development projects. The feasibility study phase's objective is to identify the most optimal scheme from a technical, economic, environmental, and sustainability standpoint. The course enables students to design a typical environmental engineering project, and enhance the technical design, communication, and teamwork skills. At the end of this course, students will understand the critical nature of proposing a viable and workable development project and the value of integrating and synthesizing knowledge from various disciplines of environmental engineering.

Course Outcomes:

1. Ability to formulate complex engineering problems reaching substantial conclusion using first principles of natural sciences and mathematics, engineering fundamental and engineering specialist.
2. Ability to assess the specific design of complex unit process and unit operation in Environmental Engineering field.
3. Ability to apply the environmental and sustainability on the impact in the societal and environmental contexts.
4. Ability to function as an individual and as a member or leader in diverse teams.
5. Ability to communicate effectively on engineering activities, verbally and written, with the engineering community and with society at large.
6. Ability to evaluate knowledge and understanding of engineering management principles and economics evaluation to manage environmental engineering design project.

AMJ48203 REKA BENTUK PROJEK KEJURUTERAAN ALAM SEKITAR BERINTEGRASI 2 [INTEGRATED ENVIRONMENTAL ENGINEERING DESIGN PROJECT 2]

No of Credits: 3

Course Synopsis:

The AMJ48203 Integrated Environmental Engineering Design Project II is a team-based project that all final year students are required to complete. It is a continuation of the semester one project from AMJ47203 which will then be developed to the point of producing a detailed design that will be adopted during the final integrated design project phase, while considering environmental (sustainability), health and safety, ethics, and economic concerns. Students are expected to apply the knowledge and skills acquired throughout the course to the solution of a particular engineering problem. Additionally, students are expected to demonstrate proper ethics, professional responsibilities, and entrepreneurial abilities while collaborating on a multidisciplinary team to provide a sustainable solution. Finally, students will create the primary deliverables, which will include an explanation of design concepts, analysis and as well as design calculations. By the end of this course, students will understand the value of reviewing and selecting a feasible technical proposal, as well as the value of integrating and synthesizing knowledge from various disciplines of environmental engineering.

Course Outcomes:

1. Ability to design the specific complex unit process and unit operation in Environmental Engineering field.
2. Ability to use the design software(s) to assist the complex environmental engineering design work.
3. Ability to assess the societal and cultural issues as well as public health and safety responsibilities of a professional engineer practise in reporting the environmental engineering design
4. Ability to function as an individual and as a member or leader in diverse teams.
5. Ability to communicate effectively on engineering activities, verbally and written, with the engineering community and with society at large.
6. Ability to evaluate knowledge and understanding of engineering management principles and economics evaluation to manage environmental engineering design project.

UR6526003

Bachelor of Civil Engineering Technology (Construction) with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Engineering technology graduates engaged in the field of civil engineering technology as demonstrated through career advancement

PEO 2

Engineering technology graduates who are members and contribute to professional society

PEO 3

Engineering technology graduates embracing in life-long learning or pursuing continuing education opportunities

PEO 4

Engineering technology graduates who are technopreneurs

PROGRAMME OUTCOMES (PO)

PO1

Knowledge: Apply knowledge of mathematics, natural science, computing and engineering fundamentals and an engineering specialization to defined and applied engineering procedures, processes, systems or methodologies.

PO2

Problem Analysis: Identify, formulate, research literature and analyse broadly-defined engineering problems reaching substantiated conclusions using analytical tools appropriate to their discipline or area of specialisation with considerations for sustainable development.

PO3

Design/ development of solutions: Design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO4

Investigation: C Conduct investigations of broadly-defined engineering problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions.

PO5

Tool Usage: Select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to broadly-defined engineering problems.

PO6

The Engineering Technologist and the World: Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving broadly-defined engineering problems.

PO7

Ethics: Understand and commit to professional ethics and norms of engineering technology practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO8

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings.

PO9

Communications: Communicate effectively and inclusively on broadly-defined engineering activities with the engineering community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO10

Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making to one's own work, as a member and leader in a team and to manage projects in multidisciplinary environments.

PO11

Lifelong Learning: Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of new specialist technologies.

PO12

Personal and Entrepreneurial Skills: Demonstrate ability to engage effectively in self-improvement initiatives for career, professional or educational goals and engage in entrepreneurial activities.

CURRICULUM STRUCTURE
UR6526003 BACHELOR OF CIVIL ENGINEERING TECHNOLOGY (CONSTRUCTION) WITH HONOURS INTAKE 2025/2026

YEAR	FIRST		SECOND		THIRD		FOURTH	
SEMESTER	1	2	3	4	5	6	7	8
DISCIPLINE CORE & ELECTIVE COURSES (115 CREDITS)	AMK10102 ^a Fundamental of Engineering Mechanics	AMK10503 ^b Fundamental of Solid Mechanics	AMK 20103 ^e Structural Theory	AMK20603 ^f Structural Analysis	AMK30103 Structural Design 1	AMK30703 Structural Design 2	AMK40103 Industrialized Building Construction Technology	AMK49912 Industrial Training
	AMK10203 Physic Technology	AMK10603 ^c Fundamental of Fluid Mechanics	AMK 20203 ^d Hydraulic and Hydrology	AMK20703 Construction Project Management	AMK30203 Construction Technology 1	AMK30803 Construction Technology 2	AMK40204 Construction Technology Integrated Project	
	AMK10302 Introduction to Civil Engineering Technology	AMK10703 Geomatic	AMK20303 ^g Soil Mechanics	AMK20803 Construction Cost Estimation	AMK30303 Highway and Traffic Technology	AMK30004 ⁱ Bachelor Degree Project 1	AMK40006 ^j Bachelor Degree Project 2	
	AMK10402 Technical Drawing	AMK10802 Construction Drawing	AMK20403 Construction Materials	AMK21003 Management of Occupational Safety and Health	AMK30402 Contract and Site Administration	AMK30903 Basic Environmental Engineering and Management	AMK4XX03 Elective III	
			AMK21203 Building Services Technology	AMK21104 ^h Geotechnics	AMK31203 Civil Engineering Technologist in Society	AMK31403 Building Operation and Maintenance		
					AMK3XX03 Elective I	AMK3XX03 Elective II		
COMMON CORE COURSES (9 CREDITS)	IMQ11103 Mathematics for Engineering Technology 1	IMQ11203 Mathematics for Engineering Technology 2	IMQ21303 Mathematics for Engineering Technology 3					
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMU13002 Philosophy and Current Issues	SMB41002 University Malay Language ^[3]	SMB31202 English for Technical Communication	SMU13102 Appreciation of Ethics and Civilization	SMU22402 Engineering Entrepreneurship			
	SMU12102 Integrity and Anti- Corruption ^[4]	SMB20102 English for General Communication ^[2]						
	SMZXX01 Co-Curriculum 1	SMZ2XX01 Co-Curriculum 2						
TOTAL CREDITS (140 CREDITS)	19	19	19	20	19	16	16	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]							

Elective I : AMK30503 Financial & Human Resource Management, AMK30603 Building Survey

Elective II : AMK31003 Construction Technology of Highway & Bridge, AMK31103 Construction Risk Management

Elective III : AMK40303 Advanced Structural Design, AMK40403 Construction Technology of Highrise Building, AMK40503 Building Maintenance Information System, AMK40603 Structural Inspection and Repair

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

COURSE ^a IS A PREREQUISITE TO COURSE ^b
 COURSE ^c IS A PREREQUISITE TO COURSE ^d
 COURSE ^e IS A PREREQUISITE TO COURSE ^f
 COURSE ^g IS A PREREQUISITE TO COURSE ^h
 COURSE ⁱ IS A PREREQUISITE TO COURSE ^j

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
AMK10102	Asas Kejuruteraan Mekanik [Fundamental of Engineering Mechanics]	SDG 9
AMK10203	Teknologi Fizik [Physic Technology]	SDG 7
AMK10302	Pengenalan kepada Teknologi Kejuruteraan Awam [Introduction to Civil Engineering Technology]	SDG 9,SDG 7
AMK10402	Lukisan Teknikal [Technical Drawing]	SDG 9
AMK10503	Asas Mekanik Pepejal [Fundamental of Solid Mechanics]	SDG 9
AMK10603	Asas Mekanik Bendalir [Fundamental of Fluid Mechanics]	SDG 9
AMK10703	Geomatik [Geomatic]	SDG 9
AMK10802	Lukisan Pembinaan [Construction Drawing]	SDG 9
AMK20103	Teori Struktur [Structural Theory]	SDG 11
AMK20203	Hidraulik dan Hidrologi [Hydrology and Hydraulic]	SDG 6
AMK20303	Mekanik Tanah [Soil Mechanics]	SDG 9,SDG 11
AMK20403	Bahan Binaan [Construction Materials]	SDG 12
AMK20603	Analisis Struktur [Structural Analysis]	SDG 11
AMK20703	Pengurusan Projek Pembinaan [Construction Project Management]	SDG 9,SDG 11
AMK20803	Angggaran Nilai Pembinaan [Construction Value Estimation]	SDG 9,SDG 11
AMK21003	Pengurusan Keselamatan dan Kesihatan Pekerjaan [Management of Occupational Safety and Health]	SDG 3, SDG 9, SDG 16
AMK21104	Geoteknik [Geotechnics]	SDG 9,SDG 11

COURSE CODE	COURSE NAME	SDG
AMK21203	Teknologi Khidmat Bangunan [Building Services Technology]	SDG 6,SDG 7, SDG 11
AMK30004	Projek Sarjana Muda 1 [Bachelor Degree Project 1]	SDG 4, SDG 9
AMK30103	Rekabentuk Struktur 1 [Structural Design 1]	SDG 11
AMK30203	Teknologi Pembinaan 1 [Construction Technology 1]	SDG 9,SDG 11
AMK30303	Teknologi Lebuhraya dan Lalulintas [Traffic and Highway Technology]	SDG 9
AMK30402	Pentadbiran Kontrak dan Tapak [Contract and Site Administration]	SDG 4, SDG 9, SDG 11
AMK30503	Pengurusan Kewangan dan Sumber Manusia [Financial and Human Resource Management]	SDG 11
AMK30603	Ukur Bangunan [Building Surveying]	SDG 4
AMK30703	Rekabentuk Struktur 2 [Structural Design 2]	SDG 11
AMK30803	Teknologi Pembinaan 2 [Construction Technology 2]	SDG 9,SDG 11
AMK30903	Asas Kejuruteraan dan Pengurusan Alam Sekitar [Basic Environmental Engineering and Management]	SDG 6, SDG 11, SDG 12, SDG 13
AMK31103	Pengurusan Risiko Pembinaan [Construction Risk Management]	SDG 8, SDG 9, SDG 11
AMK31203	Juruteknologi Kejuruteraan Awam dalam Masyarakat [Civil Engineering Technologist in Society]	SDG 8, SDG 9, SDG 11
AMK31403	Penyelenggaraan dan Operasi Bangunan [Building Operation and Maintenance]	SDG 6,SDG 7, SDG 11
AMK40103	Teknologi Pembinaan Bangunan Berindustri [Industrial Building Construction Technology]	SDG 9, SDG 11, SDG 12
AMK40204	Teknologi Pembinaan Projek Bersepadu [Construction Technology Integrated Project]	SDG 9,SDG 11
AMK40006	Projek Sarjana Muda 2 [Bachelor Degree Project 2]	SDG 9
AMK40303	Rekabentuk Struktur Termaju [Advanced Structure Design]	SDG 9,SDG 11

COURSE CODE	COURSE NAME	SDG
AMK31003	Teknologi Lebuhraya dan Jambatan [Highway and Bridge Technology]	SDG 9,SDG 11
AMK40403	Teknologi Pembinaan Bangunan Tinggi [Construction Technology of Highrise Building]	SDG 9, SDG 11
AMK40503	Sistem Maklumat Penyelenggaraan Bangunan [Building Maintenance Information System]	SDG 9
AMK40603	Pemeriksaan Dan Pembaikan Struktur [Structural Assessment and Repair]	SDG 9, SDG 11
AMK49912	Latihan Industri [Industrial Training]	SDG 4, SDG 8, SDG 9

AMK10102 ASAS KEJURUTERAAN MEKANIK [FUNDAMENTAL OF ENGINEERING MECHANICS]

No of Credits: 2

Course Synopsis:

The aim of this course is to introduce the students to principals of engineering mechanics. Two portion of engineering mechanics (static and dynamic) will be covered in this course. Force Vector, Equilibrium of particle and rigid body, moment of inertia and kinematic of particle are some of the major topics which will be taught in this course.

Course Outcomes:

1. Ability to analyse problems involving stationary objects using knowledge of engineering mechanics
2. Ability to analyse problems involving objects in motion using knowledge of engineering mechanics.

AMK10203 TEKNOLOGI FIZIK [PHYSIC TECHNOLOGY]

No of Credit: 3

Course Synopsis:

This course equips students with basic concept on physics and its application especially in construction field. At the end of this course students must be able to calculate and solve basic physics problems that related to heat, lighting, electricity, magnetism and acoustics. The students must be able to demonstrate the theory and its applications.

Course Outcomes:

1. Ability to differentiate the concept of magnetic field and electromagnetic force, Ohms law and Kirchhoff's law, basic mechanism of heat transfer and characteristic of sound.
2. Ability to evaluate the concept of magnetic field, electromagnetic force, interference of sound waves, Doppler effect, and the heat transfer by conduction through the flat the slab/wall, hollow cylinder, solid and so on.
3. Ability to perform the experiment according to the fundamental of electricity Application of measuring instrument (Ohms law), series circuits, parallel circuits, heat transfer (Thermal conductivity, Measuring light intensity and acoustics, sound and wave).

AMK10302 PENGENALAN KEPADA TEKNOLOGI KEJURUTERAAN AWAM [INTRODUCTION TO CIVIL ENGINEERING TECHNOLOGY]

No of Credits: 2

Course Synopsis:

Introduces basic skills and knowledge required for a career in civil engineering technology. This course is a cross section of topics in contemporary civil engineering with their routine works by providing neat sketches and illustrations with practical problems. The syllabus also introduces the requirement of authority liaison, construction business and value engineering for future challenges in construction industries.

Course Outcomes:

1. Ability to outline the role of Civil Engineering technology
2. Ability to assess construction work within various branches of Civil Engineering technology
3. Ability to build a house model consists of structural elements and infrastructure based on drawing in a group activity
4. Ability to present sequence concept of construction work through presentation

AMK10402 LUKISAN TEKNIK [TECHNICAL DRAWING]

No of Credits: 2

Course Synopsis:

This course introduces student to the fundamental knowledge and skills on manual and computer aided drafting. Throughout the course, students will be exposed to the knowledge and techniques that relates to manual drafting on freehand sketching, lettering, geometry, projection, isometric and oblique drawing. Other than that, student will learnt on the fundamental techniques of using computer aided software in proving basic geometry and projection.

Course Outcomes:

1. Ability to carry out applicable techniques in completing the geometry dra01-wing of manual drafting.
2. Ability to integrate the drawing information in completing the orthographic projection, isometric and oblique drawing of manual drafting
3. Ability to demonstrate the appropriate drafting techniques on preparing basic geometry and drawing projection by using computer aided software.

AMK10503 ASAS MEKANIK PEPEJAL [FUNDAMENTAL OF SOLID MECHANICS]

No of Credits: 3

Course Synopsis:

The aim of this course is to teach student to determine the stress, deformation and reaction of structural member under four basic external loads i.e. shear force, moment, torque and axial forces. This course only covers for prismatic cross section and homogeneous structural members in elastic condition. This knowledge is essential for civil engineering technology students before they can analyze more complex civil engineering structural system such as frames and truss that will be taught in structural theory and structural analysis.

Course Outcomes:

1. Ability to calculate the deformation, shear and bending moment, stress and strain reaction of structural member under axial load.
2. Ability to demonstrate experiment of Axial Forces in Truss, Euler's Strut, Torsion, Bending Moment in Beam, Flexural Behaviour of Beam and Support Reactions and Bending Moment in Frames by using Laboratory manual.
3. Ability to communicate verbally during laboratory interview session
4. Ability to cooperate in group activities for laboratory session

AMK10603 ASAS MEKANIK BENDALIR [FUNDAMENTAL OF FLUID MECHANICS]

No of Credits: 3

Course Synopsis:

This course provides student knowledge in the patterns of movement of fluid particles. By the end of this subject student will be expected to understand the basic characteristics of fluid mechanics and fluid statics, be able to analyze the hydrostatics and basic hydrodynamics in fluid. Student also will be able to analyze and differentiate between the flow in pipe and flow in open channels.

Course Outcomes:

1. Ability to assess various fluid properties, static theories, mechanic theories and pipeline system of fluids under rest condition and the application of the law of force and motion.
2. Ability to perform lab work/experiment of specific gravity of fluid, viscosity, centre of pressure, buoyancy, Bernoulli's theorem, and friction loss in pipes by using lab manual.
3. Ability to assist in a group activity during lab session with experiments involving specific gravity of fluid, viscosity, centre of pressure, buoyancy,

- Bernoulli's theorem, and friction loss in pipes.
4. Ability to explain to instructor in presentation of mini project.

AMK10703 GEOMATIK [GEOMATIC]

No of Credits: 3

Course Synopsis:

This course introduces basic concepts of surveying including the basic of surveying, levelling, distance measurement, angle, and traverse survey. In keeping with the goal of providing an up-to-date presentation of surveying equipment and procedures, total stations are stressed as the instruments for making angle and distance observation as well as the Electronic Distance Measurement (EDM). In addition, practical skills on the use and care of geomatic instruments are essential to experience the real working environment.

Course Outcomes:

1. Ability to discuss in written and verbal, fundamental concept of geomatic consist of vertical and horizontal control, angle measurement, traversing, tacheometry and cut and fill
2. Ability to solve in written, geomatic measurement problem by applying appropriate technique in geomatic
3. Ability to conduct survey using appropriate geomatics instrument according to professional practice

AMK10802 LUKISAN PEMBINAAN [CONSTRUCTION DRAWING]

No of Credits: 2

Course Synopsis:

This course equips student with drafting skills in preparing the construction drawing either manually or by computer-aided software. Besides that, it enables student to interpret the details of construction drawing which has been used for the purpose of building construction process.

Course Outcomes:

1. Ability to interpret the construction drawing of a building.
2. Ability to adapt with Computer-Aided Software in preparing construction drawing of a building.

AMK20103 TEORI STRUKTUR [STRUCTURAL THEORY]

No of credits: 3

Course Synopsis:

This course provides students with a clear and through presentation of the theory and application of structural analysis as it applies to beams, trusses, and frames. It introduces analysis of statically determinate structures for beams, trusses and frames. Besides that, it also introduces deformations analysis of statically determinate structures using Virtual Work Method for trusses, beams and frames.

Course Outcomes:

1. Ability to evaluate the internal member forces and deformations for determinate structural systems.
2. Ability to propose a sustainable bridge model based on determinate structural system of trusses.

AMK20203 HIDRAULIK DAN HIDROLOGI [HYDRAULIC AND HYDROLOGY]

No of credits: 3

Course Synopsis:

This course builds on the fundamentals given in Fluid Mechanics and reinforces students' understanding of the behaviour of fluids, through the study of the flow of water in typical civil engineering applications. The course covers the study of steady incompressible flow in pipelines and pipe networks, uniform and non-uniform flow in open channels. This course also will be introduced the hydrology theory derived from the natural process of the hydrological cycle. Hydrology introduces the application of hydrological theory to solve the problem in water resources engineering. Planning, development, management, and design of water resources projects require knowledge in hydrology.

Course Outcomes:

1. Ability to analyse the concept of hydraulics and hydrology
2. Ability to evaluate the problem related to hydraulics and hydrology using theories and principles
3. Ability to perform the experiment associated with hydrology and hydraulics using lab manual

AMK20303 MEKANIK TANAH [SOIL MECHANICS]

No of credits: 3

Course Synopsis:

The course introduces the students with the basic and background of the properties and behaviour of soil deposits and the applications of soil mechanics theory. It includes brief introduction on physical characteristics of soils. Also includes identification, classification and description of rock and soil for engineering purposes. Application of mechanics on soil such as phase relationship, compaction, permeability and seepage, stresses and effective stresses, shear strength and consolidation are also covered.

Course Outcomes:

1. Ability to analyse the fundamental concept consists in soil mechanics including soil characteristics, seepage, stress distribution, shear strength, compaction, and consolidation.
2. Ability to evaluate engineering problems related to soil using appropriate method and principal of soil mechanics.
3. Ability to perform experiment related to soil testing according to BS1377

AMK20403 BAHAN BINAAN [CONSTRUCTION MATERIALS]

No of credits: 3

Course Synopsis:

This course provides an introductory overview of the various materials used in construction. Common construction methods are introduced and building details are explored. Students have the opportunity to experience material capacity and behaviour as well as construction methods in demonstrations and lab experiments. Furthermore, material applications and detailing in structural and non-structural building components are explored. Resulting from this course, students will gain a comparative knowledge of material properties and possible applications in construction.

Course Outcomes:

1. Ability to analyse types of material used in concrete and their manufacturing process.
2. Ability to evaluate other construction material including steel, timber, brick, geopolymer and their properties.
3. Ability to perform experiment of physical and mechanical properties of construction material.

AMK21203 TEKNOLOGI KHIDMAT BANGUNAN [BUILDING SERVICES TECHNOLOGY]

No of credits: 3

Course Synopsis:

This course introduces students to the principles and applications of building services technology within the context of building development and facilities management in Malaysia. It covers essential engineering and technology systems that support the functionality, safety, and comfort of buildings, including electrical systems, lighting, water supply, sanitation, HVAC (Heating, Ventilation, and Air Conditioning), fire protection systems, and other important services for a liveability of a building. Students will gain exposure to Malaysian standards and codes of practice, such as the Uniform Building By-Laws (UBBL), Malaysian Standards (MS), and guidelines from regulatory bodies including the ST, Public Works Department Malaysia, and related government's agencies in relation to building construction and maintenance (M&E). The course emphasizes the analysis of basic design, system integration, regulatory compliance, and operational effectiveness of building services within Malaysia's tropical and urban environment. Sustainability, energy efficiency, and the adoption of smart building technologies are also key focus areas. This course is designed for students involved in building engineering, facilities management, and sustainable infrastructure development as an overview and exposure for Civil Engineering Technology (Construction) graduates.

Course Outcomes:

1. Evaluate the design suitability and regulatory compliance of core building services systems based on Malaysian standards and their contribution to sustainable building services
2. technologies, reliable and affordable.
3. Justify the selection and integration of energy-efficient, low- emission, and smart building technologies in building projects to support sustainable cities and communities while enhancing user safety and environmental performance.
4. Design and propose an integrated, resilient building services plan for a development project, demonstrating adherence to Malaysian regulations in mechanical & electrical services.
5. Demonstrate the ability to operate and inspect selected building services components and systems in accordance with Malaysian codes of practice and sustainability targets.

AMK20603 ANALISIS STRUKTUR [STRUCTURAL ANALYSIS]

No of credits: 3

Course Synopsis:

This course provides students with a clear theory and application of structural analysis as it applies to beams, trusses and frames. It introduces analysis of statically indeterminate structures for beams, trusses and frames. Two methods are introduced in this analysis of statically indeterminate structures using method of consistent deformations and moment distribution.

Course Outcomes:

1. Ability to evaluate the internal member forces of statically indeterminate structure using method of consistent deformation and moment distribution method
2. Ability to analyze indeterminate structural system by using software / computer approach based on stiffness method.

AMK20703 PENGURUSAN PROJEK PEMBINAAN [CONSTRUCTION PROJECT MANAGEMENT]

No of credits: 3

Course Synopsis:

This course aims to teach students on how to apply the project management skills throughout overall project life cycle. The role of engineering management is to assess the appropriateness of a given project, estimate its value, and justify it from an engineering standpoint. At the end of the course, students will be able to identify and discuss issues and challenges faced by engineers relating to project management in project life cycle.

Course Outcomes:

1. Ability to evaluate the process of project management, work plans of the construction cycle, construction procurement and project cost estimation.
2. Ability to formulate project management activities using appropriate tools (Microsoft Project).
3. Ability to apply project management tools for coordinating all activities in site construction.
4. Ability to demonstrate proper project management activities with professional ethics and norms based on project management process.

AMK20803 ANGGARAN KOS PEMBINAAN [CONSTRUCTION COST ESTIMATION]

No of credits: 3

Course Synopsis:

This course will lead the students to be able to implement an appropriate technique to forecast the possible costs incurred for a building or construction project via systematic calculations employing various methods to control the construction project cost at the design stage before any drawings have embarked upon. The procedure is determined through an extensive analysis of data of a building that has an influence on its cost through understanding of construction methods, the general principle of measurement and pricing. At the end of the course, students will be able to determine and produce an accurate construction cost estimation before the construction take place.

Course Outcomes:

1. Ability to discuss the appropriate methods of estimating to predict the project cost and the general principles of measuring work and preparing the quantity take offs.
2. Ability to analyse the quantity and cost of the building elements based on the Standard Method of Measurement of Building Works (SMM) and Malaysian Civil Engineering Standard Method of Measurement (My-CESMM).
3. Ability to cooperate with the industry players in order to get the building elements price rates based on the materials, labours, machineries, profit and any related cost.
4. Ability to utilise the procedure and the process by using the ms-excel or any relevant software available.

AMK21003 PENGURUSAN KESELAMATAN DAN KESIHATAN PEKERJAAN [MANAGEMENT OF OCCUPATIONAL SAFETY AND HEALTH]

No of credits: 3

Course Synopsis:

This course will focus on the aspect of establishing safety culture with regards to construction industry. Students will be exposed to OSH management system as well as OSH laws that govern the industries in Malaysia (e.g. OSHA 1994 and FMA 1967) and other relevant acts (e.g. BOMBA, UBBL, EQA 1974). They will learn to interpret the requirements stipulated under these documents and be able to apply to working environment. This course will also provide students the necessary information in identifying hazards, perform risk assessment to determine the degree of hazard that may be harmful to humans in the workplace and lastly,

develop mitigation plan/action to control or preventing the hazards and risks.

Course Outcomes:

1. Ability to analyze the legal requirement of occupational safety and health laws and regulations. And outline the OSH management system in managing the hazards and risks in the workplace.
2. Ability to assess the occupational hazards and associated risks at the workplace. And evaluate effective remedial or mitigation measures to control the hazards and risks at the workplace.
3. Ability to perform - OSH management system, OSH laws, HIRARC, and site safety assessment (e.g., ergonomics, noise, and chemical hazard assessment) in construction safety.
4. Ability to work effectively in group work.

AMK21104 GEOTEKNIK [GEOTECHNICS]

No of credits: 4

Course Synopsis:

This course provides further discussion and explanation related to soil engineering. The topics covered in this course includes site investigation, bearing capacity and design of shallow foundation and pile foundation, lateral earth pressure, and slope stability. At the end of the course, students should be able to apply theory and practical to solve problem related to geotechnical engineering.

Course Outcomes:

1. Ability to explain main component in geotechnical engineering consist of site investigation, foundation, lateral earth pressure and slope stability.
2. Ability to analyze soil bearing capacity, active and passive earth pressure, and slope stability.
3. Ability to design foundation and earth retaining structure using principle of geotechnical engineering.
4. Ability to conduct geotechnical laboratory test using appropriate instrument according to BS1377.

AMK30004 PROJEK SARJANA MUDA 1 [BACHELOR DEGREE PROJECT 1]

No of credits: 4

Course Synopsis:

This course is an individual research project in connection with a special engineering problem. The project undertaken may fall under the following areas: experimental, computer simulation, hardware or software development, device fabrication and case/field study. Students will be given two semesters to work on the task that is related to their field of interest. At the end of the project, students are compulsory to prepare the report and present the findings of the project conducted.

Course Outcomes:

1. Ability to prepare literature review based on area of specification through written research proposal and reports.
2. Ability to propose analytical and critical thinking in identifying and solving problems that relates to the area of specification through written research proposal and progress report.
3. Ability to design suitable research method according to area of specification in the written research proposal and progress report.
4. Ability to adapt engineering tools in preparing standard requirements of research writing.
5. Ability to defend the research proposal and progress report.
6. Ability to arrange systematically and independently the research project with professional ethics and norms based on standard proceeding and protocols.

AMK30103 REKABENTUK STRUKTUR 1 [STRUCTURAL DESIGN 1]

No of credits: 3

Course Synopsis:

This course introduces limit state design for reinforced concrete structure. The analyse of structure and section are introduced to assist in the design of reinforced concrete structure. At the end of the course, the students are expected to be able to design reinforced concrete structure according to Eurocode 2.

Course Outcomes:

1. Ability to analyze of structure and section at Limit State
2. Ability to design reinforced concrete structure according to Eurocode 2.
3. Ability to apply modern tool for analyse and/or design reinforced concrete structure

AMK30203 TEKNOLOGI PEMBINAAN 1 [CONSTRUCTION TECHNOLOGY 1]

No of credits: 3

Course Synopsis:

Construction Technology I is a basic knowledge over the whole field of building activities, to enable the technologist to hold and understand in the scope of work of carpentry, substructure & superstructure, framed building, finishes, internal fixtures and fittings, insulation, roofing, services, and plant and equipment in addition to Building Information Modelling (BIM).

Course Outcomes:

1. Ability to discuss building construction technology (masonry, substructure & superstructure, framed building, finishes, internal fixtures and fittings, insulation, roofing, services and plant & equipment).
2. Ability to demonstrate Building Information Modeling (BIM) using appropriate tool.
3. Ability to adapt building Information Modeling (BIM) tool for coordinating & interfacing work in construction

AMK30303 TEKNOLOGI LEBUHRAYA DAN LALULINTAS [TRAFFIC AND HIGHWAY TECHNOLOGY]

No of credits: 3

Course Synopsis:

The course introduces the student with the basic and background of traffic, road, and highway technologies. The sub-topic discussed in road and highway technologies are pavement material design and evaluations, pavement construction technologies, pavement structural thickness design, pavement evaluation, and pavement maintenance. For traffic technologies, major topic includes driver behaviour and traffic interactions, fundamental theory of speed-flow-density relationship, road performance analysis, traffic data collection & analysis, design of traffic signal control system, and highway geometric design.

Course Outcomes:

1. Ability to discuss main component in highway and traffic technology
2. Ability to evaluate pavement structure design and traffic control system using appropriate standard
3. Ability to perform the experiment on road/highway and traffic according to appropriate standard and codes.

AMK30402 PENTADBIRAN KONTRAK DAN TAPAK [CONTRACT AND SITE ADMINISTRATION]

No of credits: 2

Course Synopsis:

This course introduces the administration of a project including award of the contract, progress claims, instructions, variations, certificates, claims, cash flow and disputes resolution. At the end of the course, the students are expected to be able to identify the use of various construction documents including the administrative process with relate to practice of value engineering and use their knowledge in site administration to promote ethical and better image of the construction industry.

Course Outcomes:

1. Ability to apply the principles of of contract and site administration management, in related to civil engineering technology construction projects.
2. Ability to analyse the contractual problems of contract and site administration, in related to civil engineering technology construction projects.
3. Ability to evaluate the contractual elements and site administration, in related to civil engineering technology project management and finance

AMK30503 PENGURUSAN KEWANGAN DAN SUMBER MANUSIA [FINANCIAL AND HUMAN RESOURCE MANAGEMENT]

No of credits: 3

Course Synopsis:

This course aims to provide knowledge on financial and human resources management techniques and skills that are in line with the construction industry needs of competent construction players. This course will enable students to be exposed to the concept and foundation of decision making in financial and engineering economics such as economic equivalence, interest formula, and methods of evaluation such as present worth, annual worth, and rate of return analysis. In addition, students will be exposed to the related disciplines in human resources management as guidance for managing people in an organization.

Course Outcomes:

1. Ability to understand the concepts of human resources management and organizational behaviour needs.

2. Ability to apply the related disciplines needed in order to manage people in the construction project organization.
3. Ability to analyze the project financial and engineering economics concept and principles in the construction project organization
4. Ability to respond effectively to the functions of financial and human resources management in construction project organization planning.

AMK30603 UKUR BANGUNAN [BUILDING SURVEYING]

No of credits: 3

Course Synopsis:

In the present, practical guide in Building Surveying is important in construction industry. In this course, students will be taught to identify common defects in building structures, repairs which may be undertaken, methodology used based on the condition of the building. At the end of the semester, students shall be able to prepare a building survey report that includes investigations and recommendations to the existing building.

Course Outcomes:

1. Ability to classify building components and common defects based on their function, location, and visible characteristics.
2. Ability to apply appropriate tools and methodologies in building surveys based on the type of building and survey objectives.
3. Ability to assess the condition of buildings through visual inspection and basic measurements.
4. Ability to prepare a structured building survey report that includes findings, analysis, and recommendations for further action.

AMK30703 REKABENTUK STRUKTUR 2 [STRUCTURAL DESIGN 2]

No of credits: 3

Course Synopsis:

This course aims to introduce students to the fundamental principles of structural behaviour and design criteria of steel and timber structure. This course delivers knowledge and understanding on both analysis and design aspects. Students will be able to design steel and timber axial member, flexural member, and connection for steel and timber element.

Course Outcomes:

1. Ability to manually analyse steel and timber structural elements subjected to permanent and variable actions as recommended by Eurocode 1
2. Ability to manually design steel and timber structural elements using Eurocode 3 and Eurocode 5
3. Ability to produce detail drawing by using computerized assisted software for steel and timber structural elements based on design calculation
4. Ability to present based on design and detail drawing for steel and timber structural element

AMK30803 TEKNOLOGI PEMBINAAN 2 [CONSTRUCTION TECHNOLOGY 2]

No of credits: 3

Course Synopsis:

Construction Technology 2 is an instructional program that prepares an individual for employment or continued education in the drainage systems, Bridge Construction Technology, Railway Construction Technology, Highway Construction Technology, Machineries to launch beam and gantry, water reticulation and sewerage systems, ground treatment and slope stabilization, underground construction technology, Instrumentation, Non-Destructive Tests and Destructive Tests. Construction Technology 2 is a continuation of Construction Technology 1.

Course Outcomes:

1. Ability to evaluate developments and technologies related to various area in construction
2. Ability to demonstrate about Instrumentation for Scaffolding, Formwork construction, Rebar tying and coring works
3. Ability to PRESENT about Instrumentation for Scaffolding work, Formwork construction, Rebar tying & Coring work.

AMK30903 ASAS KEJURUTERAAN DAN PENGURUSAN ALAM SEKITAR [BASIC ENVIRONMENTAL ENGINEERING AND MANAGEMENT]

No of credits: 3

Course Synopsis:

This course focusses on basic elements of environmental engineering and management. Basic principles such as parameters and design consideration in environmental engineering for water and wastewater engineering, air and noise pollution engineering and solid waste management will be taught. Students will be introduced to Environmental Management System (EMS) and ISO 14000 and Environmental Impact Assessment (EIA) including Environmental Management Plan (EMP). Students will be also introduced to the environmental parameters measurement and monitoring systems in laboratory and field works.

Course Outcomes:

1. Ability to apply the basic principles in water and wastewater engineering, air & noise pollution engineering and solid waste management to solve environmental problems.
2. Ability to conduct lab work/ experiment for environmental quality monitoring
3. Ability to demonstrate the requirements in implementing an ISO 14001 and EMS in environmental management.
4. Ability to analyze EIA and & EMP processes & methods for environmental protection

AMK31003 TEKNOLOGI LEBUHRAYA DAN JAMBATAN [HIGHWAY AND BRIDGE TECHNOLOGY]

No of credits: 3

Course Synopsis:

This course introduces the advance knowledge of road, highway and bridge technologies. The subtopic included are Construction of Pavement, Maintenance and Rehabilitation of Pavement, Road Drainage System, Road Furniture, Fundamental of Bridge, Construction of Bridge Substructure, Construction of Bridge Superstructure, Maintenance and Rehabilitation of Bridge.

Course Outcomes:

1. Ability to differentiate in detail current main components and established construction technique for highway and bridge.
2. Ability to propose sustainable solution in highway and bridge construction system using proven technology.
3. Ability to solve mini project assessment in highway and bridge construction technology

AMK31103 PENGURUSAN RISIKO PEMBINAAN [CONSTRUCTION RISK MANAGEMENT]

No of credits: 3

Course Synopsis:

Managing risk is a critical function to ensure successful construction projects. This course will provide students a solid foundation in the concepts, tools and techniques of construction risk management. The course draws from perspective of the construction industry to give students a well-rounded approach to this process and an understanding of the rationale used in developing effective risk management systems.

Course Outcomes:

1. Ability to describe in detail the basic principles of risk management according to acknowledged standard.
2. Ability to thoroughly analyze the risk in construction projects according to established method.
3. Ability to critically elaborate the risk in construction projects according to project scenario and based on recognized risk management process and method.

AMK31203 JURUTEKNOLOGI KEJURUTERAAN AWAM DALAM MASYARAKAT [CIVIL ENGINEERING TECHNOLOGIST IN SOCIETY]

No of credits: 3

Course Synopsis:

This course aims to explain the main concepts in engineering and technology ethics and risk management as well as to expose the students to basic of law in the engineering and technology context. The course presents the introductory nature to enable technologists to appreciate factors that have to be taken into account in decision-making. Examine and assess issues and challenges faced by technologists relating to engineering and technology ethics, risk management and to understand the legal requirements related engineering and technology field.

Course Outcomes:

1. Ability to examine the issues and challenges of engineering and technology ethics
2. Ability to assess hazards, the function of risk management and occupational safety and health (OSHA).
3. Ability to integrate professional Commitment aspects and procedures of legal in engineering and technology issues.

AMK31403 PENYELENGGARAAN DAN OPERASI BANGUNAN [BUILDING OPERATION AND MAINTENANCE]

No of credits: 3

Course Synopsis:

This course introduces students to the core principles, competencies, and practices of Integrated Facility Management (IFM) within the context of Malaysia's built environment. It is structured around globally recognized standards including the 11 competency areas outlined by the International Facility Management Association (IFMA) and the national training framework established by CIDB Malaysia. Students will explore key facility management functions including operations and maintenance, energy management, sustainability, safety, emergency response, administration, communication, and interdisciplinary teamwork. The course emphasizes the integration of digital tools and monitoring systems to produce Energy Audit Report, optimize building performance while promoting ethical practice and compliance with statutory regulations. Special focus is given to sustainable water and energy management (SDG 6 and 7), as well as the role of facility management in developing smart, inclusive, and resilient urban spaces (SDG 11). Through practical case studies and project-based learning, students will gain the skills required to coordinate resources, implement effective FM strategies, and support long-term asset performance in both public and private sector facilities.

Course Outcomes:

1. Evaluate facility management functions—including operations, maintenance, sustainability, and risk management—based on national standards and global best practices to enhance resource efficiency and support sustainable urban infrastructure.
2. Develop a facilities management plan integrating monitoring systems, digital tools, and ethical practices to optimize building performance, water use, and energy efficiency within Malaysia's built environment.
3. Demonstrate the ability to manage communication, liaise with stakeholders, and lead cross-functional FM teams in the coordination of safety, quality, and emergency response systems.

AMK40006 PROJEK SARJANA MUDA 2 [BACHELOR DEGREE PROJECT 2]

No of credits: 6

Course Synopsis:

This course is the continuity of Bachelor Degree Project 1. With the aid of guidance from the supervisor (academic staff), the students will continue their research project which has been planned during the Bachelor Degree Project 1. In this course, student also exposed to journal writing. At the end of the project, each student prepares thesis report, presents and demonstrates research findings.

Course Outcomes:

1. Ability to defend the research components during presentation session.
2. Ability to prepare the research project with discipline, standard procedures, and protocols.
3. Ability to demonstrate an understanding of the impact of research project on sustainable development in terms of economic, social, technology and environment.
4. Ability to produce thesis and technical report at the end of the course.
5. Ability to demonstrate the significance of research project in terms of commercialization value in the thesis and during presentation session.

AMK40103 TEKNOLOGI PEMBINAAN BANGUNAN BERINDUSTRI [INDUSTRIALISED BUILDING CONSTRUCTION TECHNOLOGY]

No of credits: 3

Course Synopsis:

This course is designed to expose students to the concepts of IBS which includes the advantages and disadvantages using IBS in Construction, Roadmap of IBS and the usage of IBS. It also highlighted the concept of Score Calculation and submission, Principal of Modular Coordination in IBS and concepts of build ability. And expose students the components and construction method of IBS. Students are also exposed to the IBS Pre-Cast Method which also involves the construction of high-rise buildings.

Course Outcomes:

1. Ability to carrying out the concept of IBS modern construction technology and several types of IBS structure
2. Ability to evaluate the component and construction method of IBS, Principle of Score calculation and Modular Coordination in IBS
3. Ability to identify the impact of IBS concept related to sustainability

- development.
4. Ability to demonstrate entrepreneurial skill of IBS products.

AMK40204 TEKNOLOGI PEMBINAAN PROJEK BERSEPADU [CONSTRUCTION TECHNOLOGY INTEGRATED PROJECT]

No of credits: 4

Course Synopsis:

This course introduces the project related to construction technology in grouping work. The given project task is based on real construction project. All knowledges and practical skills including design, project management, modelling, and construction process which have been exposed in previous course in this programme, will be applied in this course to accomplish the given project. At the end of this course, the project proposal will be evaluated for each stage involved in the project. This will help student to understand the real construction project work that suit to technologist with good knowledge and skill in construction industry.

Course Outcomes:

1. Ability to design civil and structural component using engineering fundamentals and principles by referring to relevant codes and standards.
2. Ability to propose construction project management related problem that required specific needs with appropriate consideration and techniques.
3. Ability to solve construction related problem that required specific needs with appropriate consideration for safety, health, societal and cultural issues with appropriate techniques.
4. Ability to perform appropriate experiment related to the construction project according to relevant codes and standards.
5. Ability to complete the project management and model using modern construction tools.
6. Ability to practice responsibility as individual, team and leader to ensure project successfully accomplished.

AMK40303 REKABENTUK STRUKTUR TERMAJU [ADVANCED STRUCTURAL DESIGN]

No of credits: 3

Course Synopsis:

This elective course provides additional knowledge on the effects of dynamic loads on structures, resonance, modal analysis, wind pressure, aerodynamic technologies, base shear force due to earthquake ground motions, response spectra, time history, structural damage classifications, energy dissipation for structures and structural health monitoring for structures under dynamic loads.

Course Outcomes:

1. Ability to revise the effects of dynamic loads on structures, resonance, modal analysis, wind pressure, aerodynamic technologies, base shear force due to earthquake ground motions, response spectra, time history, structural damage classifications, energy dissipation for structures and structural health monitoring for structures under dynamic loads.
2. Ability to dissect the structural performance analysis of structures under dynamic loads.
3. Ability to interpret fundamental performance and behaviour of buildings under dynamic loads.

AMK40403 TEKNOLOGI PEMBINAAN BANGUNAN TINGGI [CONSTRUCTION TECHNOLOGY OF HIGH RISE BUILDING]

No of credits: 3

Course Synopsis:

This course is an introduction to the construction technology used to build high rise building. Construction technology related to structural concepts are discussed in relation to steel and concrete buildings. Design of high rise building due to wind loading will also be explained in this course. Besides that, the course will also explore the current technology and equipment applied in construction of high-rise building.

Course Outcomes:

1. Ability to categorise the lateral system by considering wind and seismic loading applied on high rise building
2. Ability to recommend the construction process technology towards sustainable development for high-rise building
3. Ability to defend the structural system/form through high-rise model in mini project assessment

AMK40503 SISTEM MAKLUMAT PENYELENGGARAAN BANGUNAN [BUILDING MAINTENANCE INFORMATION SYSTEM]

No of credits: 3

Course Synopsis:

This course is designed to introduce students to building maintenance and enhance their knowledge on management method that seems to become mislaid from time to time due to poor service delivery, inadequate finance, poor maintenance planning and maintenance backlogs. It will emphasize on the principles and practices relating to maintenance management in facilitating the assessment, planning and execution processes in relation to building facility. At the end of the course students should be able to apply, evaluate and develop the information system (i.e. database management) suitable for the building maintenance work on defect report and information transfer techniques with the aid of building information modelling technology.

Course Outcomes:

1. Ability to apply principles and practices relating to maintenance of building in construction engineering
2. Ability to evaluate effective method for building maintenance information system
3. Ability to build complex maintenance information system with the aid of modern engineering tools

AMK40603 PEMERIKSAAN DAN PEMBAIKAN STRUKTUR [STRUCTURAL ASSESSMENT AND REPAIR]

No of credits: 3

Course Synopsis:

This subject provides an understanding and ability to visualize and analyze the causes of distress in structures, to confirm the causes of distress and suggest suitable repair methods. Among the topics discussed are types and causes of distress in structures; corrosion - mechanism, assessment and repair; methods of testing of structures; semi-destructive and non-destructive testing; strength assessment techniques; durability assessment techniques; integrity assessment techniques; repair strategy and techniques; repair material selection; and strengthening techniques

Course Outcomes:

1. Ability to evaluate causes of defects in structures, methods to assess the defects and suitable techniques for repair.
2. Ability to demonstrate about assessment and repair techniques.
3. Ability to present about assessment and repair techniques.

6. Ability to communicate and operate assigned task given by host company.
7. Ability to engage in independent and life-long learning in specialist technologies.

AMK49912 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]

No of credits: 12

Course Synopsis:

The practical-based course exposes students to a company technical functions and organizational structure and operation such as departmental function, work procedure, communication, technical skills and project management. During this course, the students will apply knowledge learned in the university and increased the related skills required in their future profession.

Course Outcomes:

1. Ability to combine technical knowledge and practical skills.
2. Ability to practice the health, safety, legal and cultural issues in working environment
3. Ability to apply societal environmental and sustainable development in engineering problems
4. Ability to demonstrate good work performance, work ethics during training period.
5. Ability to perform as individual, a member or leader in diverse technical teams.

UR6582001

Bachelor of Technology in Building Construction with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

To produce building construction technologist that able to perform construction works related building technology.

PEO 2

To produce technopreneurs in building construction related technology

PEO 3

To produce relevant, respected and referred professionals in building construction technology.

PROGRAMME OUTCOMES (PO)

PO1

Knowledge: Apply knowledge of technology fundamentals to broadly-defined procedures, processes, systems and methodologies in building construction.

PO2

Practical Skills and High Technology: Able to suggest and apply latest tools and techniques to solve broadly-defined problems.

PO3

Analytical, Critical Thinking and Scientific Approach: Demonstrate strong analytical and critical thinking skills to solve broadly-defined problems in building construction.

PO4

Communication Skills: Able to communicate and articulate effectively in both verbal and written among technologist communities and society at large.

PO5

Social Responsibility in Society and Technologist Community: Demonstrate understanding of the societal related issues and the consequent responsibilities relevant to broadly-defined technology practices.

PO6

Lifelong Learning and Information Management: Recognize the needs for professional development and to engage independent lifelong learning in specialist technologists.

PO7

Technopreneurship and Management Skills: Demonstrate an awareness of management and technopreneurship practices in real perspective.

PO8

Ethics and Professionalism: Demonstrate professionalism and social and ethical consideration.

PO9

Teamwork and Leadership: Demonstrate leadership quality, mentoring and work effectively in diverse teams.

CURRICULUM STRUCTURE UR6582001 BACHELOR OF TECHNOLOGY IN BUILDING CONSTRUCTION WITH HONOURS INTAKE 2025/2026								
YEAR	FIRST		SECOND		THIRD			FOURTH
SEMESTER	1	2	3	4	5	6	BREAK	7
DISCIPLINE CORE & ELECTIVE COURSES (104 CREDITS)	AMT10106 Building Technology 1	AMT10305 Building Technology 2	AMT20106 Project Quality Management	AMT20404 Human Resource and Professional Ethics	AMT30106 Construction and Demolition Waste Management	AMT30110 Industry Final Project		AMT40112 Industrial Training
	AMT10603 Introduction to Building Construction	AMT10806 Building Services Technology	AMT20206 Construction Project Management	AMT20504 Safety, Health and Environmental Management	AMT30206 Building Information Modelling	AMT30705 Construction Organization Operation and Management		
	AMT10704 Building Construction Drawing		AMT20803 Construction Contract and Procurement	AMT20905 Construction Cost Estimation	AMT30606 Technopreneur Project	AMT30505 Building Assessment and Reporting		
UNIVERSITY REQUIREMENT COURSES (18 CREDITS)	SMZXXX01 Co-Curriculum 1	SMZXXX01 Co-Curriculum 2	SMB1XX02 Third Language ^[5]	SMU22402 Engineering Entrepreneurship				
	SMB41002 University Malay Language ^[3]	SMU13002 Philosophy and Current Issue	SMB31202 English for Technical Communication	SMU13102 Appreciation of Ethics and Civilization				
	SMU12102 Integrity and Anti- Corruption ^[4]	SMB20102 English for General Communication ^[2]						
TOTAL CREDITS (122 CREDITS)	18	16	19	17	18	14	6	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]							

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

[5] SMB1XX02: Thai, Arabic, Korean, Germany, Japanese, Mandarin

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
AMT10106	Teknologi Bangunan 1 [Building Technology 1]	-
AMT10305	Teknologi Bangunan 2 [Building Technology 2]	-
AMT10603	Pengenalan Pembinaan Bangunan [Introduction to Building Construction]	-
AMT10704	Lukisan Pembinaan Bangunan [Building Construction Drawing]	-
AMT10806	Teknologi Perkhidmatan Bangunan [Building Services Technology]	SDG7
AMT20106	Pengurusan Kualiti Projek [Project Quality Management]	-
AMT20206	Pengurusan Projek Pembinaan [Construction Project Management]	-
AMT20404	Sumber Manusia dan Etika Profesional [Human Resource and Professional Ethics]	-
AMT20504	Pengurusan Keselamatan, Kesihatan dan Alam Sekitar [Safety, Health and Environmental Management]	-
AMT20803	Kontrak Pembinaan dan Perolehan [Construction Contract and Procurement]	-
AMT20905	Anggaran Kos Pembinaan [Construction Cost Estimation]	-
AMT30106	Pengurusan Sisa Pembinaan dan Perobohan [Construction and Demolition Waste Management]	SDG12
AMT30206	Pemodelan Maklumat Bangunan [Building Information Modelling]	-
AMT30505	Penilaian dan Pelaporan Bangunan [Building Assessment and Reporting]	-
AMT30606	Projek Teknousahawan [Technopreneur Project]	-
AMT30705	Operasi dan Pengurusan Organisasi Pembinaan [Construction Organization Operation and Management]	-

COURSE CODE	COURSE NAME	SDG
AMT30110	Projek Akhir Industri [Industry Final Project]	-
AMT40112	Latihan Industri [Industrial Training]	-

AMT10106 TEKNOLOGI BANGUNAN 1 [BUILDING TECHNOLOGY 1]

No of Credits: 6

Course Synopsis:

Building Technology 1, will introduce students to the processes of construction and procedures. Students will learn about construction technology and construction materials. This course incorporates hands-on experience through labs that may be done on campus or at a building site. Students will learn the basics of technical drawing and plan reading, Standard specification of building works and building materials. Students also will be exposed to basic components of a building structure such as foundation, floors, walls, beams, columns, stair and roof.

Course Outcomes:

1. Ability to describe basic procedure, methods, techniques, technology, and materials for building construction.
2. Ability to perform building technology skill in laboratory and various activities for building construction.
3. Ability to demonstrate the idea and basic procedure, methods, techniques, technology, and materials for building construction.

AMT10305 TEKNOLOGI BANGUNAN 2 [BUILDING TECHNOLOGY 2]

No of Credits: 5

Course Synopsis:

Building Technology 2 introduces students to construction processes and procedures. This course is designed to expose students to the concepts of a modern method in construction and innovative techniques in construction which includes the advantages and disadvantages of using them. This subject highlighted the Industrialized Building System (IBS), which CIDB Malaysia introduced. Students will learn about the concept of Score Calculation and submission, Principal of Modular Coordination in IBS and concepts of buildability. The course content is in line with Malaysia's national agenda to transform the construction industry, with the primary objective of transforming the construction industry towards becoming highly productive, environmentally sustainable, with globally competitive players and a focus on safety and quality standards.

Course Outcomes:

1. Ability to describe and apply methods, techniques, standard (CIDB) and technology in modern method of construction.
2. Ability to integrate modern method of construction skill in construction activity/project.
3. Ability to explain by presenting IBS concept in Malaysia, effectively.

AMT10603 PENGENALAN PEMBINAAN BANGUNAN [INTRODUCTION TO BUILDING CONSTRUCTION]

No of Credits: 3

Course Synopsis:

This course is a fundamental element in construction industry by providing student the foundational overview of the principle and current practices in building construction projects. Students will be exposed to the legislative framework, statutory requirements and industry guidelines governing construction in Malaysia. Emphasis is placed on the end-to-end building process (from initial concept through to handover) and the roles and responsibilities of each stakeholder.

Course Outcomes:

1. Ability to verify the compliance for building construction permission procedures based on legislation, statutory requirements and sustainability consideration.
2. Ability to perform site investigation and preparation for construction site project.
3. Ability to examine the legislation, and statutory requirements, the roles of construction stakeholders in the case of construction project planning and development.

AMT10704 LUKISAN PEMBINAAN BANGUNAN [BUILDING CONSTRUCTION DRAWING]

No of Credits: 4

Course Synopsis:

This course introduces the fundamental principles and techniques of building construction drawing. Students will learn to prepare 2D construction drawings using computer-aided design and to develop 3D building models using BIM software. Emphasis is placed on industry-standard drafting conventions, dimensioning, annotation, layering, object properties, and end-to-end BIM workflows. Upon completion, students will demonstrate proficiency in modern CAD/BIM tools and a proactive approach to continuous skill development.

Course Outcomes:

1. Ability to interpret construction drawing elements and symbols, CAD/BIM tool functionalities, and theoretical foundation of CAD/BIM technologies.
2. Ability to demonstrate the proficiency of using computer-aided software in preparing construction drawing of a building in compliance with industry standards.
3. Ability to demonstrate self-directed learning, adaptability, and continuous skill development in digital construction technologies.

AMT10806 TEKNOLOGI PERKHIDMATAN BANGUNAN [BUILDING SERVICES TECHNOLOGY]

No of Credits: 6

Course Synopsis:

This course provides an exposure to building services systems essential for modern building. Students will explore the principles, components, and integration of mechanical, electrical, plumbing (MEP), sanitation, fire protection systems, and automated building management. The course includes theoretical understanding, technical drawing interpretation, and the use of digital tools for analysing and simulating building services performance which also addressing the automated building and energy management system. Emphasis is placed on sustainability, compliance with standards, and practical application of modern tools in real-life problem-solving scenarios. Upon completion, students will be equipped with foundational knowledge, tool proficiency, and analytical skills to manage and evaluate building services systems effectively.

Course Outcomes:

1. Ability to explain the fundamental concepts, functions, and interrelationships of mechanical, electrical, plumbing (MEP), sanitation, fire protection, and automated building management within integrated building services.
2. Ability to perform building services installations and assessment in accordance with established codes and safety standards
3. Ability to propose suitable building service solutions based on given existing building services system or functional performance issues.

AMT20106 PENGURUSAN KUALITI PROJEK [PROJECT QUALITY MANAGEMENT]

No of Credits: 6

Course Synopsis:

This course emphasizes on Project Quality Management which is a process of quality that is managed and maintained throughout a project. The course focuses on the context which implies the quality that leads to compliance with certain standards. In this course, students will be exposed to quality audit and quality control activities that will be conducted throughout the construction project life cycle.

Course Outcomes:

1. Ability to apply the fundamental and process of Project Quality Management.

2. Ability to analyse the problem based on project quality management system with standard required in construction industry.
3. Ability to demonstrate proficiency in using quality management tools that apply in construction industry.
4. Ability to organise a team in conducting project quality activities that relate to construction industry.

AMT20206 PENGURUSAN PROJEK PEMBINAAN [CONSTRUCTION PROJECT MANAGEMENT]

No of Credits: 6

Course Synopsis:

This course aims to provide the knowledge and skills of construction project management that are in line with the industry needs of competent construction project managers. This course will enable students to be exposed to all disciplines and processes on construction project lifecycles such as project initiation, planning, execution, control, and monitoring, and also project closing as guidance for managing the successful construction project.

Course Outcomes:

1. Ability to apply project management knowledge disciplines in managing the construction project.
2. Ability to analyse the management process of construction project lifecycles.
3. Ability to demonstrate the construction project management life cycles activities by using appropriate software (e.g., Microsoft Project Software).
4. Ability to organise the construction project management activities in handling a construction projects.

AMT20404 SUMBER MANUSIA DAN ETIKA PROFESIONAL [HUMAN RESOURCES AND PROFESSIONAL ETHICS]

No of Credits: 4

Course Synopsis:

This course aims to provide the knowledge of human resources and professional ethics skills focusing on construction perspective. This course will enable the students to be exposed to the concepts, processes, and functions in human resources management and professional ethics as guidance to lead companies or organizations effectively..

Course Outcomes:

1. Ability to apply the theories and concepts of human resource management and professional ethics in the organization.
2. Ability to evaluate the appropriate process and procedure in managing human resources with respect to professional ethics.
3. Ability to display ethical awareness and professionalism in managing human resources organization.
4. Ability to respond to the utilization of human resources development principles with respect to professional ethics in organizing an organization.

AMT20504 PENGURUSAN KESELAMATAN, KESIHATAN DAN PERSEKITARAN [SAFETY, HEALTH AND ENVIRONMENTAL MANAGEMENT]

No of Credits: 4

Course Synopsis:

This course exposes students with necessary knowledge and skills that requires for managing the occupational safety, health, and environmental at the work place. Thus, this course covers on; legislation and requirements in relation with workplace safety and health, principles and application of SHEaR management including hazard identification, risk assessment and risk control at the workplace. In return, students will develop abilities to manage issues related to safety, health, and environment effectively and ethically.

Course Outcomes:

1. Ability to explain in terms of legislation and requirements of SHEaR in the workplace, and principles of SHEaR management and its application in relation to construction industry.
2. Ability to explain in terms of legislation and requirements of SHEaR in the workplace, and principles of SHEaR management and its application in

relation to construction industry.

3. Ability to demonstrate responsibilities in ensuring safe working environment by applying appropriate accident prevention methods, and risk mitigation & control approach.
4. Ability to practice suitable accident investigation methods in relation to workplace safety management.

AMT20803 KONTRAK PEMBINAAN DAN PEROLEHAN [CONSTRUCTION CONTRACT AND PROCUREMENT]

No of Credits: 3

Course Synopsis:

This course exposes the students on the contractual perspectives, tendering procedure and procurement method in building construction project works. The concept of contract, tendering and decision making on the procurement approach will be introduced according to the current practices in construction industry. The introduction of Alternative Dispute Resolution (ADR) and relevant post tender practices will be introduced to students for better contractual management in industry. Other than that, the e-procurement method will be exposed to improve the contract, tendering and procurement management skills.

Course Outcomes:

1. Ability to apply the fundamental of construction contract, tendering procedure and procurement method that is related to the requirement in building projects.
2. Ability to organise the procedure on construction contract, tendering procedure and procurement in respects to Standard Form of Contracts.
3. Ability to evaluate appropriate construction contracts, tendering and procurement practices related to the requirement in building projects.

AMT20905 ANGGARAN KOS PEMBINAAN [CONSTRUCTION COST ESTIMATION]

No of Credits: 5

Course Synopsis:

This course expose on the construction cost estimating, general principles of measuring work and preparing the quantity take-offs in relation to the building construction project works. The concept of estimation preparation, measuring work and quantity take-offs techniques will be introduced according to the current practise in construction industry. Other than that, the computer-aided estimation will be exposed using the relevant software to improve the estimating, measuring work and quantity take-offs skills.

Course Outcomes:

1. Ability to discuss the appropriate methods of estimating to predict the project cost and the general principles of measuring work and preparing the quantity take-offs.
2. Ability to demonstrate proficiency using relevant computer aided estimation tools that is related to the estimating, measuring work and quantity take-offs in construction projects.
3. Ability to estimate the construction cost in respect to Standard Method of Measurement (SMM).
4. Ability to integrate the project quotations, quantities, and material selections with suppliers, consultants, contractors or any construction industry practitioners to fulfil the project's needs and requirements.

AMT30106 PENGURUSAN SISA PEMBINAAN DAN PEROBOHAN [CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT]

No of Credits: 6

Course Synopsis:

This course aims to provide knowledge and insights on construction and demolition waste management. This course will enable the students to be exposed to the concept, preparation, process, and management of construction and demolition waste management, related legislative and administrative requirements, safety and risk measures, also innovation, and technology involved towards minimizing waste and moving towards sustainable construction practices.

Course Outcomes:

1. Ability to apply the knowledge on construction and demolition waste management.
2. Ability to evaluate the process of construction and demolition waste

management in the construction sites.

3. Ability to propose suitable construction and demolition waste handling with respect to sustainability measures.
4. Ability to display responsibilities of managing construction and demolition waste by using appropriate process activities in the Waste Management Plan (WMP).

AMT30206 PEMODELAN MAKLUMAT BANGUNAN [BUILDING INFORMATION MODELLING]

No of Credits: 6

Course Synopsis:

This course will guide the students through a step-by-step project-based workflow to learn and implement BIM using a real project data. The course is therefore designed practically hands-on where the participants are required to model a multiple storey building by focusing on architectural and structural element in a building. Finally, students will learn about coordination between BIM modelling which enable them to check the clashes of the model and prepare the report for the clashed model.

Course Outcomes:

1. Ability to display proficiency of using BIM software in completing the projects.
2. Ability to derive the solution on the building modelling clashes based on the clash report generated.
3. Ability to develop strategies to discover the relevant sources of information and overcome the obstacles to complete the task of modeling the building in terms of architectural and structural elements.
4. Ability to display cooperation in the group activities of modelling the architectural and structural elements for a building as well as during modelling coordination.

AMT30505 PENILAIAN DAN PELAPORAN BANGUNAN [BUILDING ASSESSMENT AND REPORTING]

No of Credits: 5

Course Synopsis:

This course will expose the students to the Building Condition Assessment (BCA) implementation in building projects. The knowledge on building auditing and evaluation in terms of the process and procedure of BCA will be explained through on-site-oriented activities. Students will understand the concept of BCA and will be able to produce an audit report on the corrective measures to ensure the building meets the Malaysian Building Condition Assessment Rating System or equivalent.

Course Outcomes:

1. Ability to apply the fundamental of the building condition assessment concept based on the physical state of the building.
2. Ability to evaluate the preventive measures on the building condition elements according to construction industry standards.
3. Ability to deliver effective communication skills in Building Condition Assessment Rating Tools for building works.
4. Ability to demonstrate the technique in assessing building conditions using tools that apply in construction industry project management.
5. Ability to organise the process of Building Condition Assessment for building works with active leadership in teamwork skills.

AMT30606 PROJEK KEUSAHAWANAN [TECHNOPRENEUR PROJECT]

No of Credits: 4

Course Synopsis:

The Technopreneur Project will introduce students to the construction business organization and expose them to knowledge of business organization, business planning and management. Exposure to creative and innovative integration of technology as a foundation of business. Sharpening communication skills in business approach and negotiation. Providing business organizations with active leadership in teamwork skills.

Course Outcomes:

1. Ability to analyze business management principles and entrepreneurship challenges toward innovative solutions for their technopreneurial projects.
2. Ability to present effective communication and negotiation on

entrepreneurial project in relation to construction industry.

3. Ability to demonstrate a commitment to continuous professional growth and integrating new knowledge into their technopreneurial practice.
4. Ability to organise entrepreneurial project in relation to construction industry by applying entrepreneurship principles to develop a viable business venture.

AMT30705 OPERASI DAN PENGURUSAN ORGANISASI PEMBINAAN [CONSTRUCTION ORGANIZATION OPERATION AND MANAGEMENT]

No of Credits: 5

Course Synopsis:

This course aims to equip students with the advanced skills and strategic knowledge needed to effectively lead and manage construction projects, operations, and organizations. It will expose students to the complexities of construction environments, allowing them to make informed decisions and successfully drive projects to completion. By the end of the course, students will be well-prepared to become competent, confident, and forward-thinking construction project managers.

Course Outcomes:

1. Ability to demonstrate modern construction management tools and technologies to plan, monitor, and optimize construction operation and management.
2. Ability to evaluate construction organizational challenges and operational inefficiencies to propose practical solutions based on industry best practices.
3. Ability to organize the principles of construction organization operation and management to improve construction business practices.
4. Ability to display professional ethics in response to evolving practices, technologies, and regulations in construction organization, operation, and management.

AMT30110 PROJEK AKHIR INDUSTRI [INDUSTRY FINAL PROJECT]

No of Credits: 10

Course Synopsis:

The Industry Final Project requires students to conduct a project that relates to the building construction sector. The project is either a real-industry problem or research applied oriented that relates to industry-based project. Students will be assisted by industry coach and university supervisors in conducting the project but need to identify the problem boundaries, investigate and propose possible solutions, explore the appropriate approach and solve the project problem in order to deliver the project aims. In addition, students will be exposed to the project reporting and presentation skills in order to deliver the whole project findings.

Course Outcomes:

1. Ability to display proper use of technics and / or tools to improvise or solve project problem that being identified in the early stage.
2. Ability to analyse the project information and/or data towards solving the project problems that being identified in the early stage.
3. Ability to present the project outcome during the presentation session within the allocated period.
4. Ability to display improvement of intrapersonal skills in achieving better finished project.
5. Ability to systematically conduct the project activities with professional ethics based on the standard, procedures, protocols and requirement outlined.

in terms of health, safety and legal issues.

3. Ability to display working ethics consistency during training period.
4. Ability to perform effectively as individual or leader in diverse teams.
5. Ability to display effective communication during task orientation.
6. Ability to practice independent and life-long learning in specialist technologies for personal development

AMT40112 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]

No of Credits: 12

Course Synopsis:

This course expose on the practical based orientation conduct that enable students to explore on the company technical function and organization. Besides, the company operational pattern that are comprised of departmental function, work procedure, safety procedure, industrial communication, technical skills and project management. During this course, students will adapt theories that has been learnt in university into and industrial practical based work task.

Course Outcomes:

1. Ability to combine technical knowledge and practical skills through training.
2. Ability to display consistency towards society and environmental responsibility

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Programmes Offered:

- Bachelor of New Media Communication with Honours
- Bachelor of Interactive Media Technology with Honours
- Bachelor of Business (International Business) with Honours
- Bachelor of Business (Engineering Entrepreneurship) with Honours
- Bachelor of Accounting with Honours

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UR6321001

Bachelor of New Media Communication with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

To educate and produce the graduates who have the knowledge and skills of professionals in the field of communication and social interaction,

PEO 2

To educate and produce the graduates who have the knowledge and skills of professionals in the field of new media.

PEO 3

To educate and produce graduates who have the knowledge and skills of professionals in the field of entrepreneurial management.

PEO 4

To train and produce skilled graduates in implementing and managing projects/research by integrating the latest information related to new media communication.

PROGRAMME OUTCOMES (PO)

PO 01

To demonstrate professional and research skills in communication and social interaction, new media, entrepreneurship and management.

PO 02

To apply the model and the theory of communication and social interaction, new media, and entrepreneurial management through an understanding of the impact of such changes on society.

PO 03

To interpret social issues, cultural, global, and environmental responsibility, and law and ethics to the practice fields of communication and social interaction, new media, and entrepreneurial management in their professional activities.

PO 04

To identify the link between professionalism and human values in the areas of communication and social interaction, new media, and entrepreneurial management through a variety of practical applications and theoretical framework, methods and research techniques.

PO 05

To communicate effectively, both individually and in group.

PO 06

To demonstrate the ability to use hardware and software related to digital media, journalism, advertising, broadcasting, public relations, graphic design, multimedia, and photography.

PO 07

To analyse and interpret research data of communication and social interaction, new media, and entrepreneurial management, and propose a solution and justify the measures to be taken.

PO 08

To develop analytical and critical thinking skills that are appropriate in preparation for continuous learning.

PO 09

To demonstrate an understanding of the impact of changing media and communications technologies, policies and structures on the social, cultural, economic and political environments;

PO 10

To apply widely business activities in real-world perspective; and

PO 11

To demonstrate social and entrepreneurship skills and inculcate a spirit of innovation.

CURRICULUM STRUCTURE							
UR6321001 BACHELOR OF NEW MEDIA COMMUNICATION WITH HONOURS INTAKE 2025/2026							
YEAR	FIRST		SECOND		THIRD		
SEMESTER	I	II	III	IV	V	VI	BREAK
COMMON /DISCIPLINE CORE/ELECTIVE COURSES (105 credits)	SMM10103 Introduction to Communication Theory	SMM10603 Visual Communication	SMM20203 Digital Photography	SMM30303 Digital Marketing	SMM40103 Public Relations and New Media	SMM40803 Event Management	SMM49906 Industrial Training
	SMM10203 Public Speaking	SMM20103 Organizational Communication	SMM20303 Graphic Design for NewMedia	SMM30403 Digital Video Production	SMM40203 Ethics and Law in New Media Communication	SMM40903 New Media Issues & Challenges	
	SMM10303 Introduction to New Media	SMM10703 Innovative and Creative Skills	SMM20403 New Media Analysis	SMM30503 Web Design and Development	SMM40303 Animation for Integrated Media	SMM41003 Skills in Organizational Strategy and Performance Management	
	SMM10403 Script Writing & Digital Storyboard	SMM 10803 Introduction to Programming Languages	SMM30103 Media Psychology	SMM30603 New Media Arts	SMM40403 Digital Creative Advertising	SMM41104 Final Year Project 2	
	SMM10503 New Media Literacy	SMM1XXXX Elective I	SMM20503 New Era Management	SMM30703 Data Reasoning	SMM31103 Electronic Entrepreneurship		
			SMM30203 Research Method	SMM3XXXX Elective II	SMM40502 Final Year Project 1		
					SMM4XXXX Elective III		
UNIVERSITY REQUIREMENT COURSES (18 credits)	SMB0XX02 Foreign Language	SMU13102 Appreciation of Ethics and Civilization	SMB20102 English for General Communication ^[2]	SMB31302 English for Academic Purposes			
	SMU13002 Philosophy and Current Issues	SMB41002 University Malay Language ^[3]				SMU32202 Thinking Skills	
	SMZXXX01 Co-Curriculum 1	SMZ XXX01 Co-Curriculum 2				SMU12102 Integrity and Anti Corruption ^[4]	
TOTAL CREDITS (123 CREDITS)	20	20	20	20	20	17	6
AUDIT COURSES		SMB10102 Preparatory English ^[1]					
Elective I : SMM10903 Principles of Human Computer Interaction, SMM11003 Sociology in New Media Elective II : SMM30803 3D Modelling for Beginners/ SMM30903 Contemporary Photography, SMM31003 Industrial Psychology Elective III : SMM40603 Audio Design, SMM40703 Crisis Communication in New Media							
^[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.							
^[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.							
^[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.							
^[4] International students should register SMU13202 Malaysian Studies							

UR6213001

Bachelor of Interactive Media Technology with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO1

Analyse and relate broad knowledge of Interactive Media Technology concepts and principles to practices incorporating technical skills in relevant fields.

PEO2

Commit to take responsibility to lead and deliver assigned tasks when leading, interacting and communicating with peers and stakeholders while ensuring ethical practices.

PEO3

Demonstrate technical competency in the innovative and creative use of digital technology and apply numerical techniques in Interactive Media Technology.

PEO4

Commit to life-long learning and demonstrate entrepreneurial skills for academic and career advancement in relevant industries.

PROGRAMME OUTCOMES (PO)

PO1

Analyze and apply broad knowledge and skills, including the use of numeracy techniques, in the field of Interactive Media Technology effectively for innovative practice.

PO2

Critically analyze history, context, conceptual theories, and ethical considerations in the practice of Creative Multimedia Technology.

PO3

Create and develop ideas and innovations for practices in the field of Interactive Media Technology.

PO4

Articulate and communicate ideas and concepts comprehensively through visual, written, and oral engagement.

PO5

Implement design concepts and cost analysis through the use of digital and other technologies for effective delivery.

PO6

Develop Interactive Media Technology through reflection, review, and evaluation.

PO7

Communicate and interact effectively with experts, peers, clients, superiors, and the community within relevant work and organizational environments for the development of Creative Multimedia Technology.

PO8

Demonstrate commitment to leadership, accountability, and professional and ethical practices, including compliance with legal requirements and organizational functions.

PO9

Demonstrate commitment to lifelong learning for academic and career development, as well as an entrepreneurial mindset in the application of Creative Multimedia Technology.

CURRICULUM STRUCTURE UR6213001 BACHELOR IN INTERACTIVE MEDIA TECHNOLOGY WITH HONOURS INTAKE 2025/2026								
YEAR	FIRST			SECOND			THIRD	
SEMESTER	1	2	SHORT SEM	3	4	SHORT SEM	5	6
COMMON /DISCIPLINE CORE/ELECTIVE COURSES (82 credits)	SMT10103 Principle of Design	SMM10603 Visual Communication	SMM10703 Creative and Innovative Skills	SMT20303 Fundamental 3D Modelling	SMT30103 Interactive 3D Development	SMT40503 Law in Creative Industries		
	SMT10203 Fundamental Drawing	SMT20103 Graphic Design for Interactive Media	SMT20603 Media History and Culture	SMT20403 Video Production for Interactive Media	SMT40703 Product Design and Development Methods in Interactive Media Technology	SMT40603 Digital Media Content Management		
	SMT10303 Introduction to Scripting Programming	SMT10503 Web Design & Development	SMT30303 User Experiences (UX) & User Interface (UI) Design	SMT20503 Motion Graphic for Interactive Media	SMT40103 Creative Advertising			
	SMT10403 Introduction to Interactive Media	SMT20203 Photography For Integrated Media		SMT30203 Audio Production	SMT40203 Interactive Media Arts	SMT41104 FYP 1 Interactive Media Technology		
	SMM10403 Script Writing & Digital Storyboard	SMT10603 Introduction 2D Animation		SMM30303 Digital Marketing	SMT40303 Mobile Apps Development			
					SMT40803 Big Data Management			
WBL (24 credits)							SMT41212 * FYP 2 Interactive Media Technology	**SMT41012 Industrial Training
UNIVERSITY REQUIREMENT COURSES (14 credits)	SMB41002 University Malay Language ^[3]	SMB20102 English for General Communication ^[2]		SMB31302 English for Academic Purposes	SMU12102 Integrity and Anti Corruption ^[4]			
	SMZXXX01 Co-Curriculum 1	SMZXXX01 Co-Curriculum 2		SMU32202 Thinking Skills				
	SMU13102 Appreciation of Ethics and Civilization	SMU13002 Philosophy and Current Issues						
TOTAL CREDITS (120 CREDITS)	20	20	9	19	20	10	12	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]							

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme). SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
SMM10103	Introduction To Communication Theory [Pengenalan Kepada Teori Komunikasi]	SDG4
SMM10203	Public Speaking [Perucapan Awam]	SDG4
SMM10303	Introduction To New Media [Pengenalan Kepada Media Baharu]	SDG9
SMM10403	Script Writing & Digital Storyboard (Penulisan Skrip Dan Papan Cerita Digital)	SDG9
SMM10503	New Media Literacy [Literasi Media Baharu]	SDG9
SMM10603	Visual Communication [Komunikasi Visual]	SDG4
SMM10703	Innovative And Creative Skills [Kemahiran Kreatif Dan Inovatif]	SDG9
SMM10803	Introduction To Programming Languages [Pengenalan Kepada Bahasa Pengaturcaraan]	SDG9
SMM10903	Principles of Human Computer Interaction (Prinsip-Prinsip Interaksi Manusia-Komputer)	SDG9
SMM30503	Web Design And Development [Reka Bentuk Dan Pembangunan Web]	SDG9
SMM30603	New Media Arts (Seni Media Baharu)	SDG9
SMM30703	Data Reasoning [Penaakulan Data]	SDG4
SMM30803	3D Modelling For Beginners [Asas Pemodelan 3d]	SDG9
SMM30903	Contemporary Photography [Fotografi Kontemporari]	SDG9
SMM31003	Industrial Psychology [Psikologi Industri]	SDG9
SMM31103	Electronic Entrepreneurship [Keusahawanan Elektronik]	SDG8
SMM40103	Public Relations And New Media [Perhubungan Awam Dan Media Baharu]	SDG8

COURSE CODE	COURSE NAME	SDG
SMM40203	Ethics And Law In New Media Communication [Undang-Undang Dan Etika Dalam Komunikasi Media Baharu]	SDG9
SMM40303	Animation For Integrated Media [Animasi Untuk Media Bersepadu]	SDG9
SMM40403	Digital Creative Advertising [Pengiklanan Kreatif Digital]	SDG9
SMM40502	Final Year Project 1 [Projek Tahun Akhir 1]	SDG4
SMM40603	Audio Design [Reka Bentuk Audio]	SDG9
SMM40703	Crisis Communication In New Media [Komunikasi Krisis Dalam Media Baharu]	SDG8
SMM40803	Event Management [Pengurusan Acara]	SDG4
SMM40903	New Media Issues & Challenges [Isu Dan Cabaran Media Baharu]	SDG8
SMM41003	Skills In Organizational Strategy And Performance [Kemahiran Pengurusan Strategi Dan Prestasi Organisasi]	SDG8
SMM41104	Final Year Project 2 [Projek Tahun Akhir 2]	SDG4
SMM49906	Industrial Training [Latihan Industri]	SDG9
SMM11003	Sociology In New Media [Sosiologi Dalam Media Baharu]	SDG8
SMM20103	Organizational Communication [Komunikasi Organisasi]	SDG4
SMM20203	Digital Photography [Fotografi Digital]	SDG9
SMM20303	Graphic Design For New Media [Reka Bentuk Grafik Untuk Media Baharu]	SDG9
SMM20403	New Media Analysis [Analisis Media Baharu]	SDG9
SMM30103	Media Psychology [Psikologi Media]	SDG8

COURSE CODE	COURSE NAME	SDG
SMM20503	New Era Management [Pengurusan Era Baru]	SDG8
SMM30203	Research Methodology [Kaedah Penyelidikan]	SDG4
SMM30303	Digital Marketing [Pemasaran Digital]	SDG8
SMM30403	Digital Video Production [Penerbitan Video Digital]	SDG9
SMT10103	Principle of Design [Prinsip Rekabentuk]	SDG4
SMT10203	Fundamentals of Drawing [Asas Lukisan]	SDG9
SMT10303	Introduction to Scripting Programming [Pengenalan kepada Pengaturcaraan Skrip]	SDG9
SMT10403	Introduction to Interactive Media [Pengenalan kepada Media Interaktif]	SDG4
SMT10503	Web Design & Development [Reka Bentuk & Pembangunan Web]	SDG9
SMT10603	Introduction to 2D Animation [Pengenalan kepada Animasi 2D]	SDG9
SMT20103	Graphic Design for Interactive Media [Rekabentuk Grafik untuk Media Interaktif]	SDG9
SMT20203	Photography for Interactive Media [Fotografi untuk Media Interaktif]	SDG9
SMT20503	Motion Graphics for Interactive Media [Grafik Bergerak untuk Media Interaktif]	SDG9
SMT20603	Media History and Culture [Sejarah Media dan Budaya]	SDG4
SMT20303	Fundamentals of 3D Modeling [Asas Pemodelan 3D]	SDG9
SMT20403	Video Production for Interactive Media [Penerbitan Video untuk Media Interaktif]	SDG9
SMT30303	User experiences (UX) & User Interface (UI) Design (Reka Bentuk Pengalaman Pengguna (UX) & Antaramuka Pengguna (UI))	SDG9

COURSE CODE	COURSE NAME	SDG
SMT40203	Interactive Media Arts (Seni Media Interaktif)	SDG9
SMT30103	Interactive 3D Development [Pembangunan Interaktif 3D]	SDG9
SMT30203	Audio Production [Penerbitan Audio]	SDG9
SMT40103	Creative Advertising [Pengiklanan Kreatif]	SDG9
SMT40303	Mobile Application Development [Pembangunan Aplikasi Mudah Alih]	SDG9
SMT40503	Law in Creative Industries [Undang-Undang dalam Industri Kreatif]	SDG4
SMT40603	Digital Media Content Management [Pengurusan Kandungan Media Digital]	SDG9
SMT40703	Interactive Media Design & Development Methods [Kaedah Reka Bentuk & Pembangunan Media Interaktif]	SDG4
SMT40803	Big Data Management [Pengurusan Data Besar]	SDG9
SMT41012	Industrial Training [Latihan Industri]	SDG9
SMT41104	Interactive Media Technology FYP 1 [PTA Teknologi Media Interaktif]	SDG4
SMT41212	Interactive Media Technology FYP 2 [Teknologi Media Interaktif FYP 2]	SDG4

SMM10103 INTRODUCTION TO COMMUNICATION THEORY [PENGENALAN KEPADA TEORI KOMUNIKASI]

No of Credits: 3

Course Synopsis:

The course aims to expose the students to the basic concepts of human communications, theory and basic communication theories. Several definitions, the models, elements, functions and contexts of human communication will be explained. Description on several basic concepts, features and attributes of theory and the domain/families of theory will be the other focus of this course. Discussion on several basic theories of communication in its relevant contexts will be utilized to strengthen students' understanding.

Course Outcomes:

1. Ability to explain the concepts, models, elements, functions and contexts of communication.
2. Ability to apply the features, attributes and functions of theory in the context of new media communication.
3. Ability to evaluate the communication theories based on contexts.

SMM10203 PUBLIC SPEAKING [PERUCAPAN AWAM]

No of Credits: 3

Course Synopsis:

This course covers both the theoretical and practical aspects of public speaking. Students will learn how to adapt a speech for various circumstances and audiences, how to successfully support ideas, how to select and organise resources for a speech, and how to use multimedia technologies in presentations. Students should be able to demonstrate speaking and be effective communicators in academic contexts, the workplace, and the community by the end of this course.

Course Outcomes:

1. Ability to describe the vital ideas related to public speaking.
2. Ability to apply knowledge in the preparation of a speech.
3. Ability to perform a public speech in front of the audiences, according to the situation and the event.
4. Ability to evaluate and criticise speeches and presentations verbally.

SMM10303 INTRODUCTION TO NEW MEDIA [PENGENALAN KEPADA MEDIA BAHARU]

No of Credits: 3

Course Synopsis:

This course provides an insight into modern cyberculture, including various forms of human communication mediated by the creative application of computer technology, and the developments that have enabled this exploding phenomenon. This course studies the practice of new media in the current networked society; the implications of the technology; and the societal implications of the new connectedness. Second and third-generation web-based media such as social networks, blogs, wikis, and web pages are also introduced to the students.

Course Outcomes:

1. Ability to explain the concepts, functions, and characteristics of new media.
2. Ability to distinguish computer hardware, software, communication media, its functions, and characteristics.
3. Ability to analyse the new media tools used in producing/publishing new media content.

SMM10403 SCRIPT WRITING & DIGITAL STORYBOARD [PENULISAN SKRIP DAN PAPAN CERITA DIGITAL]

No of Credits: 3

Course Synopsis:

The purpose of this course is to expose students to their writing skills and their methods in the new media publication. Students will learn the interactive pattern of online writing as compared to traditional writing. This course will help students to upgrade their understanding of the method of new media writing by appreciating the relevant concepts and will be able to apply them in the organizational situation.

Course Outcomes:

1. Ability to explain the concepts of new media scriptwriting & digital storyboard.
2. Ability to demonstrate scriptwriting and storyboard development skills for the new media content.
3. Ability to justify creative ideas in new media writing and storyboard development.

SMM10503 NEW MEDIA LITERACY [LITERASI MEDIA BAHARU]

No of Credits: 3

Course Synopsis:

This course aims to familiarise students with the fundamental concepts, issues, genres and technologies of new media. By taking something as fundamental as our experiences of space, at times our mobility has become severely restricted. Structural and visualisation design assignments are used to analyse these contemporary communication issues.

Course Outcomes:

1. Ability to explain the concepts of new media literacy and the technologies related to it.
2. Ability to apply basic media technologies in our society.
3. Ability to analyse the existing tools of media technologies with probable solutions that can accommodate future lifestyle.

SMM10603 VISUAL COMMUNICATION [KOMUNIKASI VISUAL]

No of Credits: 3

Course Synopsis:

This course will guide students to understand the basic principles of visual communication and relationship with publishing products. This course will guide students to produce visual projects based on various concepts of visual perspective, the history of visual communication and its development, its importance from the perspective of different cultures' understanding. It will help students to become more critical and sensitive in the use of color, layout, design and selection of tones in attracting attention and leaving a meaning to the audience.

Course Outcomes:

1. Ability to explain the concepts, theories and principles of visual communication with a suitable approach.
2. Ability to analyse the elements of visual communication of the product creation.
3. Ability to produce communication products that emphasize on the aspects of visual communication.

SMM10703 INNOVATIVE AND CREATIVE SKILLS [KEMAHIRAN KREATIF DAN INOVATIF]

No of Credits: 3

Course Synopsis:

This course aims to build students' knowledge and understanding of theories and processes related to creative thinking and innovative skills. Ultimately, the course can make students think and act creatively and innovatively in problem solving to make them more competitive either as individuals or members of organizations.

Course Outcomes:

1. Ability to identify the basic concepts for thinking creatively and innovatively
2. Ability to solve problems creatively and innovatively.
3. Ability to analyse innovation activities in different organizations and environments

SMM10803 INTRODUCTION TO PROGRAMMING LANGUAGES [PENGENALAN KEPADA BAHASA PENGATURCARAAN]

No of Credits: 3

Course Synopsis:

This course aims to familiarise students with the various programming languages. It is also to provide some knowledge and necessary skills to develop basic programming/coding. Coding and debugging exercises are used to develop students' ease of learning and understanding; problem-solving skills; transferable skills across almost any industry; and opportunities for invention and innovation.

Course Outcomes:

1. Ability to describe the concepts of related programming languages (program style/formatting and self-documenting code, and familiar with the debugging process).
2. Ability to apply basic programming solutions in various contexts.
3. Ability to develop a simple application using related programming languages.

SMM10903 PRINCIPLES OF HUMAN COMPUTER INTERACTION (PRINSIP-PRINSIP INTERAKSI MANUSIA-KOMPUTER)

No of Credits: 3

Course Synopsis:

This course provides an overview of the principles of human-computer interaction (HCI) that are applicable to the New Media Communication Programme. HCI is an interdisciplinary field that integrates theories and methodologies from computer science, cognitive psychology, design and many other areas. The course readings span current theory and practice in interface specification, design and evaluation in HCI. Students will work on the group report and group presentation to design, implement and evaluate computer interfaces. They should be able to explore the HCI in their projects, and analyse its relevance and usage for managerial usage and decision making.

Course Outcomes:

1. Ability to identify the principles of human-computer interaction to relate with today's activities.
2. Ability to analyse the application that related to principles of human-computer interaction.
3. Ability to propose various human-computer interaction features that can be used by society.

SMM11003 SOCIOLOGY IN NEW MEDIA [SOSIOLOGI DALAM MEDIA BAHARU]

No of Credits: 3

Course Synopsis:

This course provides an overview of the study of the relationship between humans and society in the context of new media. This course will allow students to examine how economics, politics, religion, race, gender, family, and the environment interact to shape people's lives. Students will learn to analyse social problems to discover their causes and possible solutions. This course also prepares the students for employment in social service, recreation, teaching, and preparation for pre-professional studies.

Course Outcomes:

1. Ability to explain the concepts related to sociology.
2. Ability to analyse how social change factors affect individuals and society
3. Ability to propose solutions using sociological perspectives to solve problemson the impact of media towards society.

SMM20103 ORGANIZATIONAL COMMUNICATION [KOMUNIKASI ORGANISASI]

No of Credits: 3

Course Synopsis:

This course provides an introduction to contemporary theory and intellectual traditions applied to the study of organizations, including the role of organizations in society and cultural practices. Whatever your career goals, the knowledge you gain from participating in this course will help you make sense of how communication is integral to the organizational experience.

Course Outcomes:

1. Ability to explain organizational communication elements and processes.
2. Ability to analyse communication problems in organizational contexts.
3. Ability to develop strategies based on the organizational communication issues and problems.

SMM20203 DIGITAL PHOTOGRAPHY [FOTOGRAFI DIGITAL]

No of Credits: 3

Course Synopsis:

In this course, students learn the basic principles of the photographic media, basic camera functions, become familiar with various settings and presets on camera, explore the photographic process from pre-visualization, taking images, digital storage media and transfer of images, to adjusting and manipulation of digital images, output to print and creating digital portfolio. Emphasis is placed on learning design principles, composition, and fundamental history and theory of photographic media. Through a number of projects students approach various subjects to create images that are personal and expressive.

Course Outcomes:

1. Ability to analyse the notion of digital photography as an art form
2. Ability to practice camera techniques necessary for using digital photography as a creative tool.
3. Ability to demonstrate professional images editing software and apply proper digital workflow.

SMM20303 GRAPHIC DESIGN FOR NEW MEDIA [REKA BENTUK GRAFIK UNTUK MEDIA BAHARU]

No of Credits: 3

Course Synopsis:

This course is designed upon creative industry needs nowadays for every graphic designer. The students will learn the skills in using Adobe software, fundamentals of design, and how to solve a design problem in the real world. Covering every aspect of fundamentals include Design Principle, Elements of Arts, Stages of Design and many more. At the end of this course, students should be able to demonstrate the skill of using Adobe software, the fundamentals and problem solving in design.

Course Outcomes:

1. Ability to analyze the key ideas related to Graphic Design.
2. Ability to demonstrate technical skills by using graphic software to produce creative projects
3. Ability to perform the creative process and design strategies in solving design problem

SMM20403 NEW MEDIA ANALYSIS [ANALISIS MEDIA BAHARU]

No of Credits: 3

Course Synopsis:

This course is designed to help students develop an informed, critical, and practical understanding of new communication media including analysis of digital media. This course enables students to demonstrate their understanding of the key concepts of media languages, representation, audience, production, skills and processes as well as express their creativity and originality.

Course Outcomes:

1. Ability to explain the process and technique of new media analysis
2. Ability to analyse processes and techniques to create media works.
3. Ability to create media content for different contexts, audiences and purposes.

SMM30103 MEDIA PSYCHOLOGY [PSIKOLOGI MEDIA]

No of Credits: 3

Course Synopsis:

Media psychology is concerned with the interaction between people and media technology on a cognitive, affective, and behavioral level. This course will help to improve the students' ability to comprehend the concepts related to media psychology that can be used to discuss issues related with human behaviour and media. The main concern in this course is to help students to use their understanding of media psychology to recommend a solution to neutralize the possible impact of vast development in media technology to humans.

Course Outcomes:

1. Ability to explain the concepts related to media psychology
2. Ability to evaluate issues related with interaction of human behavior and media technology
3. Ability to propose solutions using psychology elements to solve problems on a media basis.

SMM20503 NEW ERA MANAGEMENT [PENGURUSAN ERA BARU]

No of Credits: 3

Course Synopsis:

This course aims to expose students to the basic concepts and skills for managing organizations in the new era. Specifically, the course focuses on managerial functions in organizations such as planning, organizing, leading, controlling and monitoring organizations either locally or globally based on new era management driven by the strength of information technology and innovation.

Course Outcomes:

1. Ability to explain the concepts related to new era management.
2. Ability to analyse the management aspects of the new era in local and international organizations
3. Ability to propose solutions in managing the organizations facing contemporary challenges led by the power of innovation and information technology.

SMM30203 RESEARCH METHODOLOGY [KAEDAH PENYELIDIKAN]

No of Credits: 3

Course Synopsis:

This course focuses on the processes involved in conducting research in the field of social sciences particularly in new media and communication. It aims at providing the experience for students to apply selected research designs to conduct research focused in the field of new media and communication. In addition, it develops research exposure in collecting, analyzing and interpreting research data. The course will enable students to apply research format to prepare a research proposal.

Course Outcomes:

1. Ability to explain the concepts and research processes in new media communication
2. Ability to distinguish research design to conduct research in the field of new media and communication.
3. Ability to prepare a research proposal.

SMM30303 DIGITAL MARKETING [PEMASARAN DIGITAL]

No of Credits: 3

Course Synopsis:

Digital marketing is an exciting area of marketing practice. In this course, we will cover the what, why, and how of major current approaches, including online listening and monitoring, website traffic analytics, search engine optimization, search and display ads, affiliates, email marketing, and social media. Digital marketers approach their jobs with a curiosity about how new technologies will change business, with an insistence that strategy drive tactics, and with a measurement mindset. The course is designed to get the student to think like a digital marketing professional.

Course Outcomes:

1. Ability to explain the concepts and frameworks used in Digital marketing.
2. Ability to evaluate digital marketing concepts in business.
3. Ability to produce effective digital marketing strategies in business.

SMM30403 DIGITAL VIDEO PRODUCTION [PENERBITAN VIDEO DIGITAL]

No of Credits: 3

Course Synopsis:

This course introduces students to the fundamentals of digital video production. Students will learn how to produce short videos, including storyboarding, directing, lighting and shooting, sound recording, and will finish productions using current video and sound-editing software. Particular attention is paid to the skills required to successfully bring a mediated story or message to an audience. Students will learn to analyse and respond critically to a variety of audio/visual productions.

Course Outcomes:

1. Ability to demonstrate various concepts in operating digital video production.
2. Ability to interpret audio/visual productions and respond critically.
3. Ability to evaluate technical and aesthetic qualities of digital video productions in the context of contemporary video making trends.

SMM30503 WEB DESIGN AND DEVELOPMENT [REKA BENTUK DAN PEMBANGUNAN WEB]

No of Credits: 3

Course Synopsis:

This course provides the knowledge and basic skills in creating, coding and posting basic HTML and CSS files to the Internet. Equipped with standard design guidelines to ensure strong website presentation, the students will have a foundational knowledge of website creation and apply it to the planning, design and development of their own web page over the course of the semester. Critical thinking will be encouraged through class interactions, projects, and online postings.

Course Outcomes:

1. Ability to develop HTML, CSS code and website designs.
2. Ability to perform the skills of applying new media elements on websites.
3. Ability to design a functioning prototype website.

SMM30603 NEW MEDIA ARTS (SENI MEDIA BAHARU)

No of Credits: 3

Course Synopsis:

This course offers an overview of and exposure to visual and media arts through a theoretical, aesthetic, and practical framework. Students will be introduced to media concepts and techniques in creating creative media artwork which will create an interactive digital media, hologram, digital painting, and projection mapping. As a result, students will be equipped to build their own creative media artwork. The practical component of the course will emphasize the creative process from conception of idea and writing through production and postproduction. Students will be given a series of assignments in which they will produce interactive digital media, hologram, digital painting and projection mapping projects in all genres discussed.

Course Outcomes:

1. Ability to Interpret the key ideas related to the new media art.
2. Ability to apply technical skills by using various graphic software to produce creative new media artwork.
3. Ability to prepare and deliver coherent and structured both written and artwork development research reports.

SMM30703 DATA REASONING [PENAAKULAN DATA]

No of Credits: 3

Course Synopsis:

This course provides to students the process of evaluating data using analytical and logical reasoning to examine each component of the data provided. Data from various sources is gathered, reviewed, and then analysed using a variety of specific data analysis methods with the goal of discovering useful information or supporting decision-making and learning to use data to make reasonable, useful conclusions and to write the results and reports in effective and convincing ways.

Course Outcomes:

1. Ability to understand the concepts and terms related to the basics of statistical analysis.
2. Ability to use software for data entry and mining.
3. Ability to analyse research data based on quantitative and qualitative.
4. Ability to interpret findings and develop a meaningful conclusion.

SMM30803 3D MODELLING FOR BEGINNERS [ASAS PEMODELAN 3D]

No of Credits: 3

Course Synopsis:

This course aims to expose the students to the skills of practical in basic 3D modelling through providing in-depth experience of 3D modelling practices and applications. Object manipulation, lighting and rendering techniques, and specialized components, such as characters, are addressed at various levels. Students completing the class will have a foundational understanding of, and practical experience in creating three-dimensional animated text, graphics, and characters that can be used in games, multimedia, and transmedia applications.

Course Outcomes:

1. Ability to produce simple 3D models and environments.
2. Ability to demonstrate materials for 3D models (Texturing).
3. Ability to compose effective & rendering of 3D environments.

SMM30903 CONTEMPORARY PHOTOGRAPHY [FOTOGRAFI KONTEMPORARI]

No of Credits: 3

Course Synopsis:

The course will begin in a project directed framework but will develop towards independent research as it progresses. Students will develop a sound critical dialogue within the disciplines of photography, progressing into more independent practical solutions for a series of challenging projects. Students begin to construct a platform of individual study in discussion with their personal tutor and informed by peer discussions.

Course Outcomes:

1. Ability to demonstrate descriptive and analytical skills with reference to advanced visual analysis of photographic images.
2. Ability to demonstrate independent judgements with reference to the study of contemporary photography.
3. Ability to develop a multi-tasking and multi-skilled approach to professional practices.

SMM31003 INDUSTRIAL PSYCHOLOGY [PSIKOLOGI INDUSTRI]

No of Credits: 3

Course Synopsis:

This course focuses both on understanding the psychological bases of work behavior and on the organizational practices used to create a good fit between people's characteristics and work demands. During this course, we will cover a number of topics including personnel selection, placement, training, work motivation, job satisfaction, leadership, teamwork, and work-family balance.

Course Outcomes:

1. Ability to explain the science of human behavior is used to select, develop, and manage employees.
2. Ability to evaluate the major content areas and vital foundational components of Industrial Psychology.
3. Ability to propose solutions to the problems relevant to Industrial Psychology.

SMM31103 ELECTRONIC ENTREPRENEURSHIP [KEUSAHAWANAN ELEKTRONIK]

No of Credits: 3

Course Synopsis:

Learn how entrepreneurial ventures use digital technology to design and offer new products and services, acquire and retain customers, analyze customer data, and provide satisfying user experiences online. Learn how to identify and exploit business opportunities online. Learn how to test new business ideas on real customers. Be able to exploit modern business technology trends and experimental business. Digital products and services will be the norm going forward for businesses. This course will help you begin to understand this new reality, and to develop the skills needed to deliver and manage digital business offerings.

Course Outcomes:

1. Ability to explain the theories and concepts that are relevant to electronic entrepreneurship.
2. Ability to analyse the process of electronics entrepreneurship in a real business environment.
3. Ability to develop and propose a business plan and demonstrate the main elements of digital business design.

SMM40103 PUBLIC RELATIONS AND NEW MEDIA [PERHUBUNGAN AWAM DAN MEDIA BAHARU]

No of Credits: 3

Course Synopsis:

The course is designed to provide students with the theory and knowledge, understanding, skills and experience in applying new and emerging media technologies to public relations. Students will learn how new media technologies are used by public relations professionals to develop online strategies.

Course Outcomes:

1. Ability to explain the various ways, new and emerging media technologies are shaping and changing PR practices and activities.
2. Ability to analyse how social media and new media technologies are applied to PR practices and activities.
3. Ability to apply and demonstrate various new media technologies to PR practices and activities.
4. Ability to evaluate and recommend the solution to the PR issues in a new media context.

SMM40203 ETHICS AND LAW IN NEW MEDIA COMMUNICATION [UNDANG-UNDANG DAN ETIKA DALAM KOMUNIKASI MEDIA BAHARU]

No of Credits: 3

Course Synopsis:

This course aims to enhance students' understanding and knowledge about policies, laws, and ethics related to communication and new media. Students will develop an understanding and appreciation of issues related to policies, law, and ethics in new media. The case study approach will be used, with an emphasis on the principles and philosophy that underlie the various aspects of communications. At the end of this course, students should be able to analyse the important law and ethical issues involved with the new media scenarios.

Course Outcomes:

1. Ability to explain the policies, laws, and ethics that are relevant to the field of communications and new media
2. Ability Interpret law and ethics related to communication and new media
3. Ability to evaluate the law and ethics related to communication and new media issues

SMM40303 ANIMATION FOR INTEGRATED MEDIA [ANIMASI UNTUK MEDIA BERSEPADU]

No of Credits: 3

Course Synopsis:

This course provides the students with the familiarization of the Adobe Flash and Adobe After Effects. It also will cover the fundamental programming concepts in addition to the flash and aftereffects environment. The course also covers principles of interface design, measurement as it applies to embedded items, and requires the writing of an instructional design document. Students finishing this course will have at least one basic Animation and After Effects project for their portfolios demonstrating a strong knowledge of the software.

Course Outcomes:

1. Ability to apply the principles of animation in new media.
2. Ability to design animate vector graphics for new media.
3. Ability to design and compose themed animation for new media.

SMM40403 DIGITAL CREATIVE ADVERTISING [PENGIKLANAN KREATIF DIGITAL]

No of Credits: 3

Course Synopsis:

This course focuses on creative thinking and exploration, creative strategy, realization and experience which encourages students to become independent learners with the ability to synthesize and reflect. It covers specialized courses of study in creative advertising in copywriting, art direction and practices that develop students' capability to articulate their learning to enter professional new media and advertising practice in the creative industry.

Course Outcomes:

1. Ability to create creative ideas and skills to communicate through media with audiences.
2. Ability to evaluate methods and manage projects in response to well-defined problems, communicating effectively in the discipline.
3. Ability to evaluate the capacity of producing work that follows the creative process from research through ideation to execution using a variety of media production technologies.

SMM40502 FINAL YEAR PROJECT 1 [PROJEK TAHUN AKHIR 1]

No of Credits: 2

Course Synopsis:

This course comprises the first phase of the final year project and provides the opportunity to apply knowledge and skills in planning and managing projects. At the end of the semester, the students will defend their project proposal before a full project execution in the next semester.

Course Outcomes:

1. Ability to formulate project planning, implementation and prepare a project proposal
2. Ability to practice ethical and professional norms for the implementation of the projects.
3. Ability to present and justify the project's proposal.

SMM40603 AUDIO DESIGN [REKA BENTUK AUDIO]

No of Credits: 3

Course Synopsis:

Audio Design is an area that is closely related to the maintenance and handling of sound equipment and recording equipment. A comprehensive hands-on study of the post-production sound workflow in the video production process, with emphasis on sound editing, sound design and multitrack mixing. The course is project-based learning.

Course Outcomes:

1. Ability to demonstrate proficiency of the skills basic to audio production, including recording and mixing.
2. Ability to create solutions, integrating technical knowledge and design principles for Audio products and projects.
3. Ability to revise digital audio projects through a three-step process of description, analysis and evaluation.

SMM40703 CRISIS COMMUNICATION IN NEW MEDIA [KOMUNIKASI KRISIS DALAM MEDIA BAHARU]

No of Credits: 3

Course Synopsis:

The potential risks in modern-day business are greater, more dynamic, and less predictable than ever before. The greatest exposure does not lie within these risks. Rather, it lies in having a team that is not prepared to anticipate, foresee, or respond to a rising threat, and its impact on your reputation, revenue, and relationships in real-time. In this course the students will examine theories and concepts that lay at the intersections of communication, business, social psychology, and interpersonal relationships. This course will also address historic and contemporary examples of crises in order to give the students both theoretical and hands-on approach to crisis communication and an understanding of how it relates to our daily world.

Course Outcomes:

1. Ability to critically analyse crisis communication in new media case studies
2. Ability to critically discuss crisis communication and management strategies and tactics for detection, prevention, preparation, containment, and recovery.
3. Ability to recommend the application of learned new media crisis communication and management skills to a real-world context.

SMM40803 EVENT MANAGEMENT [PENGURUSAN ACARA]

No of Credits: 3

Course Synopsis:

This course covers the various types and ranges of events, as well as the project nature of events and the unique set of skills required for a successful event project. This course combines theoretical and practical applications in the development of skills and knowledge in the administration of many types of event planning, both locally and globally. Students should be able to organize, implement, and conduct the real event by the end of this course.

Course Outcomes:

1. Ability to develop an enhanced understanding of professionalism in event management.
2. Ability to analyze and manage the risks of an event.
3. Ability to organize a full range of resources to ensure successful event

management.

4. Ability to organize an event project.

SMM40903 NEW MEDIA ISSUES & CHALLENGES [ISU DAN CABARAN MEDIA BAHARU]

No of Credits: 3

Course Synopsis:

This course provides a forum for students to discuss and generate ideas (prepare, practice and present) on issues related to a variety of applied new media communication. Students will conduct a project or a study of a research topic of their choice, discuss these issues with experts in the field of project or research selected, work in discussion groups, debate and problem solve on selected issues. The students will be given an opportunity to integrate their knowledge, skills and practical experience gained in the program. This course seeks to improve their skills, confidence, and long-term success by focusing on critical thinking, writing, and speaking; on building community; and on engaging with institutional, intellectual, and social culture.

Course Outcomes:

1. Ability to determine the strategies to exploit information resources effectively, efficiently and ethically.
2. Ability to write appropriate information related to current new media issues and challenges
3. Ability to perform a sharing session by communicating intelligently with audiences, and to collaborate effectively.

SMM41003 SKILLS IN ORGANIZATIONAL STRATEGY AND PERFORMANCE [KEMAHIRAN PENGURUSAN STRATEGI DAN PRESTASI ORGANISASI]

No of Credits: 3

Course Synopsis:

This course is designed to explore the basic knowledge and skills to formulate a strategy and organizational performance. Students will learn the basic concepts of strategy and organizational performance and hone skills on how to formulate the strategy of an organization such as mission and vision, scanning the environment, set the theme and the success of strategic, strategic objectives, strategic map, performance measures, strategic initiatives, and implementation of strategies and performance automation.

Course Outcomes:

1. Ability to explain the concepts and elements related to organizational strategy and /or performance management.
2. Ability to formulate the organizational strategy and performance Measures step by step.
3. Ability to produce organizational strategic and performance plan documents.

SMM41104 FINAL YEAR PROJECT 2 [PROJEK TAHUN AKHIR 2]

No of Credits: 4

Course Synopsis:

This course comprises the second phase of the final year project and provides the opportunity to apply knowledge and skills in managing and implementing projects. At the end of the semester, the students will present their project reports in a seminar.

Course Outcomes:

1. Ability to execute project and management of their selected project.
2. Ability to practice ethical and professional norms for the implementation of the projects.
3. Ability to present and justify the projects.

SMM49906 INDUSTRIAL TRAINING [LATIHAN INDUSTRI]

No of Credits: 5

Course Synopsis:

Students are required to undergo industrial training at a selected industry or organization for 12 weeks. During the training, there will be a visit from the faculty panel to monitor their work progress and to get feedback from their industrial supervisor. This training will expose students to technical and professional as well skills such as communication, leadership, and management. At the end of the training, students must prepare and submit a report regarding their work.

Course Outcomes:

1. Ability to display good work performance and adapt to the working environment during the training period.
2. Ability to demonstrate good communications and work ethics during the training period.
3. Ability to perform assigned tasks given by the host company.

SMT10103 PRINCIPLE OF DESIGN [PRINSIP REKABENTUK]

No of Credits: 3

Course Synopsis:

This course develops multimedia specialists by integrating design theory with practical problem-solving. Students explore foundational design principles, applying them to interactive media projects through lectures, tutorials, seminars, and studio works.

Course Outcomes:

1. Ability to explain the principles of design in interactive media
2. Ability to analyse design works based on appropriate principles
3. Ability to prepare design work based on appropriate principles of design

SMT10203 FUNDAMENTALS OF DRAWING [ASAS LUKISAN]

No of Credits: 3

Course Synopsis:

This course introduces classical and contemporary drawing techniques, emphasizing formal language, observation, linear perspective, composition, shading, tonal value, and critical thinking. Students develop practical drawing skills for fine arts practice.

Course Outcomes:

1. Ability to interpret key fundamentals of digital art
2. Ability to analyze and evaluate historical and contemporary drawings
3. Ability to produce drawings in multiple media that synthesize observational techniques

SMT10303 INTRODUCTION TO SCRIPTING PROGRAMMING [PENGENALAN KEPADA PENGATURCARAAN SKRIP]

No of Credits: 3

Course Synopsis:

This course emphasizes mobile application development using modern programming languages and tools. Students gain skills in database management, networking, application development, and deployment, enabling them to create functional mobile applications.

Course Outcomes:

1. Ability to apply basic techniques used in programming
2. Ability to produce programming algorithms/flowcharts in various contexts
3. Ability to construct basic computer applications using appropriate programming scripts

SMT10403 INTRODUCTION TO INTERACTIVE MEDIA [PENGENALAN KEPADA MEDIA INTERAKTIF]

No of Credits: 3

Course Synopsis:

This course covers fundamentals of interactive media design and development, including UI/UX design, interactive storytelling, multimedia integration, and

interactive programming. Students conceptualize, prototype, and implement projects using industry-standard software and technologies.

Course Outcomes:

1. Ability to identify the fundamentals of interactive media
2. Ability to analyze fundamentals of interactive media in media production
3. Ability to use media editing software in interactive media production

SMT10503 WEB DESIGN & DEVELOPMENT [REKA BENTUK & PEMBANGUNAN WEB]

No of Credits: 3

Course Synopsis:

This course provides knowledge and skills to create, code, and publish HTML and CSS-based websites. The course emphasizes design guidelines, planning, development, and interactive media integration, providing foundational web design skills for academic and professional applications.

Course Outcomes:

1. Ability to write HTML and CSS code for website designs
2. Ability to apply web design principles in developing websites
3. Ability to design a basic website containing interactive media

SMT10603 INTRODUCTION TO 2D ANIMATION [PENGENALAN KEPADA ANIMASI 2D]

No of Credits: 3

Course Synopsis:

Students explore fundamental principles, techniques, and creative processes of 2D animation for interactive digital experiences. The course equips students with skills to bring characters, narratives, and interactive elements to life through animation, emphasizing timing, spacing, and movement.

Course Outcomes:

1. Ability to identify the basic principles in animation production
2. Ability to produce an animatic storyboard for interactive media
3. Ability to complete a short 2D animation video using creative techniques

SMT20103 GRAPHIC DESIGN FOR INTERACTIVE MEDIA [REKABENTUK GRAFIK UNTUK MEDIA INTERAKTIF]

No of Credits: 3

Course Synopsis:

This course explores the principles, techniques, and applications of graphic design within interactive digital experiences. Students gain skills to create visually engaging and user-centric designs across platforms, demonstrating proficiency in Adobe software and applying design principles in academic and professional contexts.

Course Outcomes:

1. Ability to analyse the key ideas related to graphic design
2. Ability to demonstrate technical skills using graphic software to produce creative projects
3. Ability to prepare graphic media using principles of graphic design

SMT20203 PHOTOGRAPHY FOR INTERACTIVE MEDIA [FOTOGRAFI UNTUK MEDIA INTERAKTIF]

No of Credits: 3

Course Synopsis:

This course introduces students to photographic principles, camera functions, and composition. Students learn the process from pre-visualization, capturing images, digital storage, and editing, to portfolio creation. Emphasis is on design, composition, and photography theory for expressive outcomes.

Course Outcomes:

1. Ability to identify the concept of digital photography as an art form
2. Ability to demonstrate camera techniques as creative tools
3. Ability to produce photographic and digital works in interactive media

SMT20503 MOTION GRAPHICS FOR INTERACTIVE MEDIA [GRAFIK BERGERAK UNTUK MEDIA INTERAKTIF]

No of Credits: 3

Course Synopsis:

This introductory course teaches motion graphics for digital and interactive

media. Using industry-standard software, students create animations, visual effects, storyboards, and motion graphics projects for multimedia and video production.

Course Outcomes:

1. Ability to apply principles of motion graphics
2. Ability to produce storyboards for motion graphics
3. Ability to prepare motion graphics for interactive media

SMT20603 MEDIA HISTORY AND CULTURE [SEJARAH MEDIA DAN BUDAYA]

No of Credits: 3

Course Synopsis:

This course explores media's historical progression and cultural impact. Students analyze media evolution, societal influences, and cultural representations, gaining critical skills for engaging with contemporary media landscapes and professional media practice.

Course Outcomes:

1. Ability to explain historical and cultural development of media technologies
2. Ability to analyze historical events and cultural practices in media
3. Ability to evaluate issues related to media history and culture

SMT20303 FUNDAMENTALS OF 3D MODELING [ASAS PEMODELAN 3D]

No of Credits: 3

Course Synopsis:

This course provides practical experience in basic 3D modeling. Students learn object manipulation, lighting, rendering, and character creation, gaining foundational skills for creating 3D text, graphics, and characters for games and multimedia.

Course Outcomes:

1. Ability to prepare proper 3D models
2. Ability to apply suitable material designs for 3D models
3. Ability to design and render 3D environments

SMT20103 GRAPHIC DESIGN FOR INTERACTIVE MEDIA [REKABENTUK GRAFIK UNTUK MEDIA INTERAKTIF]

No of Credits: 3

Course Synopsis:

This course explores the principles, techniques, and applications of graphic design within interactive digital experiences. Students gain skills to create visually engaging and user-centric designs across platforms, demonstrating proficiency in Adobe software and applying design principles in academic and professional contexts.

Course Outcomes:

1. Ability to analyse the key ideas related to graphic design
2. Ability to demonstrate technical skills using graphic software to produce creative projects
3. Ability to prepare graphic media using principles of graphic design

SMT20203 PHOTOGRAPHY FOR INTERACTIVE MEDIA [FOTOGRAFI UNTUK MEDIA INTERAKTIF]

No of Credits: 3

Course Synopsis:

This course introduces students to photographic principles, camera functions, and composition. Students learn the process from pre-visualization, capturing images, digital storage, and editing, to portfolio creation. Emphasis is on design, composition, and photography theory for expressive outcomes.

Course Outcomes:

1. Ability to identify the concept of digital photography as an art form
2. Ability to demonstrate camera techniques as creative tools
3. Ability to produce photographic and digital works in interactive media

SMT20503 MOTION GRAPHICS FOR INTERACTIVE MEDIA [GRAFIK BERGERAK UNTUK MEDIA INTERAKTIF]

No of Credits: 3

Course Synopsis:

This introductory course teaches motion graphics for digital and interactive

media. Using industry-standard software, students create animations, visual effects, storyboards, and motion graphics projects for multimedia and video production.

Course Outcomes:

1. Ability to apply principles of motion graphics
2. Ability to produce storyboards for motion graphics
3. Ability to prepare motion graphics for interactive media

SMT20603 MEDIA HISTORY AND CULTURE [SEJARAH MEDIA DAN BUDAYA]

No of Credits: 3

Course Synopsis:

This course explores media's historical progression and cultural impact. Students analyze media evolution, societal influences, and cultural representations, gaining critical skills for engaging with contemporary media landscapes and professional media practice.

Course Outcomes:

1. Ability to explain historical and cultural development of media technologies
2. Ability to analyze historical events and cultural practices in media
3. Ability to evaluate issues related to media history and culture

SMT20303 FUNDAMENTALS OF 3D MODELING [ASAS PEMODELAN 3D]

No of Credits: 3

Course Synopsis:

This course provides practical experience in basic 3D modeling. Students learn object manipulation, lighting, rendering, and character creation, gaining foundational skills for creating 3D text, graphics, and characters for games and multimedia.

Course Outcomes:

1. Ability to prepare proper 3D models
2. Ability to apply suitable material designs for 3D models
3. Ability to design and render 3D environments

SMT20403 VIDEO PRODUCTION FOR INTERACTIVE MEDIA [PENERBITAN VIDEO UNTUK MEDIA INTERAKTIF]

No of Credits: 3

Course Synopsis:

This course familiarizes students with single-camera digital video production, editing, and visual storytelling. Students gain experience in writing, producing, directing, shooting, and editing digital interactive media.

Course Outcomes:

1. Ability to demonstrate effective use of digital video production equipment
2. Ability to prepare interactive videos using various concepts and styles
3. Ability to analyze technical and non-technical aspects of interactive video

SMT30103 INTERACTIVE 3D DEVELOPMENT [PEMBANGUNAN INTERAKTIF 3D]

No of Credits: 3

Course Synopsis:

This course focuses on principles and techniques for creating interactive 3D experiences, covering graphics, game development, and interactive applications. Students gain hands-on experience with industry-standard tools to create 3D content.

Course Outcomes:

1. Ability to create basic virtual 3D environments
2. Ability to create basic augmented reality applications
3. Ability to prepare an interactive 3D application

SMT30203 AUDIO PRODUCTION / PENERBITAN AUDIO

No of Credits: 3

Course Synopsis:

This course introduces techniques for recording, editing, mixing, and producing sound for video and television. Students gain hands-on experience in digital music production in a professional lab, learning audio principles for creative projects.

Course Outcomes:

1. Ability to demonstrate basic audio production skills

2. Ability to synthesize audiovisual products based on audiovisual principles
3. Ability to analyze technical and non-technical aspects of audiovisual content

SMT30303 UX & UI DESIGN [REKA BENTUK PENGALAMAN PENGGUNA & ANTARA MUKA PENGGUNA]

No of Credits: 3

Course Synopsis:

This course explains UI and UX principles. UI design refers to visual layout, while UX design focuses on the user's experience. Students learn principles and practices of UI/UX design in human-computer interaction development.

Course Outcomes:

1. Ability to identify the principles of UI and UX
2. Ability to apply UI and UX principles in designing interfaces
3. Ability to develop prototype user interfaces

SMT40203 INTERACTIVE MEDIA ARTS [SENI MEDIA INTERAKTIF]

No of Credits: 3

Course Synopsis:

This course explores the world of interactive media arts, combining elements of digital media, visual arts, and technology. Students learn to create interactive and immersive experiences through websites, apps, digital art, and installations.

Course Outcomes:

1. Ability to explain the fundamentals of interactive media design
2. Ability to apply design fundamentals in interactive media production
3. Ability to produce interactive media arts

SMT40103 CREATIVE ADVERTISING [PENGIKLANAN KREATIF]

No of Credits: 3

Course Synopsis:

This course focuses on creative thinking, strategy, and execution in advertising. Students develop skills in copywriting, branding, art direction, and cross-media advertising, preparing them for professional practice.

Course Outcomes:

1. Ability to produce creative advertisements for marketing and promotion
2. Ability to prepare methods in response to well-defined problems
3. Ability to manage cross-media advertising projects

SMT40303 MOBILE APPLICATION DEVELOPMENT [PEMBANGUNAN APLIKASI MUDAH ALIH]

No of Credits: 3

Course Synopsis:

This course teaches mobile app development using specialized software and programming languages. Students learn database management, networking, and app deployment, equipping them to create, test, and publish apps.

Course Outcomes:

1. Ability to explain the mobile application development process
2. Ability to demonstrate technical skills in mobile development
3. Ability to produce mobile application prototypes

SMT40503 LAW IN CREATIVE INDUSTRIES [UNDANG-UNDANG DALAM INDUSTRI KREATIF]

No of Credits: 3

Course Synopsis:

This course enhances understanding of policies, law, and ethics in communication and media. Students use case studies to analyze legal issues, protect intellectual property, negotiate contracts, and sustain careers in creative industries.

Course Outcomes:

1. Ability to explain policies, laws, and ethics relevant to creative industries
2. Ability to interpret law and ethics in creative industries
3. Ability to evaluate law and ethics in industry scenarios

SMT40603 DIGITAL MEDIA CONTENT MANAGEMENT [PENGURUSAN KANDUNGAN MEDIA DIGITAL]

No of Credits: 3

Course Synopsis:

This course explores digital content management, including metadata, taxonomy, content creation, distribution, and rights management. Students develop skills to organize content and compose social media content.

Course Outcomes:

1. Ability to discuss principles and characteristics of content management
2. Ability to prepare the digital content framework
3. Ability to compose social media content in specific contexts

SMT40703 INTERACTIVE MEDIA DESIGN & DEVELOPMENT METHODS [KAEDAH REKA BENTUK & PEMBANGUNAN MEDIA INTERAKTIF]

No of Credits: 3

Course Synopsis:

This course emphasizes a comprehensive approach to product development in interactive media. Students explore design principles, UI/UX, storytelling, game design, responsive design, and emerging technologies.

Course Outcomes:

1. Ability to identify concepts and research processes in interactive media
2. Ability to differentiate product design approaches in development
3. Ability to prepare a product design and development proposal

SMT40803 BIG DATA MANAGEMENT [PENGURUSAN DATA BESAR]

No of Credits: 3

Course Synopsis:

This course introduces students to analysis and management of big data using modern techniques and tools. Students work with datasets from various domains, applying principles of investigation, validation, and reporting.

Course Outcomes:

1. Ability to identify applicable government regulations and maintain Big Data security
2. Ability to organize architectures and storage for Big Data applications
3. Ability to analyze data within Big Data systems

SMT41012 INDUSTRIAL TRAINING [LATIHAN INDUSTRI]

No of Credits: 12

Course Synopsis:

Industrial Training provides immersive experience in professional environments. Students integrate theory with practice while gaining insights into the interactive media industry.

Course Outcomes:

1. Ability to display good work performance and adapt to the workplace
2. Ability to demonstrate good communication and work ethics
3. Ability to perform assigned tasks given by host company

SMT41104 INTERACTIVE MEDIA TECHNOLOGY FYP 1 [PTA TEKNOLOGI MEDIA INTERAKTIF]

No of Credits: 4

Course Synopsis:

This course is the first phase of the final year project, providing students the opportunity to plan and manage projects. Students defend their proposal before executing the full project in the next semester.

Course Outcomes:

1. Ability to report project development, testing, and evaluation

2. Ability to practice ethical and professional norms in project development
3. Ability to present the project proposal

SMT41212 INTERACTIVE MEDIA TECHNOLOGY FYP 2 [TEKNOLOGI MEDIA INTERAKTIF FYP 2]

No of Credits: 12

Course Synopsis:

Final Year Project 2 integrates knowledge and skills acquired throughout the program. Students manage and develop their project, culminating in prototype defense. The course develops problem-solving skills and professional readiness.

Course Outcomes:

1. Ability to report project development, testing, and evaluation
2. Ability to practice ethical and professional norms for project development
3. Ability to present the final product

UR6340001

Bachelor of Business (International Business) with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates who are highly sought after by the industry at the executive level.

PEO 2

Graduates who are business leaders experienced in global/international business environments

PEO 3

Graduates who pursue continuous educational opportunities.

PEO 4

Graduates who contribute to society.

PEO 5

Graduates who contribute through research and development



PROGRAMME OUTCOMES (PO)

PO 1

Ability to apply the theories and concepts of international business management in the work environment.

PO 2

Ability to analyse problems and enhance their problem solving and decision making skills.

PO 3

Ability to adapt business operation practices and principles currently used in a professional business environment.

PO 4

Ability to collaborate professionally and ethically with multidisciplinary business teams.

PO 5

Ability to communicate effectively in business and work environments.

PO 6

Ability to use appropriate information and communication technology to engage in lifelong learning.

PO 7

Ability to propose solutions for international business issues based on analysing numerical data and information.

PO 8

Ability to demonstrate leadership skills and responsibility in international business environments.

PO 9

Ability to identify international business opportunities by analysing global business trends.

PO 10

Ability to demonstrate professional entrepreneurship skills and innovativeness required for sustainable development.

PO 11

Ability to adopt professionally and ethically the social, cultural and environmental responsibilities and issues from a global perspective.

CURRICULUM STRUCTURE UR6340002 BACHELOR OF BUSINESS (INTERNATIONAL BUSINESS) WITH HONOURS INTAKE 2025/2026							
YEAR	FIRST		SECOND		THIRD		
SEMESTER	I	II	III	IV	V	VI	BREAK
BUSINESS PROGRAM COMMON CORE/ DISCIPLINE CORE/ SPECIALIZATION COURSES (112 credits)	SMP10103 Principles of Economics	SMP10703 Principles of Finance	SMP20203 International Business Management	SMP22203 Managerial Accounting	SMP33803 Strategic Management	SMP30303 International Finance	SMP39204 Industrial Training
	SMP10603 Principles of Accounting	SMP11002 Organisational Behaviour	SMP22103 Operations Management	SMP20903 Leadership in Organisation	SMP30103 Talent Management	SMP30503 International Human Resource Management	
	SMP10803 Principles of Marketing	SMP15503 Business Ethics	SMP22303 Human Resource Management	SMP21003 Management Information System	SMP30603 Sales Management	SMP33503 International Business Environment	
	SMP10903 Principles of Management	SMP11102 Introduction to Human Resource Information Systems	SMP20803 Financial Technology	SMP25503 Digital Marketing	SMP31803 Research Methodology	SMP33703 International Marketing	
	SMP15603 Principles of Business Analytics	SMP11203 Services Marketing	SMP22503 Digital Business	SMP20303 International Economics	SMP32203 Supply Chain Management	SMP34403 Export Import Management	
	SMP11902 Business Communication	SMP11503 Principles of Entrepreneurship	SMP20603 Cross-Cultural Management	SMP21103 Multinational Corporation	SMP30703 Foreign Direct Investment	SMP36003 International Business Strategy	
		SMP11803 Organisational Economics					
UNIVERSITY REQUIREMENT COURSES (12 credits)	SMZXXX01 Co-Curriculum 1	SMZXXX01 Co-Curriculum 2	SMB20102 English for General Communication ^[4]	SMU13102 Appreciation of Ethics and Civilization ^[2]	SMB31302 English for Academic Purposes	SMU12102 Integrity and Anti Corruption ^[5]	
	SMU13002 Philosophy and Current Issues ^[2]						
TOTAL CREDITS [124 credits]	20	20	20	20	20	20	4
AUDIT COURSES	SMB10102 Preparatory English ^[1]	SMB41002 University Malay Language ^[3]					

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).
SMB10102 Preparatory English is an Audit course.

[2] International students may choose either SMU13002 Philosophy and Current Issues or SMU13102 Appreciation of Ethics and Civilization. In the semester when they do not take one of these courses, they are compulsory to register for SMB11002 Basic Malay Language

[3] Compulsory to local student who obtained a Grade B+ and below in Bahasa Melayu in the Sijil Pelajaran Malaysia (SPM) examination

[4] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but need to replace the course by registering for a 2 credits Optional Course

[5] International students should register SMU13202 Malaysian Studies.

UR6340002

Bachelor Of Business (Engineering Entrepreneurship) with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates who are entrepreneurs.

PEO 2

Graduates who are entrepreneurial leaders in the chosen field as demonstrated through career advancement

PEO 3

Graduates who pursue continuous educational opportunities.

PEO 4

Graduates who contribute to society.

PEO 5

Graduates who contribute through research and development.



PROGRAMME OUTCOMES (PO)

PO1

Ability to apply the theories and concepts of engineering entrepreneurship in the work environment.

PO2

Ability to analyse problems and enhance their problem solving and decision making skills.

PO3

Ability to adapt business operation practices and principles currently used in professional business environment.

PO4

Ability to collaborate professionally and ethically with multidisciplinary business teams.

PO5

Ability to communicate effectively in business and work environment.

PO6

Ability to use appropriate information and communication technology to engage in lifelong learning.

PO7

Ability to propose solution for engineering entrepreneurship issues base on analysing numerical data and information.

PO8

Ability to demonstrate leadership skills and responsibility in international business environments.

PO9

Ability to identify engineering entrepreneurship opportunities by analysing global business trend.

PO10

Ability to demonstrate professional entrepreneurship skills and innovativeness required for sustainable development.

PO11

Ability to adopt professionally and ethically the social, cultural and environmental responsibilities and issues from a global perspective.

CURRICULUM STRUCTURE							
UR6340002 BACHELOR OF BUSINESS (ENGINEERING ENTREPRENEURSHIP) WITH HONOURS INTAKE 2025/2026							
YEAR	FIRST		SECOND		THIRD		
SEMESTER	I	II	III	IV	V	VI	BREAK
BUSINESS PROGRAM COMMON CORE/ DISCIPLINE CORE/ SPECIALIZATION COURSES (112 credits)	SMP10803 Principles of Marketing	SMP11002 Organisational Behaviour	SMP22303 Human Resource Management	SMP22103 Operations Management	SMP30203 Socio Economic for Technology	SMP33803 Strategic Management	SMP29104 Incubator Program
	SMP10903 Principles of Management	SMP10103 Principles of Economics	SMP10703 Principles of Finance	SMP22203 Managerial Accounting	SMP32203 Supply Chain Management	SMP21503 Entrepreneurial Finance	
	SMP15603 Principles of Business Analytics	SMP11203 Services Marketing	SMP15503 Business Ethics	SMP22003 Technology Entrepreneurship	SMP20203 International Business Management	SMP32603 Project Management	
	SMP10603 Principles of Accounting	SMP14203 Introduction to Engineering Technology	SMP22503 Digital Business	SMP25703 Data Analytics for Engineering Management	SMP21903 Product Design and Development	SMP21003 Management Information System	
	SMP11503 Principles of Entrepreneurship	SMP27203 Creativity & Business Innovation	SMP21303 Business Venture Management	SMP25503 Digital Marketing	SMP25303 Entrepreneurial Marketing	SMP36203 Business Plan for Engineering Entrepreneurship Project	
	SMP11902 Business Communication	SMP11303 Sustainable Entrepreneurship	SMP25603 Engineering Drawing for Product Design	SMP20703 Small Business Development and Sustainability	SMP30403 Coaching and Consultancy for Entrepreneurship	SMP35803 Quality Assurance in Manufacturing Process	
		SMP11102 Introduction to Human Resource Information Systems					
UNIVERSITY REQUIREMENT COURSES (12 credits)	SMZXXX01 Co-Curriculum 1	SMZXXX01 Co-Curriculum 2	SMB20102 English for General Communication ^[4]	SMU13102 Appreciation of Ethics and Civilization ^[2]	SMB31302 English for Academic Purposes	SMU12102 Integrity and Anti Corruption ^[5]	
	SMU13002 Philosophy and Current Issues ^[2]						
TOTAL CREDITS [124 credits]	20	20	20	20	20	20	4
AUDIT COURSES	SMB10102 Preparatory English ^[1]	SMB41002 University Malay Language ^[3]					

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).
SMB10102 Preparatory English is an Audit course.

[2] International students may choose either SMU13002 Philosophy and Current Issues or SMU13102 Appreciation of Ethics and Civilization. In the semester when they do not take one of these courses, they are compulsory to register for SMB11002 Basic Malay Language

[3] Compulsory to local student who obtained a Grade B+ and below in Bahasa Melayu in the Sijil Pelajaran Malaysia (SPM) examination

[4] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but need to replace the course by registering for a 2 credits Optional Course

[5] International students should register SMU13202 Malaysian Studies.

COURSE CODE	COURSE NAME	SDG
SMP10103	Prinsip-prinsip Ekonomi [Principles of Economics]	SDG 8
SMP10603	Prinsip-prinsip Perakaunan [Principles of Accounting]	SDG 9
SMP10703	Prinsip-prinsip Kewangan [Principles of Finance]	SDG 8
SMP10803	Prinsip-prinsip Pemasaran [Principles of Marketing]	SDG 12
SMP10903	Prinsip-prinsip Pengurusan [Principles of Management]	SDG 8
SMP11002	Gelagat Organisasi [Organisational Behaviour]	SDG 5
SMP11102	Pengenalan kepada Sistem Maklumat Sumber Manusia [Introduction to Human Resource Information Systems]	SDG 8
SMP11203	Pemasaran Perkhidmatan [Services Marketing]	SDG 12
SMP11303	Keusahawanan Lestari [Sustainable Entrepreneurship]	SDG 12
SMP11503	Prinsip-prinsip Keusahawanan [Principles of Entrepreneurship]	SDG 8
SMP11803	Ekonomi Organisasi [Organisational Economics]	SDG 8
SMP11902	Komunikasi Perniagaan [Business Communication]	SDG 4
SMP14203	Pengenalan kepada Teknologi Kejuruteraan [Introduction to Engineering Technology]	SDG 9
SMP15503	Etika Perniagaan [Business Ethics]	SDG 16
SMP15603	Prinsip-prinsip Analitik Perniagaan [Principles of Business Analytics]	SDG 9
SMP20203	Pengurusan Perniagaan Antarabangsa [International Business Management]	SDG 17
SMP20303	Ekonomi Antarabangsa [International Economics]	SDG 17
SMP20603	Pengurusan Silang Budaya [Cross-Cultural Management]	SDG 10

COURSE CODE	COURSE NAME	SDG
SMP20703	Pembangunan dan Kelestarian Perniagaan Kecil [Small Business Development and Sustainability]	SDG 12
SMP20803	Teknologi Kewangan [Financial Technology]	SDG 9
SMP20903	Kepimpinan Dalam Organisasi [Leadership in Organisation]	SDG 16
SMP21003	Pengurusan Sistem Maklumat [Management Information System]	SDG 9
SMP21103	Syarikat Multinasional [Multinational Corporation]	SDG 8
SMP21303	Pengurusan Usahawan Perniagaan [Business Venture Management]	SDG 8
SMP21503	Kewangan Keusahawanan [Entrepreneurial Finance]	SDG 8
SMP21903	Reka Bentuk dan Pembangunan Produk [Product Design and Development]	SDG 9
SMP22003	Keusahawanan Teknologi [Technology Entrepreneurship]	SDG 8
SMP22103	Pengurusan Operasi [Operations Management]	SDG 9
SMP22203	Perakaunan Pengurusan [Managerial Accounting]	SDG 8
SMP22303	Pengurusan Sumber Manusia [Human Resource Management]	SDG 5
SMP22503	Perniagaan Digital [Digital Business]	SDG 9
SMP25303	Pemasaran Keusahawanan [Entrepreneurial Marketing]	SDG 12
SMP25503	Pemasaran Digital [Digital Marketing]	SDG 12
SMP25603	Lukisan Kejuruteraan untuk Reka Bentuk Produk [Engineering Drawing for Product Design]	SDG 12
SMP25703	Analitik Data untuk Pengurusan Kejuruteraan [Data Analytics for Engineering Management]	SDG 9
SMP27203	Kreativiti & Inovasi Perniagaan [Creativity & Business Innovation]	SDG 9

COURSE CODE	COURSE NAME	SDG
SMP30103	Pengurusan Bakat [Talent Management]	SDG 8
SMP30203	Sosioekonomi untuk Teknologi [Socio Economic for Technology]	SDG 9
SMP30303	Kewangan Antarabangsa [International Finance]	SDG 17
SMP30403	Latihan dan Perundingan untuk Keusahawanan [Coaching and Consultancy for Entrepreneurship]	SDG 8
SMP30503	Pengurusan Sumber Manusia Antarabangsa [International Human Resource Management]	SDG 10
SMP30603	Pengurusan Jualan [Sales Management]	SDG 8
SMP30703	Pelaburan Langsung Asing [Foreign Direct Investment]	SDG 17
SMP31803	Kaedah Penyelidikan [Research Methodology]	SDG 4
SMP32203	Pengurusan Rantaian Bekalan [Supply Chain Management]	SDG 12
SMP32603	Pengurusan Projek [Project Management]	SDG 9
SMP33503	Persekitaran Perniagaan Antarabangsa [International Business Environment]	SDG 17
SMP33703	Pemasaran Antarabangsa [International Marketing]	SDG 12
SMP33803	Pengurusan Strategik [Strategic Management]	SDG 9
SMP34403	Pengurusan Eksport Import [Export Import Management]	SDG 17
SMP35803	Jaminan Kualiti dalam Proses Pembuatan [Quality Assurance in Manufacturing Process]	SDG 12
SMP36003	Strategi Perniagaan Antarabangsa [International Business Strategy]	SDG 17
SMP36203	Pelan Perniagaan untuk Projek Keusahawanan Kejuruteraan [Business Plan for Engineering Entrepreneurship Project]	SDG 9
SMP39204	Latihan Industri [Industrial Training]	SDG 4

SMP10903 PRINCIPLES OF MANAGEMENT [PRINSIP-PRINSIP PENGURUSAN]

No of Credits: 3

Course Synopsis:

This course presents thorough and systematic coverage of management theory and practice. It focuses on the management's fundamental roles, skills, and functions, particularly attention to managerial responsibility for the effective and efficient achievement of goals.

Course Outcomes:

1. Ability to explain the fundamental concepts of management.
2. Ability to analyse the managerial process of planning, organising, leading, and controlling in the organisational context.
3. Ability to analyse the interaction between the environment, technology, human, and organisation to achieve organisational objectives.

SMP11002 ORGANISATIONAL BEHAVIOUR [GELAGAT ORGANISASI]

No of Credits: 2

Course Synopsis:

This course discusses the role of organisational behaviour including individual values and perception, team dynamics, power, politics, conflict, organisational culture and change management. The learning outcomes of this course allow graduates to assess the importance of understanding organisational behaviour, propose solutions and create functional organisations based on the structure and culture of an organisation.

Course Outcomes:

1. Ability to explain the importance of organisational behaviour and individual differences in the workplace.
2. Ability to apply the theories and concepts of motivation and leadership.
3. Ability to analyse the influence of groups and teams, power, influence and politics, culture and change to organisational behaviour.

SMP11203 SERVICES MARKETING [PEMASARAN PERKHIDMATAN]

No of Credits: 3

Course Synopsis:

This course will explain about the characteristics of the service, how to understand the service, how consumer behavior is related to the service and how to market the service. This course will facilitate understanding to learn about services and also how one can be a part of a successful service marketer. The course will also cover the development of the concept and value of services, and also explain about the products, distribution, pricing and communication strategies necessary to develop a successful business model.

Course Outcomes:

1. Ability to discuss the service product consumers and markets in the new market perspectives.
2. Ability to explain the 4Ps of marketing to services and identify the role of marketing communication.
3. Ability to analyse the managing service processes and relate the service environment.

SMP11503 [PRINCIPLES OF ENTREPRENEURSHIP [PRINSIP-PRINSIP KEUSAHAWANAN]

No of Credits: 3

Course Synopsis:

This course addresses the concept of entrepreneurship which includes individual components of entrepreneurship and its implications to society. It introduces the basics of planning and launching a business by identifying problems and opportunities, creative problem solving, developing a viable business model and entrepreneurial ethics. Students will develop an understanding of successes, opportunities and risks of entrepreneurship.

Course Outcomes:

1. Ability to explain the nature and dynamic role of entrepreneurship.
2. Ability to recognise business opportunities and creative solutions.
3. Ability to formulate a feasible business model.

SMP10103 PRINCIPLES OF ECONOMICS [PRINSIP-PRINSIP EKONOMI]

No of Credits: 3

Course Synopsis:

This course covers two branches of economics, namely microeconomics and macroeconomics. The study of microeconomics involves basic economics concepts, demand, supply, market equilibrium, production costs, and market structures. Macroeconomics concerns business cycles, national income accounting, aggregate demand, aggregate supply, government policies and national debt.

Course Outcomes:

1. The ability to demonstrate detailed knowledge of economic analysis in business.
2. The ability to analyse business issues and appropriate economic tools.
3. The ability to evaluate economic analysis and the complexity of business issues.

SMP10603 PRINCIPLES OF ACCOUNTING [PRINSIP-PRINSIP PERAKAUNAN]

No of Credits: 3

Course Synopsis:

This course is an introductory course that provides students with the accounting concepts, principles, and assumptions that are essential to the preparation and presentation of financial statements. Students will also prepare financial statements based on accounting standards. In addition, this course provides students with the skills of interpreting financial statements.

Course Outcomes:

1. Ability to apply the basic concepts of accounting as well as principles and procedures.
2. Ability to classify accounting information in the financial statements to present the information to the internal and external users.
3. Ability to analyse the accounting information for companies to make the best decision for the organization as a whole.

SMP10703 PRINCIPLES OF FINANCE [PRINSIP-PRINSIP KEWANGAN]

No of Credits: 3

Course Synopsis:

This course focuses on the methods of valuation for financial assets, investments in long-term assets, capital structure, dividends policy of the company and emphasizes practical methods for the management of working capital and business finance of a company. It is related to understanding the concept and scope of the financial management environment, the method of financing a company, decision making in an investment focusing on the private business management sector in Malaysia particularly. This approach is based on the theory and practical approach to make financial decisions for a firm. At the end of this course, students are expected to understand and be able to apply the financial decision-making methods that can increase the economic value of a firm.

Course Outcomes:

1. Ability to interpret financial information tools on the financial problem.
2. Ability to analyse using various techniques for short-term, long-term financing, and investment decisions.
3. Ability to evaluate the financial information in making financial decisions.

SMP10803 PRINCIPLES OF MARKETING [PRINSIP-PRINSIP PEMASARAN]

No of Credits: 3

Course Synopsis:

The course deals with the study and analysis of the basic principles, theories, problems, and practices of marketing in an ever-changing economic environment. Emphasis is placed on the marketing functions, planning, and the distribution of goods and services from the producer to the ultimate consumer. The marketing mix (product, price, place, and promotion) is presented as a controllable variable to target market segments. They have unmet needs and wants that a firm can satisfy and be profitable. Market research and information tools of the marketing manager are explored.

Course Outcomes:

1. Ability to determine the marketing concepts and its related environments.
2. Ability to analyse issues and challenges in marketing.
3. Ability to evaluate marketing strategies and techniques.

SMP11902 BUSINESS COMMUNICATION [KOMUNIKASI PERNIAGAAN]

No of Credits: 2

Course Synopsis:

Communication is one of the most vital skills to success, especially in business. This course is designed to help students understand various aspects of business communication and to acquire the skills and competencies of good oral and written business communication that will help them communicate and develop a communication strategy effectively.

Course Outcomes:

1. Ability to apply the skills of business communication in appropriate business situations.
2. Ability to establish the concept of communication in business contexts.
3. Ability to relate the concepts and theories of communication in a business environment.

SMP14203 INTRODUCTION TO ENGINEERING TECHNOLOGY [PENGENALAN KEPADA TEKNOLOGI KEJURUTERAAN]

No of Credits: 3

Course Synopsis:

This course is designed to expose students to the fields or disciplines of Engineering and Manufacturing Technology and Processes. In the first part of the course, teaching and learning will begin with explanations about the functions of an engineer with a breakdown of engineering fields or disciplines. Furthermore, the second part of the subject will deal with manufacturing technologies and its processes. Whereas, students will totally focus on the processing and assembly operations. At the end of this course, students will have a clear understanding of the roles, responsibilities and gain knowledge related to operations and processes in the manufacturing sector.

Course Outcomes:

1. Ability to apply knowledge about areas of expertise, disciplines and responsibilities in the engineering profession with any related activities.
2. Ability to correlate the processing and assembly operations in manufacturing activities with applicable situations.
3. The ability to analyse manufacturing technologies and processes to produce a product or in applicable engineering activities.

SMP15503 BUSINESS ETHICS [ETIKA PERNIAGAAN]

No of Credits: 3

Course Synopsis:

Ethics refers to well-founded standards of right and wrong that prescribe what humans ought to do, usually in terms of rights, obligations, benefits to society, fairness, or specific virtues. However, business ethics is one of the important branches of applied ethics. Business ethics is the application of general ethical ideas to business. Ethics in business is concerned with collective action problems among dispersed investors and the reconciliation of conflicts of interest between various corporate stakeholders. Business ethics and corporate governance of an organisation go hand in hand. In fact, an organisation that follows ethical practices in all its activities will, in all probability, follow best corporate governance practices as well. The purpose of this course is to give an overview of the concept of business ethics, theories of ethics and ethical principles in business as well as theories, principles and regulations related to the corporate business environment.

Course Outcomes:

1. Ability to apply the importance of business ethics as a system of interlinked concepts derived from management and social science.
2. Ability to analyse solutions for transformation of ethical code of conduct responsibilities in a business environment.
3. Ability to evaluate the outcome of a business ethics programme in contemporary social business reasoning.

SMP15603 PRINCIPLES OF BUSINESS ANALYTICS [PRINSIP-PRINSIP ANALITIK PERNIAGAAN]

No of Credits: 3

Course Synopsis:

This course is an application-oriented study of statistical concepts and techniques. It provides statistical methods for decision-making in business problems. This course will introduce some statistical techniques that can help in the decision-making process and analyze the output accurately.

Course Outcomes:

1. Ability to describe the statistical concept in business problems.
2. Ability to apply the appropriate statistical methods to business problems.
3. Ability to analyze the solutions for business problems using statistical methods.

SMP20203 INTERNATIONAL BUSINESS MANAGEMENT [PENGURUSAN PERNIAGAAN ANTARABANGSA]

No of Credits: 3

Course Synopsis:

This course will expose students to globalization and internationalization issues, cross-cultural business, political economy, international business ethics, economic development of nations, international trade theory, international trade and investment, international trade organization, trade policy, regional economic integration, international business strategy, selecting and managing international entry modes and other related to international business management activities. Students will be able to describe the opportunities and threats in the international business environment.

Course Outcomes:

1. Ability to recognize the issues and trends of international business.
2. Ability to discuss international business theories and practices.
3. Ability to describe opportunities and threats in the international business environment.

SMP20303 INTERNATIONAL ECONOMICS [EKONOMI ANTARABANGSA]

No of Credits: 3

Course Synopsis:

Students will learn the ideas and perspectives of economic theory and thinking that build international economics. They will also learn critical ideas in understanding the three main components of international economics: International trade, international finance, and the international financial system. Then students will apply concepts and theories to understand issues and criticisms in the global economy.

Course Outcomes:

1. Ability to define the basic concepts of international economics and differentiate the economic thoughts of various economists.
2. Ability to analyse issues related to the international trade, international finance and international monetary system.
3. Ability to interpret the theories and economic thoughts of international economics with regards to the current global economic issues.

SMP20603 CROSS-CULTURAL MANAGEMENT [PENGURUSAN SILANG BUDAYA]

No of Credits: 3

Course Synopsis:

This course covers the cultural aspect of leadership, corporate strategy, change in organizations, marketing, business communication across culture and its barriers, negotiation and international teams, and cultural conflicts. The cross-culture management course also explains the cross-cultural management theories and concepts in the international business setting. Cross-cultural competencies expose the students to work effectively in international business organizations.

Course Outcomes:

1. Ability to explain cross-cultural management theories and concepts in an international business setting.
2. Ability to identify the suitability of cultural knowledge, theories, and concepts for international business opportunities.
3. Ability to propose solutions based on cross-cultural theories and concepts for solving international business problems.

SMP20803 FINANCIAL TECHNOLOGY [TEKNOLOGI KEWANGAN]

No of Credits: 3

Course Synopsis:

This course acquaints students with the fundamentals of financial technology and how it functions and fits into the organization. Using a cycle approach, the course introduces internal control procedures, covers the basics elements of the procedures, covers the basic elements of the revenue and expense cycles, and enables students to become proficient with documentation techniques, such as flowcharting. The course focuses on the needs and responsibilities of accountants as users and developers of information technology and as auditors. Students will explore the capabilities of accounting software and undertake a course related project.

Course Outcomes:

1. Ability to synthesize the role, purpose and importance of an accounting information system.
2. Ability to apply common tools in financial accounting information systems as a basis of decision-making.
3. Ability to demonstrate higher quality of accounting services (financial statements) based on the security, confidentiality, privacy, processing integrity and availability suggested by accounting bodies.

SMP20903 LEADERSHIP IN ORGANISATION [KEPIMPINAN DALAM ORGANISASI]

No of Credits: 3

Course Synopsis:

This course is designed to enhance students' understanding and widen their perspective, knowledge and conceptions of leadership theories, styles, effectiveness and practical applications for their career in business, government and non-profit organizations. The main focus of this course is on managerial leadership effectiveness and what makes a person an effective leader. The syllabus covers leadership approaches, behavioural tendencies of leaders, teamwork, uses of power, participation, delegation, and empowerment, effective change, developing leadership skills, cross-cultural leadership and other topics related to leadership in organization.

Course Outcomes:

1. Ability to explain the meaning of leadership, its concepts and various theories that have been developed and practiced in organization today.
2. Ability to analyse effective leadership skills in communication, building strong teams, creating effective change, motivation and persuasion to increase followers' commitment and loyalty.
3. Ability to investigate the leader, follower and situational factors that affect the leadership styles and behaviours in organization.

SMP21003 MANAGEMENT INFORMATION SYSTEM [PENGURUSAN SISTEM MAKLUMAT]

No of Credits: 3

Course Synopsis:

This course will expose students to the Management Information System (MIS) topics like organisations, management, infrastructures, and applications for managing the information system.

Course Outcomes:

1. Ability to explain principles and role of Management Information Systems (MIS) in business organizations.
2. Ability to analyse tools and techniques of the information system hardware, software, database, and networking technologies.
3. Ability to examine the core information system applications to improve operational excellence and decision making.

SMP21303 BUSINESS VENTURE MANAGEMENT [PENGURUSAN USAHAWAN PERNIAGAAN]

No of Credits: 3

Course Synopsis:

This course introduces to the students about the stages in the entrepreneurial process such as the decision to become an entrepreneur, developing successful business ideas, moving from an idea to an entrepreneurial firm and managing and growing an entrepreneurial firm. The focus will be on the start-up phase in which the individual decides to become an entrepreneur and goes through the opportunity discovery, exploitation and allocation of resources.

Course Outcomes:

1. Ability to analyse the entrepreneurial process for new venture creation.
2. Ability to express opportunity-driven business ideas using appropriate methodology.
3. Ability to organize resources in new business ventures.

SMP21503 ENTREPRENEURIAL FINANCE [KEWANGAN KEUSAHAWANAN]

No of Credits: 3

Course Synopsis:

Entrepreneurial finance is the study of value and resource allocation, applied to new ventures and the questions which confront all entrepreneurs pertaining to the amount of funding that can and should be raised, the timing to raise funding, the suitable sources of funding that should be approached, valuing a startup worth, and structuring funding contracts and exit decisions.

Course Outcomes:

1. Ability to analyse financial information for the development of the firm's financial plan
2. Ability to explain the financial concepts in relation to the entrepreneurial process.
3. Ability to express solutions to entrepreneurial finance problems using appropriate financial tools.

SMP21903 PRODUCT DESIGN AND DEVELOPMENT [REKA BENTUK DAN PEMBANGUNAN PRODUK]

No of Credits: 3

Course Synopsis:

The aims of the course are to further the students ability to plan and propose product design solutions/concepts using proper product development processes, tools and methods. In addition, students will be exposed to three main disciplines and their functions in a product design and development project. Students will experience how to design and develop a product from the earliest planning stage and finish with a final proposal of the design concept and its specifications. These are done by having an individual and a group design project. At the end of the course, students are expected to be ready and able to manage and participate in a multidisciplinary product design and development project.

Course Outcomes:

1. Ability to integrate the nature and role of multidisciplinary product development team tasks and their responsibilities in the process of developing a product
2. Ability to classify appropriate design strategies at different stages in the product development process.
3. Ability to analyze design factors using proper product design and development methods and tools for different types of products.

SMP22003 TECHNOLOGY ENTREPRENEURSHIP [KEUSAHAWANAN TEKNOLOGI]

No of Credits: 3

Course Synopsis:

This course will give exposure to the process of innovative transformation of knowledge into commercial product and service. Students will assess real technologies for the commercial potential in terms of licensing and for venture development. The course begins by examining concepts associated with technology commercialisation. Concepts are introduced to improve and accelerate the commercialisation process, from decisions made by scientists at the research bench, through development, intellectual property protection, to the formation of technology-based ventures.

Course Outcomes:

1. Ability to analyse key concepts in technology entrepreneurship and commercialisation.
2. Ability to adopt a model for technology commercialization.

3. Ability to conceptualize technology opportunities.

SMP22103 OPERATIONS MANAGEMENT [PENGURUSAN OPERASI]

No of Credits: 3

Course Synopsis:

The purpose of the operations management course is to ensure students gain an understanding of the managerial processes for effective operations in both goods-producing and service-rendering organizations. This course is an introduction to the concepts, principles, problems, and practices of operations management. This course intends to provide students with gaining knowledge and understanding on the importance of operations management existence in organizations and expose students to the planning and control of manufacturing and service operations at local and international level.

Course Outcomes:

1. Ability to apply the operations management theories and concepts.
2. Ability to analyse a range of organisational problems and issues concerning the operations management field.
3. Ability to evaluate models and tools in operations management in solving organisational problems and issues.

SMP22203 MANAGERIAL ACCOUNTING [PERAKAUNAN PENGURUSAN]

No of Credits: 3

Course Synopsis:

This course provides an understanding of the importance of an organization's managerial accounting information in planning, controlling, and decision-making; enables the students to apply costing and budgeting methods which will provide useful information to the organization's internal users.

Course Outcomes:

1. Ability to apply various cost behaviour, performance measurement and costing methods in managing internal business and making business decisions.
2. Ability to adapt relevant costing and decision-making concepts in a variety of business environments.
3. Ability to evaluate various budgeting methods to plan, control and make a decision for internal business.

SMP22303 HUMAN RESOURCE MANAGEMENT [PENGURUSAN SUMBER MANUSIA]

No of Credits: 3

Course Synopsis:

The course is developed to enhance the knowledge and understanding related to managing human resources in the organization. The course covers the concepts and practices of human resources management (HRM) functions to ensure both employers and employees are managed effectively and efficiently to achieve common goals. The human resource activities that will be discussed are introduction of human resource management, legal environment in HRM, job analysis and design, staffing, human resource development, performance appraisal, compensation management, occupational safety and health, industrial relations and employee rights and discipline.

Course Outcomes:

1. Ability to explain the definition of human resource management and its functions in the workplace.
2. Ability to apply the legal Acts in Malaysia which influence human resource management practices in Malaysia.
3. Ability to analyse the effects of human resource management functions to the individual and organisation.

SMP22503 DIGITAL BUSINESS [PERNIAGAAN DIGITAL]

No of Credits: 3

Course Synopsis:

This course is a comprehensive guide to identify the driving forces of a digital business. The course analyzes the key concepts of digital business such as digital supply chain management, procurement and infrastructure. This course will also guide students to design a proper marketing campaign that is complemented by proper digital customer relationship management.

Course Outcomes:

1. Ability to identify the scope of digital business in driving business opportunities for companies.
2. Ability to analyze the potential components of digital business such as digital supply chain management, procurement, and infrastructure.
3. Ability to design a digital marketing campaign with improved elements of digital customer relation management concepts of digital marketing.

SMP25503 DIGITAL MARKETING [PEMASARAN DIGITAL]

No of Credits: 3

Course Synopsis:

This course provides the most comprehensive guide to all aspects of using the internet, digital media, and marketing technology to achieve the goals of integrated multichannel marketing. The emerging trends in marketing through social media and digital platforms are gathered and informatively explained. With the growing use of digital comes an increasing demand for employees who have strategic and practical digital marketing skills like search engine optimization, social media and creating effective websites.

Course Outcomes:

1. Ability to apply digital competency to enhance the marketing techniques.
2. Ability to correlate ordinary or conventional marketing into digital marketing methods.
3. Ability to plan digital marketing programmes for related projects.

SMP25603 ENGINEERING DRAWING FOR PRODUCT DESIGN [LUKISAN KEJURUTERAAN UNTUK REKA BENTUK PRODUK]

No of Credits: 3

Course Synopsis:

The aims of the course are to further the ability to communicate technical information by graphical means, using CAD software packages to develop technical products. This will be achieved through the ability to visualize and understand spatial/3-dimensional relationships, and the ability to select and use appropriate graphical methods for representing specifications, object forms, and sizes. The course will comprise of visualization and graphical theory, drawing standards and conventions, CAD drawing tools, and the use of drawings in engineering applications. By the end of the course, the students will be able to draw, visualize and read specifications of any engineering parts and components in engineering drawings using CAD software.

Course Outcomes:

1. Ability to analyze standard language and symbols used in engineering drawing.
2. Ability to manipulate CAD software interfaces, and tools with proper engineering drafting methods and standards.
3. Ability to evaluate graphical objects for communication of concepts, ideas, and design of engineering components or products through CAD drawings.

SMP25703 DATA ANALYTICS FOR ENGINEERING MANAGEMENT

No of Credits: 3

Course Synopsis:

This course is designed as a preparation for meaningful opportunities in the future with respect to data analytics. This course will introduce data analytics and describe the important phases of a data analytics project. It will further guide students to use different functions of spreadsheets regarding data analytics. Next, Pivot tables and their use in data analytics will be introduced. The students will learn the way to represent data using charts and tables, as well as analyse the visualised data in the Data Visualization phase. This course also allows students to build projects according to case study and produce final deliverables. At the end of this course, students will be introduced to some optimization techniques used in data analytics to improve decision making.

Course Outcomes:

1. Ability to understand the phases of data analytics project and other related optimization techniques in data analytics
2. Ability to apply basic operations and formatting as well as different formulae and functions in spreadsheets.
3. Ability to analyze the visualized data in spreadsheets.

SMP27203 CREATIVITY & BUSINESS INNOVATION [KREATIVITI & INOVASI]

No of Credits: 3

Course Synopsis:

This course is designed for students to develop their creative and innovative thinking skills in solving problems. They will learn about creativity and innovation in the context of entrepreneurship. The students will be exposed to various aspects of business innovation and innovation management. At the end of the course, the students are expected to be able to use the creativity tools to generate ideas as well as to use methods and processes to build an innovative organization.

Course Outcomes:

1. Ability to analyze the concepts of creativity and innovation in entrepreneurship.
2. Ability to develop ideas using creative tools.
3. Ability to adapt methods in managing innovation.

SMP30303 INTERNATIONAL FINANCE [KEWANGAN ANTARABANGSA]

No of Credits: 3

Course Synopsis:

The subject matter of international finance consists of issues raised by the special problems of economic interaction between sovereign states. This course will introduce the main concepts and theories of international finance and illustrate them with applications drawn from the real world. It will address a wide range of issues, including the balance of payments, exchange rate determination, international policy coordination, and the international capital market. The international finance course will focus on the monetary side of the international economy and international financial transactions.

Course Outcomes:

1. Ability to identify the general multinational corporations' operations and the international financial environment and its components.
2. Ability to analyze the critical relationship involving exchange rates i.e. exchange rates movement, interest rate parity, and purchasing power parity.
3. Ability to prepare the various functions to involve in the management of exchange rate risk and apply the techniques for performance forecasting and hedging.

SMP30503 INTERNATIONAL HUMAN RESOURCE MANAGEMENT [PENGURUSAN SUMBER MANUSIA ANTARABANGSA]

No of Credits: 3

Course Synopsis: This course provides the introduction to the critical issues facing organisations in simultaneously managing their human resources at home and abroad. It focuses on the connection between corporate strategies and the effective management of human resources, which at times, may require differing policies across countries. The course is based on the notion that competitive firms and economies require appropriate structures, policies, and strategies for managing their employees at every level of the enterprise. This is particularly true of multinational enterprises (MNEs) and transactional corporations (TCs) intricately involved in a global environment.

Course Outcomes:

1. Ability to demonstrate international human resource management models and practices.
2. Ability to identify the roles of international human resource management for the global market.
3. Ability to explain trends and future challenges in international human resource management.

SMP30603 SALES MANAGEMENT [PENGURUSAN JUALAN]

No of Credits: 3

Course Synopsis:

This course emphasises on the duties of professional salesperson on the way to develop the sales presentations. It also covers the entire sales management process from prospecting to follow up, and the importance of the proper use and management of one's time and sales territory coverage. This course provides students with the ability to analyse the sales opportunity based on business activities. It also exposes students on the ability to evaluate the elements of sales application towards supplier and customer.

Course Outcomes:

1. Ability to explain the sales management principles in empowering the selling strategies and techniques.
2. Ability to apply the sales management concept based on business activities.
3. Ability to analyse the sales opportunity using the personal selling strategies and techniques.

SMP31803 RESEARCH METHODOLOGY [KAEDAH PENYELIDIKAN]

No of Credits: 3

Course Synopsis:

To successfully conduct a business research, students must develop a foundation of their understanding with regards to the key elements of the process and procedure in completing their research project. This course emphasises the basic knowledge for business students in developing their strategies to produce impactful research projects.

Course Outcomes:

1. Ability to analyse the main key terms of research methodology based on existing research articles.
2. Ability to formulate a systematic research project by understanding the flow of the research process.
3. Ability to explain the concept of the whole research process.

SMP32203 SUPPLY CHAIN MANAGEMENT [PENGURUSAN RANTAIAN BEKALAN]

No of Credits: 3

Course Synopsis:

Supply chain management is a highly-detailed system used by small and large organisations alike to get products to consumers, from obtaining raw materials, manufacturing and delivering the final product to the customer. A well-organised supply chain management system involves optimizing operations functionality to be fast and efficient.

Course Outcomes:

1. Ability to analyse the general concepts and processes involved in supply chain management.
2. Ability to evaluate supply chain models.
3. Ability to design an effective supply chain in a business environment.

SMP32603 PROJECT MANAGEMENT [PENGURUSAN PROJEK]

No of Credits: 3

Course Synopsis:

In this course, students will study basic concepts and models that will enhance successful management of projects in engineering and technology. Topics will include a structured approach to project management, project life cycle, project selection and evaluation, organizational concepts in project management, project planning, conflict and negotiation, budgeting and cost estimation, scheduling, resource allocation, monitoring, information systems and project evaluation and control, project reviewing and project termination.

Course Outcomes:

1. Ability to define and discuss organisational issues and management methods that are necessary for successful project management.
2. Ability to understand and apply organisational concepts and project planning, including conflict and negotiation in project management.
3. Ability to analyse and evaluate budgeting and cost estimation, project scheduling, resources allocation, project monitoring, information systems and project evaluation, project reviewing and project termination.

SMP33503 INTERNATIONAL BUSINESS ENVIRONMENT [PERSEKITARAN PERNIAGAAN ANTARABANGSA]

No of Credits: 3

Course Synopsis:

This course will describe the PESTLE+C analysis which is used as a base for theories and concept evaluation of the international business environment with a focus on global politics, economics, social, technology, legal, environmental, and competition forces to international business activities.

Course Outcomes:

1. Ability to describe the impact of global political, economic, social, technological, legal and environmental changes from an international business perspective.
2. Ability to explain international business theories and concepts in the global business environment.
3. Ability to propose solutions for international business problems, based on the current information.

SMP33703 INTERNATIONAL MARKETING [PEMASARAN ANTARABANGSA]

No of Credits: 3

Course Synopsis:

This course will expose students to issues involved in international marketing, the market strategy for a product and a service in every country, general examples and frameworks of international marketing through the text, lecture and discussion and also, specific and in-depth examples of how to market a product/service in a country.

Course Outcomes:

1. Ability to explain the importance of international marketing theories and concepts.
2. Ability to apply theories and models in international marketing.
3. Ability to analyse the outputs from the application of the models and tools in international marketing.

SMP33803 STRATEGIC MANAGEMENT [PENGURUSAN STRATEGIK]

No of Credits: 3

Course Synopsis:

Strategic management educates aspiring managers on how to deal with uncertainty and achieve organisational goals. Strategic management requires ongoing analysis of the environment, strategy formulation, strategy implementation, and performance evaluation. The corporation focuses on its capabilities to maximise environmental potential. Strategic management as a capstone-multidisciplinary course analyses business, management, and strategic direction issues.

Course Outcomes:

1. Ability to analyse business environments to determine strategic factors that are Ability to formulate and implement strategies to achieve competitive advantages for the organisation.
2. Ability to formulate and implement strategies to achieve competitive advantage for the organisation.
3. Ability to assess the appropriateness of strategies implemented and take corrective actions to get the organization back on track to attain goals and objectives.

SMP34403 EXPORT IMPORT MANAGEMENT [PENGURUSAN EKSPORT IMPORT]

No of Credits: 3

Course Synopsis:

This course focuses on the knowledge, skills and experience base needed to manage the import and export business activities either as a comprehensive trading company or a department in the company with import and export activities. This course will also expose students to the responsibilities of a manager in the import and export and develop students' mental preparation for working in the field of international business. Exposure includes knowledge of the rules, procedures and organizations involved in the import and export business.

Course Outcomes:

1. Ability to explain the application of primary documents and procedures in export and import, and INCOTERMS in international business.
2. Ability to identify the various export and import business processes and procedures in international business.
3. Ability to evaluate various export and import documentation based on the mode of international transportation.

SMP35803 QUALITY ASSURANCE IN MANUFACTURING PROCESS [JAMINAN KUALITI DALAM PROSES PEMBUATAN]

No of Credits: 3

Course Synopsis:

The aims of the course are to further the ability to perform thorough product assessments using total quality management. A fully implemented quality management system in the manufacturing industry ensures better control of processes and workflows to deliver a quality product. An end-to-end quality management system boosts the overall effectiveness of any manufacturing unit, maintaining consistency with the resources. Better control also indicates the implementation of best practices in the system, processes, as well as product. By the end of the course, the students will be able to evaluate appropriate quality management tools to improve the quality of processes while ensuring customer satisfaction at the end.

Course Outcomes:

1. Ability to analyze appropriate quality management knowledge for detecting manufacturing process problems.
2. Ability to appraise quality management tools for manufacturing process
3. Ability to develop solutions for quality monitoring in manufacturing processes.

SMP36003 INTERNATIONAL BUSINESS STRATEGY [STRATEGI PERNIAGAAN ANTARABANGSA]

No of Credits: 3

Course Synopsis:

This course is designed to explore the basic knowledge and skills to formulate international business strategy. It highlights for students the process that multinational companies engage in when deciding to compete in the global economy and the management consequences of these strategic choices. Students will learn the basic concepts of international business strategy that provide essential background on the nature of multinational management, how multinational companies formulate successful strategies to compete internationally, the management systems used to implement multinational strategies, the adaptation of international human resource practices across cultures and strategy implementation at the level of the individual in the organization.

Course Outcomes:

1. Ability to explain the concepts and elements related to international business strategy.
2. Ability to formulate successful strategies to compete internationally.
3. Ability to solve international business strategy case study.

SMP36203 BUSINESS PLAN FOR ENGINEERING PROJECT [PELAN PERNIAGAAN UNTUK PROJEK KEUSAHAWANAN KEJURUTERAAN]

No of Credits: 3

Course Synopsis:

This course is a capstone final year project, which provides exposure to the students in culminating their learning of business, basic engineering, and technology. Students will apply their learning theory into practice, by developing a business plan for their new start-up business, in a specific format and for a specific product or project.

Course Outcomes:

1. Ability to organize concepts into practice.
2. Ability to develop opportunity-driven business ideas using appropriate business tools.
3. Ability to independently create a business plan for an engineering project.

SMP39204 INDUSTRIAL TRAINING [LATIHAN INDUSTRI]

No of Credits: 4

Course Synopsis:

Industrial Training is a practical-oriented course where students will go for attachment at industries or some related organizations for a certain period of time. During industrial training, the students will be exposed to the real working environment where they will learn about the company operations, department functions, works and safety procedures, project management, technical skills, communication, administration, etc. The students are also required to submit their logbook and final report at the end of the Industrial Training period.

Course Outcomes:

1. Ability to display good work performance and adapt to the working environment during the training period.
2. Ability to practice good communication skills and work ethics during the training period.
3. Ability to demonstrate leadership, autonomy and responsibility to the assigned task given by the host company.

UR6344001

Bachelor of Accounting with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Producing graduates who possess comprehensive knowledge and skills to effectively perform accounting and its related functions to meet industry requirements.

PEO 2

Preparing graduates who can apply cognitive and functional skills to propose solutions for job-related needs and possess critical thinking, entrepreneurial foundations, and innovative skills to generate new ideas in a dynamic environment.

PEO 3

Producing graduates who practice ethics and professionalism as a way of life and ensure integrity in all actions and interactions.

PEO 4

Producing graduates who are committed to continuous learning and proficient in using digital applications and current numeracy skills to support organizational needs.

PROGRAMME OUTCOMES (PO)

PO 1

Examine in-depth principles and theories in accounting, taxation, and auditing.

PO 2

Synthesize financial and non-financial information to provide solutions for value creation.

PO 3

Apply accounting and its related knowledge to support organisations in decision making.

PO 4

Collaborate effectively with diverse stakeholders in a dynamic environment.

PO 5

Communicate effectively with various stakeholders on financial and non – financial information using contemporary medium.

PO 6

Demonstrate the utilisation of technology/digital skills in preparing financial reports in accordance with applicable laws and frameworks.

PO 7

Analyse numerical and graphical data to support accounting decision making.

PO 8

Demonstrate leadership skills and responsibility in managing organisations.

PO 9

Identify self-improvement for professional development.

PO 10

Integrate entrepreneurial skill in executing accounting functions for sustainability.

PO 11

Demonstrate ethical skills in performing tasks.

CURRICULUM STRUCTURE UR6344001 BACHELOR OF ACCOUNTING WITH HONOURS INTAKE 2025/2026							
YEAR	FIRST		SECOND		THIRD		FOURTH
SEMESTER	I	II	III	IV	V	VI	VII
DISCIPLINE CORE, COMMON CORE & ELECTIVE COURSES (113 credits)	SMA10103 Financial Management	SMA10203 Intermediate Financial Reporting	SMA20803 Cost and Management Accounting	SMA20303 Consolidated Financial Reporting	SMA31503 Advance Audit & Assurance	SMA30405 Financial Modeling & Valuation	SMA42812 Industrial Training
	SMA12903 Innovative Marketing	SMA11103 Introduction to Taxation	SMA21203 Tax Compliance & Planning	SMA20903 Management Accounting & Control	SMA31803 Governmental Accounting & Reporting	SMA32710 Final Year Project	
	SMP10103 Principles of Economics	SMA11703 Principles of Public Sector Accounting	SMA22003 Company Secretarial Practice	SMA21403 Audit & Assurance	SMA32103 Corporate Governance	SMA3XXX3 Elective III	
	SMP10903 Principles of Management	SMA12203 Business Laws & Ethics	SMA22303 Accounting Information System	SMA22403 Accounting System Analysis & Design	SMA32503 Information System Audit & Control		
	SMP15603 Principles of Business Analytics	SMA13003 Corporate Finance	SMP33803 Strategic Management	SMA2XXX3 Elective I	SMA3XXX3 Elective II		
				SMP32603 Project Management	SMP15903 Financial Technology		
UNIVERSITY REQUIREMENT COURSES (16 credits)	SMU12102 Integrity and Anti-Corruption ^[4]	SMU13102 Appreciation of Ethics and Civilization	SMJ13002 Philosophy and Current Issue		SMU22402 Engineering Entrepreneurship		
	SMZXXX01 Co-Curriculum I	SMB20102 English for General Communication ^[2]	SMB31302 English for Academic Purposes	SMB41002 University Malay Language ^[3]			
		SMZ2XX01 Co-Curriculum 2					
TOTAL CREDITS [129 credits]	18	20	19	20	20	20	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]						

Elective I : SMA20603 International Accounting, SMA20703 Sustainability Accounting & Reporting and SMA21603 Forensic Accounting & Investigation.

Elective II : SMA31003 Seminar in Managerial Accounting and SMA31903 Seminar in Public Sector Accounting.

Elective III : SMA30505 Selected Issues in Accounting and Financial Report, SMA31305 Advance Taxation & Planning and SMA32605 Accounting Programming Package.

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).
SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
SMA10103	Financial Management [Pengurusan Kewangan]	SDG8, SDG9
SMA10203	Intermediate Financial Reporting [Pelaporan Kewangan Pertengahan]	SDG8, SDG16
SMA11103	Introduction to Taxation [Pengenalan kepada Percukaian]	SDG8, SDG16, SDG17
SMA11703	Principles of Public Sector Accounting [Prinsip-prinsip Perakaunan Sektor Awam]	SDG16, SFG17
SMA12203	Business Law & Ethics [Undang-undang Perniagaan & Etika]	SDG16
SMA12903	Innovative Marketing [Pemasaran Inovatif]	SDG8, SDG12
SMA13003	Corporate Finance [Kewangan Korporat]	SDG8, SDG9
SMA20303	Consolidated Financial Reporting [Pelaporan Kewangan Disatukan]	SDG8, SDG16
SMA20803	Cost and Management Accounting [Perakaunan Pengurusan dan Kos]	SDG8, SDG12
SMA20903	Management Accounting & Control [Kawalan & Perakaunan Pengurusan]	SDG8, SDG12
SMA21203	Tax Compliance & Planning [Perancangan & Pematuhan Cukai]	SDG8, SDG16
SMA21403	Audit & Assurance [Audit & Jaminan]	SDG16
SMA22003	Company Secretarial Practice [Amalan Kesetiausahaan Syarikat]	SDG16
SMA22303	Accounting Information System [Sistem Maklumat Perakaunan]	SDG9, SDG16
SMA22403	Accounting System Analysis & Design [Reka Bentuk & Analisis Sistem Perakaunan]	SDG9, SDG12
SMA30405	Financial Modeling & Valuation [Penilaian & Pemodelan Kewangan]	SDG8, SDG9, SDG12
SMA31503	Advance Audit & Assurance [Audit Lanjutan & Jaminan]	SDG16
SMA31803	Governmental Accounting & Reporting [Pelaporan & Perakaunan Kerajaan]	SDG16, SDG17

COURSE CODE	COURSE NAME	SDG
SMA32103	Corporate Governance [Tadbir Urus Korporat]	SDG16
SMA32503	Information System Audit and Controls [Kawalan dan Audit Sistem Maklumat]	SDG9, SDG16
SMA32710	Final Year Project [Projek Tahun Akhir]	SDG4, SDG8, SDG9
SMA42812	Industrial Training [Latihan Industri]	SDG4, SDG8, SDG9
SMP10103	Principles of Economics [Prinsip-prinsip Ekonomi]	SDG1, SDG8, SDG10
SMP10903	Principles of Management [Prinsip-prinsip Pengurusan]	SDG8, SDG16
SMP15603	Principles of Business Analytics [Prinsip Analitik Perniagaan]	SDG9, SDG12
SMP15903	Financial Technology [Teknologi Kewangan]	SDG8, SDG9
SMP32603	Project Management [Pengurusan Projek]	SDG8, SDG9, SDG11
SMP33803	Strategic Management [Pengurusan Strategik]	SDG8, SDG9
SMA2XXX3	Elective I [Elektif I]	SDG8, SDG16
SMA3XXX3	Elective II [Elektif II]	SDG8, SDG16
SMA3XXX3	Elective III [Elektif III]	SDG8, SDG16

SMA10103 FINANCIAL MANAGEMENT [PENGURUSAN KEWANGAN]

No of Credits: 3

Course Synopsis:

This course provides an overview of the evolution of IASB and MASB, acquainting students with pertinent IFRSs and MFRS. It delves into the rationale behind conceptual frameworks and the identification of financial statement elements, aligning with pedagogical principles. Additionally, it covers fundamental topics such as accounting for assets, liabilities, equity, financial statement analysis with ratio interpretation, budgeting and working capital.

Course Outcomes:

1. Ability to apply the basic concepts of accounting as well as principles and procedures.
2. Ability to apply and organize accounting information in the financial statements to present the information to the internal and external users.
3. Ability to analyze the accounting information based on numerical data for companies to make the best decision for the organization as a whole.

SMA10203 INTERMEDIATE FINANCIAL REPORTING [PELAPORAN KEWANGAN PERTENGAHAN]

No of Credits: 3

Course Synopsis:

This course aims to furnish students with a foundational comprehension of fundamental accounting principles, including the principles and techniques of double-entry systems. Additionally, it covers procedures for preparing financial statements for both sole traders in merchandising and service enterprises, as well as partnership businesses. The objective is to equip students with the essential accounting knowledge necessary for maintaining comprehensive financial records within a business organization. Moreover, it seeks to cultivate students' proficiency in crafting financial statements for partnerships, addressing adjustments such as changes in partnership structure, asset revaluation, and modifications in goodwill accounting.

Course Outcomes:

1. Ability to understand the financial accounting and reporting for sole proprietorship and partnership.
2. Ability to apply knowledge and communication skills in task related to financial accounting and reporting for sole proprietorship or partnership.
3. Ability to analyze numerical data and demonstrate skills in task related to the accounting simulation project.

SMA11103 INTRODUCTION TO TAXATION [PENGENALAN KEPADA PERCUKAIAN]

No of Credits: 3

Course Synopsis:

This course equips students with the knowledge and understanding of the concepts, principles and current tax practices in Malaysia as well as the ability to solve practical problems and to be familiar with aspects of other relevant legislation.

Course Outcomes:

1. Ability to understand the basic concepts, philosophy and practices of taxation in Malaysia.
2. Ability to apply the computation of tax liability for individuals, companies, trusts, partnerships, limited liability partnerships, estates, clubs, cooperative societies and other specialised businesses.
3. Ability to analyze the major tax incentives available to taxpayers and investors as well as integrate the application of exemptions and reliefs and advise taxpayers for their entrepreneurial ventures.

SMA11703 PRINCIPLES OF PUBLIC SECTOR ACCOUNTING [PRINSIP-PRINSIP PERAKAUNAN SEKTOR AWAM]

No of Credits: 3

Course Synopsis:

The objective of this course is to understand the basics concept of government accounting. This course provides students with exposure to public sector accounting standards, Fund Accounting preparation, and Government Budget preparation and control. Based on the learning outcomes, students will be able to explain the basic concepts of public sector accounting, prepare, and differentiate the elements in fund accounting and government budget.

Course Outcomes:

1. Ability to understand the concepts and standards of governments and not-for-profits accounting.
2. Ability to apply and discuss issues related to the fund accounting and governmental budgets.
3. Ability to analyse and perform tasks related to different types of fund accounting and governmental budgets.

SMA12203 BUSINESS LAW & ETHICS [UNDANG-UNDANG PERNIAGAAN & ETIKA]

No of Credits: 3

Course Synopsis:

This course is a foundation of Business Law and Ethics which covers essential legal principles including contract, sales, agency, partnership, and company law, alongside business and accounting ethics. Students learn to navigate legal frameworks, MIA bylaws, and ethical dilemmas, fostering responsible business conduct in finance, accounting, and related fields.

Course Outcomes:

1. Ability to understand the essential elements of a valid contract and its effects on business.
2. Ability to analyse the importance of business law in relation to business transaction and different entities and demonstrate leadership skills related.
3. Ability to develop and propose policy and procedure for business ethics and conduct professionally.

SMA12903 INNOVATIVE MARKETING [PEMASARAN INOVATIF]

No of Credits: 3

Course Synopsis:

This course introduces students to the fundamentals of marketing while emphasizing innovative strategies and approaches in the contemporary business landscape. Students will explore emerging trends, disruptive technologies, and creative marketing methods to develop a comprehensive understanding of how innovation drives marketing success.

Course Outcomes:

1. Ability to understand the basic concepts and principles of marketing.
2. Ability to implement adaptive innovative marketing strategies and techniques.
3. Ability to analyze case studies to comprehend real-world applications of innovative marketing in business ventures using latest digital marketing tools.

SMA13003 CORPORATE FINANCE [KEWANGAN KORPORAT]

No of Credits: 3

Course Synopsis:

This course enables the students to understand and deepen their knowledge of corporate finance theories. In addition, it will enable them to understand various techniques related to risk and return, capital budgeting, capital structure, dividend policy, mergers and acquisitions, risk management and financial derivatives.

Course Outcomes:

1. Ability to understand the needs and importance of corporate finance in business and the possible challenges business in the future.
2. Ability to analyze the capital structure of a corporation based on the numerical data, including its funding and actions that management takes to increase the value of the company.
3. Ability to propose a business model through planning and implementation of resources, while balancing risk and profitability.

SMA20303 CONSOLIDATED FINANCIAL REPORTING [PELAPORAN KEWANGAN DISATUKAN]

No of Credits: 3

Course Synopsis:

At an advanced level, this course delves into group accounting and reporting, refining proficiency in consolidating intricate group structures involving associates, joint ventures, and foreign operations. It focuses on keeping up students with the materials up to date with the latest developments in financial reporting standards promulgated by the International Accounting Standards Board (IASB), as well as to incorporate changes in new IFRSs that may affect consolidated financial statements, such as IFRS 9 Financial Instruments and IFRS 16 Leases. The MPERS Framework for private entities, which went into effect on January 1, 2016, includes several sections on business combinations and consolidation.

Course Outcomes:

1. Ability to understand consolidation concepts, techniques, and standards.
2. Ability to apply critical thinking skills and solve consolidation problems through the use of case studies.
3. Ability to analyze and propose accounting solutions based on consolidated financial reporting.

SMA20803 COST AND MANAGEMENT ACCOUNTING [PERAKAUNAN PENGURUSAN DAN KOS]

No of Credits: 3

Course Synopsis:

This course introduces students to the fundamental concepts and applications of cost and management accounting within an organization in a variety of business contexts. It explores how accounting information is used to support decision-making, planning, and control.

Course Outcomes:

1. Ability to understand and analyse the role of cost and management accounting in organizations.
2. Ability to apply cost management techniques to product costing, cost behavior analysis, and cost-volume-profit (CVP) analysis.
3. Ability to apply management accounting tools for budgeting, planning, and performance evaluation.
4. Ability to demonstrate critical thinking and problem-solving skills in a managerial accounting context.

SMA20903 MANAGEMENT ACCOUNTING & CONTROL [KAWALAN & PERAKAUNAN PENGURUSAN]

No of Credits: 3

Course Synopsis:

Building on foundational knowledge, this course delves deeper into advanced management accounting and control concepts and practices. It explores how accounting information is used for strategic decision-making, performance management, and organizational design.

Course Outcomes:

1. Ability to apply advanced costing technique.
2. Ability to analyze and interpret financial statements for decision-making purposes.
3. Ability to evaluate management control systems and propose solution based on numerical data and information.

SMA21203 TAX COMPLIANCE & PLANNING [PERANCANGAN & PEMATUHAN CUKAI]

No of Credits: 3

Course Synopsis:

This course provides an in-depth understanding of advanced topics in taxation, focusing on Malaysian tax laws and regulations. It aims to equip students with the knowledge and skills necessary to handle complex tax issues and to understand the implications of tax planning and compliance.

Course Outcomes:

1. Ability to apply Malaysian tax laws and regulations to complex taxation scenarios involving individuals, corporations, partnerships, trusts, and estates.
2. Ability to evaluate comprehensive tax planning and strategy based on numerical data, distinguishing between legal tax avoidance and illegal tax avoidance.
3. Ability to evaluate and communicate to taxpayer's related to tax audits and tax investigations.

SMA21403 AUDIT & ASSURANCE [AUDIT & JAMINAN]

No of Credits: 3

Course Synopsis:

This course discusses the basic theories, concepts, processes and applications of internal auditing. It emphasises the role of internal audit function in ensuring good corporate governance. Students will also be exposed to relevant ethical issues.

Course Outcomes:

1. Ability to understand the principles of professional standards and ethics in auditing.
2. Ability to apply critical thinking skills and solve auditing problems and risk through the use of financial statements.
3. Ability to analyze and take decisions based on conflicting information, audit procedures and techniques.

SMA22003 COMPANY SECRETARIAL PRACTICE [AMALAN KESETIAUSAHAAN SYARIKAT]

No of Credits: 3

Course Synopsis:

This course is a crucial course for undergraduates, providing a comprehensive understanding of corporate governance and the pivotal roles of company secretaries, boards, and shareholders in modern business. The course covers the responsibilities of directors and executive boards, regulatory compliance, and the essential functions of company secretaries, including their involvement in annual and integrated reports, collaboration with external auditors, and their multifaceted roles in governance, advisory, management, facilitation, and communication. Students will also learn the art of conducting meetings and crafting agendas, making this course an essential resource for those pursuing careers in business, governance, and corporate management.

Course Outcomes:

1. Ability to understand the regulations, roles and practices of company secretary.
2. Ability to apply practical roles of company secretarial practices.
3. Ability to create minute meetings and agenda.

SMA22303 ACCOUNTING INFORMATION SYSTEM [SISTEM MAKLUMAT PERAKAUNAN]

No of Credits: 3

Course Synopsis:

This course is an introduction to Accounting Information Systems. Their role in organizations, particularly in support of strategic and operational decision-making and problem-solving, as well as operations support and management. Systems thinking; systems design & and development; management perspectives on the IT support role to business (particularly security & controls); trends, issues and concerns in IS; and end-user application software including accounting packages, reporting, and database management, are studied and assessed.

Course Outcomes:

1. Ability to apply accounting information systems, explain the relationship between accountings.
2. Ability to apply the mitigation of computer abuse and fraud techniques covering the accounting information system, including hardware, software, database design, and data analytics, and discuss the importance of internal

controls and system security within the key business processes.

3. Ability to manipulate and evaluate business transaction cycles and AIS applications using accounting software.

SMA22403 ACCOUNTING SYSTEM ANALYSIS & DESIGN [REKA BENTUK & ANALISIS SISTEM PERAKAUNAN]

No of Credits: 3

Course Synopsis:

This course covers the phases of systems development life cycle (SDLC) that includes systems planning, analysis, design, evaluation and selection, conversion and implementation, and system maintenance. This course also covers project management software and data analysis using spreadsheet together with basic programming language for data visualization.

Course Outcomes:

1. Ability to apply knowledge and system development strategies related to Accounting Information System (AIS) for business organization.
2. Ability to operate and demonstrate practical skills in tasks related to system implementation and operation management, including the use of project management software.
3. Ability to analyze programming languages for data automation and interface design in accounting systems, taking initiative in addressing related issues.

SMA30405 FINANCIAL MODELING & VALUATION [PENILAIAN & PEMODELAN KEWANGAN]

No of Credits: 3

Course Synopsis:

Financial modelling and valuation typically encompass the fundamental principles, techniques, and applications involved in analysing and valuing financial assets, businesses, and investment opportunities. It provides students with the necessary tools and techniques to construct financial models, forecast financial performance, and conduct valuation analyses. Students will develop proficiency in spreadsheet modelling, discounted cash flow (DCF) analysis, comparable company analysis (CCA), and other valuation methodologies used in corporate finance, investment banking, and financial analysis.

Course Outcomes:

1. Ability to synthesize key components and principles underlying financial models and valuation techniques, using financial and non-financial information for value creation.
2. Ability to proficiently apply advanced Excel functions and formulas for data manipulation, analysis, and visualization.
3. Ability to systematically analyze and communicate findings from case studies and real-world examples to apply financial modeling and valuation techniques in practical contexts.

SMA31503 ADVANCE AUDIT & ASSURANCE [AUDIT LANJUTAN & JAMINAN]

No of Credits: 3

Course Synopsis:

This course intends to strengthen and enhance students' understanding by examining and applying the relevant auditing, Assurance and Ethics Standards to various scenarios. It is practical in nature with students required to apply the Standards to different scenarios, including a comprehensive case study which integrates different topics in auditing. This course is specifically developed for students who wish to pursue MICPA professional qualification upon graduation.

Course Outcomes:

1. Ability to apply advanced audit techniques, including data analytics, forensic auditing, and audit sampling methods, to address complex audit issues and enhance audit effectiveness.
2. Ability to analyze audit risks associated with complex business transactions,

accounting estimates, and internal control deficiencies, and develop appropriate risk responses and audit procedures.

3. Ability to evaluate the design and operating effectiveness of internal controls, assess control deficiencies, and adjust audit procedures based on the findings.

SMA31803 GOVERNMENTAL ACCOUNTING & REPORTING [PELAPORAN & PERAKAUNAN KERAJAAN]

No of Credits: 3

Course Synopsis:

This course simplifies the intricacies of government accounting, making it accessible and practical. It covers fundamental subjects such as revenue recognition, expenditure accounting, interfund transactions, and special assessments in a straightforward manner. Additionally, students will explore topics like capital projects, debt service, capital assets, and investments, while gaining valuable insights into derivatives and long-term obligations. This course provides a solid foundation in governmental fund accounting, bridging the gap between modified accrual and full accrual accounting, making it an invaluable resource for students aiming to grasp the complexities of public sector accounting.

Course Outcomes:

1. Ability to explain the structure of governmental funds and government-wide statements.
2. Ability to demonstrate the preparation of revenue, expenditure, and obligations in governmental accounting.
3. Ability to assess capital assets and investments in government-wide statements, including marketable securities.

SMA32103 CORPORATE GOVERNANCE [TADBIR URUS KORPORAT]

No of Credits: 3

Course Synopsis:

This course aims to explore the core principles and contemporary issues in corporate governance. Covering topics such as the historical context of corporate governance in Malaysia, board leadership, director composition, remuneration structures, financial disclosure, stakeholder engagement, corporate social responsibility, sustainability reporting, risk management, internal control, and effective communication with shareholders, this course provides a comprehensive foundation in corporate governance principles and practices. It prepares students for future careers in corporate leadership, governance, and responsible business management, emphasizing the importance of transparency, ethics, and accountability in the corporate world.

Course Outcomes:

1. Ability to understand the theories, principles and frameworks of corporate governance in Malaysia and other countries.
2. Ability to apply the board of directors and senior management leadership and controls.
3. Ability to demonstrate the evaluation of potential engagement with stakeholders and shareholders.

SMA32503 INFORMATION SYSTEM AUDIT AND CONTROLS [KAWALAN DAN AUDIT SISTEM MAKLUMAT]

No of Credits: 3

Course Synopsis:

This course emphasises both theoretical and practical aspects of information systems audit and control. It is intended to provide students with knowledge and practical experience on conducting information systems audit projects. Guest seminars from the audit industry will be included. Various auditing tools, data analytics, simulations and exercises on information system audit.

Course Outcomes:

1. Ability to apply the concept of audit in managing information systems and controls, including governance, risk, and compliance (GRC) in information systems management.
2. Ability to develop and demonstrate practical skills in designing, testing, and assessing IS controls, and evaluate the impacts of IS audit and control on

data privacy and protection.

3. Ability to explain the audit process, including the planning of an audit, governance framework, and emerging trends and challenges in Information system audit and control.

SMA32710 FINAL YEAR PROJECT [PROJEK TAHUN AKHIR]

No of Credits: 10

Course Synopsis:

This capstone course serves as the culmination of the accounting program, integrating knowledge from various disciplines like financial accounting, management accounting, taxation, auditing, finance, and more. It aims to equip students with the ability to apply theoretical knowledge to real-world business problems. Through experiential exercises and independent research, students will learn to identify business issues, conduct research based on theory and past studies, analyze data, and present well-organized information to support effective decision-making.

Course Outcomes:

1. Ability to demonstrate the application of accounting principles to real-world scenarios.
2. Ability to develop and demonstrate critical thinking and problem-solving skills in accounting.
3. Ability to develop and present a comprehensive business plan.
4. Ability to demonstrate professionalism in analyzing and evaluating business opportunities.

SMA42812 INDUSTRIAL TRAINING [LATIHAN INDUSTRI]

No of Credits: 12

Course Synopsis:

Industrial training is a practical oriented course where the student needs to participate with attachment at companies within related industries for 6 months. During industrial training the student will be exposed to the real working environment where they will learn about the company's operation, departmental functions, work and safety procedure, project management, technical skill and communications skill. The student is also required to submit their logbook and final report at the end of industrial training period.

Course Outcomes:

1. Ability to recognize and adapt the working environment to optimize performance during the training period.
2. Ability to demonstrate effective communication skills and work ethics during the training period.
3. Ability to implement leadership autonomy and take responsibility for assigned tasks given by the host company.

SMP10103 PRINCIPLES OF ECONOMICS [PRINSIP-PRINSIP EKONOMI]

No of Credits: 3

Course Synopsis:

This course covers two branches of economics, namely microeconomics and macroeconomics. The study of microeconomics involves basic economics concepts, demand/ supply, market equilibrium, production costs, and market structures. Macroeconomics concerns business cycles, national income accounting, aggregate demand, aggregate supply, government policies and national debt.

Course Outcomes:

1. Ability to demonstrate detailed knowledge of economic analysis in business.
2. Ability to analyse business issues and appropriate economic tools.
3. Ability to evaluate economic analysis and the complexity of business issues.

SMP10903 PRINCIPLES OF MANAGEMENT [PRINSIP-PRINSIP PENGURUSAN]

No of Credits: 3

Course Synopsis:

This course presents thorough and systematic coverage of management theory and practice. It focuses on the fundamental roles, skills, and functions of management, particularly attention to managerial responsibility for the effective and efficient achievement of goals. Special attention is given to social responsibility, managerial ethics, and the importance of multi-national organizations.

Course Outcomes:

1. Ability to explain fundamental concepts in management process.
2. Ability to apply the management process of planning, organizing, leading and controlling in organization.
3. Ability to demonstrate management process interaction between organization environment, human resources and technology in decision making.

SMP15603 PRINCIPLES OF BUSINESS ANALYTICS [PRINSIP ANALITIK PERNIAGAAN]

No of Credits: 3

Course Synopsis:

This course is an application-oriented study of statistical concepts and techniques. It provides statistical methods for decision-making in business problems. This course will introduce some statistical techniques that can help in the decision-making process and analyze the output accurately.

Course Outcomes:

1. Ability to describe the statistical concept in business problems.
2. Ability to apply the appropriate statistical methods to business problems.
3. Ability to analyze the solutions for business problems using statistical methods.

SMP15903 FINANCIAL TECHNOLOGY [TEKNOLOGI KEWANGAN]

No of Credits: 3

Course Synopsis:

This course acquaints students with the fundamentals of financial technology and how it functions and fits into the organization. Using fintech tools, the course introduces internal control procedures covering the basic elements of the procedures, revenue and expense cycles. It enables students to become proficient with documentation techniques, such as flowcharting. The course focuses on the needs and responsibilities of accountants as users and developers of information technology and as well as auditors. Students will explore the capabilities of accounting software and undertake a course related project.

Course Outcomes:

1. Ability to apply finance and accounting-based technology knowledge by recognizing the role, purpose and importance of financial technology (fintech) as a whole.
2. Ability to classify common tools in fintech by relating it with current situation of company's financial transactions and record-keeping that describe a variety of financial activities such as money transfer, managing investments and raising money for a business startup.
3. Ability to demonstrate higher quality of fintech services based on the security, confidentiality, privacy, processing integrity and availability.

SMP32603 PROJECT MANAGEMENT [PENGURUSAN PROJEK]

No of Credits: 3

Course Synopsis:

This course offers a comprehensive understanding of project management theories, tools, and processes. It enhances students' insight into key project team concerns, enabling them to tackle common problems confidently. By emphasizing the importance of these concepts, it equips students with essential skills for ensuring project success.

Course Outcomes:

1. Ability to define and discuss the organizational issues and illustrate a quantitative method that is necessary for successful project management.
2. Ability to illustrate the organizational concepts in project management, analyze project planning, and identify conflict and negotiation.
3. Ability to evaluate and analyze budgeting and cost estimation, scheduling, resource allocation, monitoring information systems and project evaluation, control, project reviewing, and project termination.

SMP33803 STRATEGIC MANAGEMENT [PENGURUSAN STRATEGIK]

No of Credits: 3

Course Synopsis:

The strategic management course readies future managers for turbulent business environments, emphasizing relentless pursuit of organizational goals. It involves environmental analysis, strategy formulation, implementation, and performance evaluation to ensure alignment with vision and mission. Integrating various disciplines, it addresses diverse business challenges and fosters strategic direction.

Course Outcomes:

1. Ability to analyze business environments to determine strategic factors that are critical to the organization.
2. Ability to propose strategies to achieve a competitive advantage for the organization.
3. Ability to evaluate strategies implemented by the organization to achieve goals and objectives.

ELECTIVE I COURSES:

SMA20603 INTERNATIONAL ACCOUNTING [PERAKAUNAN ANTARABANGSA]

No of Credits: 3

Course Synopsis:

The subject of International Accounting covers various aspects of accounting practices and principles as they apply in the global context. It delves into the diversity of accounting standards worldwide, the ongoing convergence efforts towards harmonizing financial reporting standards, and the specific challenges and nuances associated with international financial reporting, including foreign currency transactions, translation of financial statements, and taxation implications. Additionally, it explores the concept of transfer pricing in international business operations.

Course Outcomes:

1. Ability to understand global accounting diversity.
2. Ability to apply and practise International Financial Reporting Standards (IFRS).
3. Ability to analyze and explains international taxation and transfer pricing and make informed decisions regarding the tax aspects and the complexity of cross-border transactions.

SMA20703 SUSTAINABILITY ACCOUNTING & REPORTING [PELAPORAN & PERAKAUNAN MAMFAN]

No of Credits: 3

Course Synopsis:

This course introduces students to the growing field of sustainability accounting and reporting. It will explore the integration of environmental, social, and governance (ESG) factors into traditional financial accounting. Students will gain understanding of sustainability frameworks, reporting standards, and the impact of sustainability on financial decision-making.

Course Outcomes:

1. Ability to understand the concept of sustainability and its relevance to accounting practices.
2. Ability to analyze and identify the benefits and challenges of integrating sustainability into financial reporting.
3. Ability to evaluate different sustainability reporting frameworks (e.g., GRI Standards, SASB) and their application.

SMA21603 FORENSIC ACCOUNTING & INVESTIGATION [PENYIASATAN & PERAKAUNAN FORENSIK]

No of Credits: 3

Course Synopsis:

This course will address the fundamentals and approaches of forensic accounting, focusing on detecting and preventing fraud. It offers a strong basis for developing expertise in forensic accounting methods, which involve acquiring, understanding, and recording evidence. Covered topics encompass fraud detection, prevention, and documentation, as well as techniques for investigating fraud, gathering, analyzing, and assessing evidence, and interpreting and conveying findings. Additionally, the course will explore strategies for resolving financial discrepancies in compliance with relevant laws and regulations.

Course Outcomes:

1. Ability to explain the fundamentals and approaches in forensic accounting.
2. Ability to demonstrate techniques for detecting and preventing fraud.
3. Ability to uphold and demonstrate integrity while analyzing, assessing evidence, and conveying findings in forensic accounting.

ELECTIVE II COURSES:

SMA31003 SEMINAR IN MANAGERIAL ACCOUNTING [SEMINAR PERAKAUNAN PENGURUSAN]

No of Credits: 3

Course Synopsis:

This course explores the evolution of management accounting, delving into both traditional and contemporary strategic management techniques. Through analysis and evaluation using real-world business cases, students gain a comprehensive understanding of performance evaluation, management control, behavioral and ethical considerations, and recent developments in the field. Emphasis is placed on behavioral aspects, fostering teamwork and facilitating engaging group discussions to enhance learning outcomes.

Course Outcomes:

1. Ability to critically analyze contemporary research, practices, and case studies in managerial accounting.
2. Ability to apply theoretical knowledge to real-world managerial accounting problems.
3. Ability to demonstrate ethical participation in seminar discussions and debates on managerial accounting topics, showing respect for differing perspectives and maintaining integrity in communication.

SMA31903 SEMINAR IN PUBLIC SECTOR ACCOUNTING [SEMINAR PERAKAUNAN SEKTOR AWAM]

No of Credits: 3

Course Synopsis:

This course is a comprehensive course tailored for undergraduate students, aiming to demystify the world of government funds, fiduciary activities, and financial reporting. Students will begin by exploring government funds in different business settings to build a basic grasp of public sector finance. The course covers crucial topics such as managing pension funds, financial reporting, and analysis, with a significant emphasis on not-for-profit organizations, colleges, universities, and healthcare providers. Additionally, it covers auditing government and nonprofit organizations and offers insights into federal government accounting. This course prepares undergraduates in accounting, finance, or public administration to excel in public finance and accounting.

SMA31903 SEMINAR IN PUBLIC SECTOR ACCOUNTING [SEMINAR PERAKAUNAN SEKTOR AWAM]

No of Credits: 3

Course Synopsis:

This course is a comprehensive course tailored for undergraduate students, aiming to demystify the world of government funds, fiduciary activities, and financial reporting. Students will begin by exploring government funds in different business settings to build a basic grasp of public sector finance. The course covers crucial topics such as managing pension funds, financial reporting, and analysis, with a significant emphasis on not-for-profit organizations, colleges, universities, and healthcare providers. Additionally, it covers auditing government and nonprofit organizations and offers insights into federal government accounting. This course prepares undergraduates in accounting, finance, or public administration to excel in public finance and accounting.

Course Outcomes:

1. Ability to critically analyse contemporary research, practices, and case studies in public sector accounting.
2. Ability to evaluate behavioral biases, psychological factors, and group dynamics that impact pension funds, financial reporting and analysis and not-for-profit organizations.
3. Ability to demonstrate the application of theoretical knowledge to real-world governmental accounting problems.
4. Ability to demonstrate ethical skills and professionalism while participating effectively in group discussions and debates.

ELECTIVE III COURSES:

SMA30505 SELECTED ISSUES IN ACCOUNTING AND FINANCIAL REPORT [ISU-ISU TERPILIH DALAM LAPORAN KEWANGAN DAN PERAKAUNAN]

No of Credits: 3

Course Synopsis:

This course explores contemporary and complex issues impacting accounting practices and financial reporting. It will delve into emerging trends, recent regulatory changes, and controversies surrounding financial information. Students will develop critical thinking skills to analyze complex accounting issues and their implications for stakeholders.

Course Outcomes:

1. Ability to select tax optimization strategies to minimize tax liabilities for individuals, businesses, and investment portfolios.
2. Ability to propose recent regulatory changes in financial reporting practices.
3. Ability to relate the impact of technology advancements (e.g., blockchain) on the future of accounting and financial reporting.
4. Ability to dissect and address different perspectives on key accounting controversies and ethical dilemmas.

SMA31305 ADVANCE TAXATION & PLANNING [PERANCANGAN & PERCUKAIAN LANJUTAN]

No of Credits: 3

Course Synopsis:

This course covers advanced topics in taxation. They include discussion on tax audit and investigation, tax for specialised industries such as banking and shipping, transfer pricing, trusts and estate under administration. Various tax incentives and emerging issues related to taxation are also discussed in this course.

Course Outcomes:

1. Ability to select tax optimization strategies to minimize tax liabilities for individuals, businesses, and investment portfolios.
2. Ability to propose tax planning opportunities, alternative strategies, and implement tax-efficient solutions tailored to the specific needs and objectives of clients or organizations.
3. Ability to prepare tax compliance requirements for individuals and businesses, including tax return preparation, reporting obligations, and tax audit procedures.
4. Ability to practise tax compliance, risk management, and dispute resolution.

SMA32605 ACCOUNTING PROGRAMMING PACKAGE [PAKEJ PENGATURCARAAN PERAKAUNAN]

No of Credits: 3

Course Synopsis:

This course equips students with the knowledge and skills to utilize accounting programming packages for efficient and accurate financial data processing. It will explore advanced features of accounting software, delve into basic programming concepts for customization, and emphasize the application of these tools in real-world accounting scenarios.

Course Outcomes:

1. Ability to identify and demonstrate a comprehensive understanding of advanced features within popular accounting software packages.
2. Ability to demonstrate programming skills to automate accounting processes and tasks.
3. Ability to synthesize real-world accounting data sets using programming tools for decision-making.
4. Ability to practice ethical considerations and data security practices relevant to accounting software use.

LIST OF GENERAL STUDIES & LANGUAGE COURSES

COURSE CODE	COURSE NAME	SDG
SMU13002	Falsafah Dan Isu Semasa [Philosophy And Current Issues]	SDG4
SMU13102	Penghayatan Etika Dan Peradaban [Appreciation Of Ethics And Civilization]	SDG16
SMU12102	Integriti Dan Anti Rasuah [Integrity And Anti-Corruption]	SDG16
SMU22402	Keusahawanan Kejuruteraan [Engineering Entrepreneurship]	SDG8
SMU32202	Kemahiran Berfikir [Thinking Skills]	SDG4
SMU13202	Pengajian Malaysia [Malaysian Studies]	SDG4
SMB11002	Bahasa Melayu Asas [Basic Malay Language]	SDG 4, SDG10
SMB41002	Bahasa Melayu Universiti [University Malay Language]	SDG 4, SDG17
SMB10102	Preparatory English [Bahasa Inggeris Persediaan]	SDG 4, SDG10
SMB20102	English For General Communication [Bahasa Inggeris Untuk Komunikasi Umum]	SDG 4, SDG10
SMB31202	English For Technical Communication [Bahasa Inggeris Untuk Komunikasi Teknikal]	SDG 4, SDG10
SMB31302	English For Academic Purposes [Bahasa Inggeris Akademik]	SDG 4, SDG10
SMB01402	Mandarin Language For Beginners [Bahasa Mandarin Permulaan]	SDG 4, SDG10
SMB11402	Preparatory Mandarin Language [Bahasa Mandarin Persediaan]	SDG 4, SDG10
SMB21402	Elementary Mandarin Language 1 [Bahasa Mandarin Asas 1]	SDG 4, SDG10
SMB01502	Thai Language For Beginners [Bahasa Thai Asas]	SDG 4, SDG10
SMB11502	Preparatory Thai Language [Bahasa Thai Persediaan]	SDG 4, SDG10
SMB21502	Elementary Thai Language 1 [Bahasa Thai Asas 1]	SDG 4, SDG10

COURSE CODE	COURSE NAME	SDG
SMB01602	Arabic Language for Beginners [Bahasa Arab Permulaan]	SDG 4, SDG10
SMB11602	Preparatory Arabic Language [Bahasa Arab Persediaan]	SDG 4, SDG10
SMB01702	Japanese Language for Beginners [Bahasa Jepun Permulaan]	SDG 4, SDG10
SMB11702	Japanese Language Preparatory [Bahasa Jepun Persediaan]	SDG 4, SDG10
SMB21702	Elementary Japanese Language 1 [Bahasa Jepun Asas 1]	SDG 4, SDG10
SMB31702	Elementary Japanese Language 2 [Bahasa Jepun Asas 2]	SDG 4, SDG10
SMB41702	Pre-Intermediate Japanese Language [Bahasa Jepun Pertengahan]	SDG 4, SDG10
SMB01802	German Language For Beginners [Bahasa Jerman Asas]	SDG 4, SDG10
SMB11802	Preparatory German Language [Bahasa Jerman Persediaan]	SDG 4, SDG10
SMB21802	Elementary German Language 1 [Bahasa Jerman Asas 1]	SDG 4, SDG10
SMB31802	Elementary German Language 2 [Bahasa Jerman Asas 2]	SDG 4, SDG10
SMB41802	Pre-Intermediate German Language [Bahasa Jerman Pertengahan]	SDG 4, SDG10
SMB01902	Korean Language for Beginners [Bahasa Korea Asas]	SDG 4, SDG10
SMB11902	Preparatory Korean Language [Bahasa Korea Persediaan]	SDG 4, SDG10

SMU13002 FALSAFAH DAN ISU SEMASA [PHILOSOPHY AND CURRENT ISSUES]

No of Credits: 2

Course Synopsis:

This course focuses on basic ideas and questions in philosophy which emphasizes on noble way of life within the intellectual thinking. The aim of this course is to give students a way to think more maturely in dealing with problems and issues in life. Students will be able to comprehend philosophy and its importance in building identity, moral responsibility, human relations and relationship with nature within the formation of Malaysian value systems.

Course Outcomes:

1. Ability to comprehend current issues base on philosophical knowledge and National Education Philosophy with "Rukun Negara".
2. Ability to explain current issues base on the main stream of various philosophical school of thought.
3. Ability to discuss current issues through comparison of philosophical perspectives to understand the integration of culture.

SMU13102 PENGHAYATAN ETIKA DAN PERADABAN [APPRECIATION OF ETHICS AND CIVILIZATION]

No of Credits: 2

Course Synopsis:

This course explains ethics from the perspective of different civilizations in Malaysia by identifying ethnic's system, level of development, progress, and culture in strengthening social cohesion. The goal of this course is to expose students to relevant knowledge in parsing and discussing contemporary issues related to economics, politics, social, culture, and the environment from a civilizational standpoint which hopefully will instill ethical perceptions and behaviour among students. The delivery of this course makes use of appropriate high-impact educational practices (HEIPs).

Course Outcomes:

1. Ability to comprehend the ethical concepts of different civilizations.
2. Ability to compare systems, levels of development, social and cultural progress across ethnic groups.
3. Ability to explain contemporary issues issues related to economics, politics, society, culture and the environment from an ethical and civilizational perspective.

SMU12102 INTEGRITI DAN ANTI RASUAH [INTEGRITY AND ANTI-CORRUPTION]

No of Credits: 2

Course Synopsis:

This course covers basic concepts on the value of Integrity, forms of corruption and abuse of power in daily life. This does not only happen in society but also involves existing organizations in the country. Therefore, methods to prevent corruption as well as identify real cases of corruption found in this life will be discussed in the learning session.

Course Outcomes:

1. Ability to identify and understand the value concepts of integrity and corruption.
2. Ability to analyze the value of integrity and corrupt behavior in life and organizations.
3. Ability to discuss and evaluate integrity and acts of corruption through any type of media observation/ case study/ community service.

SMU22402 KEUSAHAWANAN KEJURUTERAAN [ENGINEERING ENTREPRENEURSHIP]

No of Credits: 2

Course Synopsis:

This course introduces the basic concepts and theories of entrepreneurship. Students will be taught to develop a creative and innovative entrepreneurship ideas and business plan. The aim of this course is to instil entrepreneurial mindset among students in conducting daily activities.

Course Outcomes:

1. Ability to comprehend the elements and the concept of entrepreneurship based on selected case study.
2. Ability to create a creative and innovative entrepreneurship idea.
3. Ability to develop a business plan.

SMU32202 KEMAHIRAN BERFIKIR [THINKING SKILLS]

No of Credits: 2

Course Synopsis:

This course highlights the basic knowledge and understanding of thinking skills. Students will be able to understand and comprehend the related thinking skills philosophies, theories and concepts in local and western perspectives. Students will be able to choose, apply and discuss the appropriate and suitable thinking skill concepts and strategies in lateral and logical thinking in problem solving and decision-making processes.

Course Outcomes:

1. Ability to comprehend the concepts, theories and processes of thinking skills.
2. Ability to analyze the suitable and appropriate concepts, theories and processes of thinking skills in any given contexts.
3. Ability to discuss the suitable and appropriate concepts, theories and processes of thinking skills in any given contexts.

SMU13202 PENGAJIAN MALAYSIA [MALAYSIAN STUDIES]

No of Credits: 2

Course Synopsis:

The Malaysian Studies course emphasizes on the political, economic, and social aspects of the country's formation and growth. It contains details on the background history of ancient and Indian Southeast Asian kingdoms. Additionally, it covers Malacca's earliest known population, Malay Sultanate, Malay Kingship traditions, the rise and fall of Malacca, the nationalistic era, and the path to independence. Along with a brief history of Perlis, it also addresses topics such as foreign policy, globalization challenges, democratic and administrative characteristics.

Course Outcomes:

1. Ability to explain Malaysian historical background, nationalism, development, and growth to reach independence.
2. Ability to analyze the Malaysian process of democracy and system of administration.
3. Ability to discuss Malaysian issues and challenges in the era of globalization.

SMB11002 BAHASA MELAYU ASAS [BASIC MALAY LANGUAGE]

No of Credits: 2

Sinopsis Kursus:

Kursus ini dapat mengasah kemahiran berbahasa yang asas sehingga pelajar berkebolehan untuk menulis dan bertutur dalam bahasa Melayu. Kandungan kursus ini dapat memberi nilai tambah kepada kemahiran menulis dan bertutur dengan kosa kata asas dalam perbualan harian dan pembacaan teks mudah. Tatabahasa asas diterapkan untuk menyokong kemahiran berbahasa secara tepat.

Course Outcomes:

1. Kebolehan untuk memahami struktur asas tatabahasa dalam penulisan bahasa Melayu.
2. Kebolehan untuk mengaplikasi perkataan dan ayat mudah secara lisan dalam bahasa Melayu.
3. Kebolehan untuk menganalisis teks secara lisan dalam bahasa Melayu.

SMB41002 BAHASA MELAYU UNIVERSITI [UNIVERSITY MALAY LANGUAGE]

No of Credits: 2

Sinopsis Kursus:

Secara amnya kursus ini menekankan empat elemen dalam berbahasa, iaitu kemahiran mendengar, bertutur, membaca dan menulis. Pelajar mendapat pendedahan tentang konsep pemilihan kata, kesantunan berbahasa, penggunaan laras bahasa dan bahasa sapaan. Topik perancangan bahasa menyentuh sistem ejaan dan pembentukan kata dalam konteks rasmi. Pelajar akan didedahkan dengan penggunaan bahasa tidak formal, terutamanya dalam dialek geografi dan dialek sosial. Tugasan penulisan memberikan peluang kepada pelajar mempelajari proses-proses analisis disiplin bahasa dari segi fonologi, morfologi, leksikal, semantik dan sintaksis melalui penghuraian idea secara lisan dan tulisan.

Course Outcomes:

1. Kebolehan untuk memahami aspek-aspek kemahiran berbahasa dalam lisan dan tulisan.
2. Kebolehan untuk menganalisis penggunaan bahasa dan tatabahasa mengikut konteks.
3. Kebolehan untuk berhujah dengan menggunakan bahasa yang kritis dan analitis.

SMB10102 PREPARATORY ENGLISH [BAHASA INGGERIS PERSEDIAAN]

No of Credits: 2

Course Synopsis:

This course aims to enhance students English Language proficiency level on a variety of familiar subjects within their fields of interest. The learning of productive and receptive language skills are integrated within communicative approaches.

Course Outcomes:

1. Ability to interpret texts on the subjects related to their field of interest.
2. Ability to express straightforward descriptions or opinions with reasons on a variety of familiar subjects within their field of interest.
3. Ability to write reflectively on a range of familiar subjects within their field of interest using targeted grammatical items correctly.

SMB20102 ENGLISH FOR GENERAL COMMUNICATION [BAHASA INGGERIS KOMUNIKASI UMUM]

No of Credits: 2

Course Synopsis:

This course focuses on productive skills with some emphasis on receptive skills using semi-authentic and authentic content on a variety of subjects related to their field of interest. Students are exposed to evaluating information and arguments by applying appropriate grammatical items. This learner-centered course adopts language in context and skills-based approaches.

Course Outcomes:

1. Ability to identify the main ideas of complex texts in both concrete and abstract topics.
2. Ability to discuss critically on a wide range of subjects related to their field of interest, expanding and supporting ideas with subsidiary points and relevant examples.
3. Ability to argue on a variety of subjects related to their field of interest; evaluating information and arguments by applying appropriate grammatical items.

SMB31202 ENGLISH FOR TECHNICAL COMMUNICATION [BAHASA INGGERIS UNTUK KOMUNIKASI TEKNIKAL]

No of Credits: 2

Course Synopsis:

This course is designed to build students' competency in technical writing. Various fundamentals of technical communication will be introduced throughout this course. Students will learn how to write clearly and concisely. Students will also be exposed to primary and secondary research, techniques of analyzing and interpreting information. At the end of the semester, students are required to participate in discussions on a given topic related to the technical discipline.

Course Outcomes:

1. Ability to understand the fundamentals of technical communication.
2. Ability to produce clear, well-structured technical document based on the fundamentals of technical communication and supported with appropriate examples.
3. Ability to discuss critically and express agreement and disagreement within a group on a variety of topics related to the technical discipline.

SMB31302 ENGLISH FOR ACADEMIC PURPOSES [BAHASA INGGERIS AKADEMIK]

No of Credits: 2

Course Synopsis:

This course is aimed at preparing students to improve their general academic writing skills by familiarising them with the fundamentals of academic writing. Students will be expected to perform tasks in academic contexts on topics from various disciplines such as conducting primary and secondary research, writing a project paper, applying the correct form of APA style referencing in their writings, and critically analyse reading texts. This course also places some emphasis on reading and speaking skills.

Course Outcomes:

1. Ability to analyse complex academic texts critically from various disciplines.
2. Ability to produce well-structured academic writing by applying information gathered from primary and secondary sources using APA referencing.
3. Ability to argue in a discussion of topics from various disciplines convincingly.

SMB01402 MANDARIN LANGUAGE FOR BEGINNERS [BAHASA MANDARIN PERMULAAN]

No of Credits: 2

Course Synopsis:

This course is designed for beginners with no prior knowledge of Mandarin. This course focuses on developing the learner's basic listening, speaking and reading skills. Students will acquire the correct Mandarin pronunciation using Pinyin, to enable them to interact in various everyday situations. Simple conversations such as self-introduction, introducing one self to others, describing objects/people and expressing everyday activities are taught. In addition, students will be exposed to the basic elements of Chinese culture via the topics covered in the syllabus.

Course Outcomes:

1. Ability to identify basic simple words, phrases and short texts using Pinyin transliteration.
2. Ability to respond to everyday expressions & activities dealing with everyday needs in very short, slow, and repeated speech.
3. Ability to describe personal information (e.g., name, age, nationality, spoken language) using short phrases and simple dialogues.

SMB11402 PREPARATORY MANDARIN LANGUAGE [BAHASA MANDARIN PERSEDIAAN]

No of Credits: 2

Course Synopsis:

This course is designed for students who have no prior background in Mandarin language. The course focus on receptive and productive skills. The student will be introduced to Chinese Character and Pinyin, read and write short simple sentences using Chinese characters with reference to pin yin, and learn daily expressions in Mandarin language.

Course Outcomes:

1. Ability to comprehend words and phrases in simple informational texts.
2. Ability to reproduce personal information and details using simple phrases and short sentences using Chinese characters with reference to pin yin.
3. Ability to respond to repeated speech in everyday expressions & activities dealing with daily needs.
4. Ability to describe themselves and personal information (e.g., name, age, nationality, spoken language) using short phrases and simple dialogues.

SMB21402 ELEMENTARY MANDARIN LANGUAGE 1 [BAHASA MANDARIN ASAS 1]

No of Credits: 2

Course Synopsis:

At this Elementary 1 level, students will be introduced to grammatical structures used in common everyday language and related to the workplace. Students will also be able to read, understand and write longer sentences and conversations in different social contexts.

Course Outcomes:

1. Ability to understand short, simple texts written in common everyday language and related to my job.
2. Ability to describe longer sentences, dialogues, basic descriptions of events and activities using Chinese characters.
3. Ability to identify essential information from short recorded passage dealing with everyday matters which are spoken slowly and clearly.
4. Ability to express simple aspects of their everyday life in a series of simple sentences, simple words and basic phrases.

SMB01502 THAI LANGUAGE FOR BEGINNERS [BAHASA THAI ASAS]

No of Credits: 2

Course Synopsis:

This course is designed for beginners with no prior knowledge of Thai language. This course focuses on developing the learner's basic listening, speaking and reading skills. Students will acquire the correct Thai language pronunciation using Thai transliteration, to enable them to interact in various everyday situations. Simple conversations such as self introduction, introducing one self to others, describing objects/people and expressing everyday activities are taught. In addition, students will be exposed to the basic elements of Thai culture via the topics covered in the syllabus.

Course Outcomes:

1. Ability to identify basic simple words, phrases and short texts using Thai transliteration.
2. Ability to respond to everyday expressions & activities dealing with everyday needs in very short, slow, and repeated speech.
3. Ability to describe personal information (e.g., name, age, nationality, spoken language) using short phrases and simple dialogues.

SMB11502 PREPARATORY THAI LANGUAGE [BAHASA THAI PERSEDIAAN]

No of Credits: 2

Course Synopsis:

This course is designed for students who have no prior background in Thai language. The course focus on receptive and productive skills. Student will be introduced to Thai phonetic transcriptions, read and write short simple sentences using Thai Scripts, and learn daily expressions.

Course Outcomes:

1. Ability to comprehend words and phrases in simple informational texts.
2. Ability to reproduce personal information and details using simple phrases and short sentences.
3. Ability to respond to repeated speech in everyday expressions & activities dealing with daily needs.
4. Ability to describe themselves and personal information (e.g., name, age, nationality, spoken language) using short phrases and simple dialogues language on workplace related topics and contexts.

SMB21502 ELEMENTARY THAI LANGUAGE 1 [BAHASA THAI ASAS 1]

No of Credits: 2

Course Synopsis:

At this Elementary 1 level, students will be introduced to grammatical structures used in common everyday language and related to the workplace. Students will also be able to read, understand and write longer sentences and conversations in different social contexts.

Course Outcomes:

1. Ability to understand short, simple texts written in common everyday language and related to my job.
2. Ability to describe longer sentences, dialogues, basic descriptions of events and activities using Thai characters.
3. : Ability to identify essential information from short recorded passages dealing with everyday matters which are spoken slowly and clearly.
4. Ability to express simple aspects of their everyday life in a series of simple sentences, simple words and basic phrases.

SMB01602 ARABIC LANGUAGE FOR BEGINNERS [BAHASA ARAB PERMULAAN]

No of Credits: 2

Course Synopsis:

This course is designed for beginners with no prior knowledge of Arabic language. This course focuses on developing the learner's basic listening, speaking and reading skills. Students will acquire the correct Arabic language pronunciation using Romanized transliteration, to enable them to interact in various everyday situations. Simple conversations such as self introduction, introducing one self to others, describing objects/people and expressing everyday activities are taught. In addition, students will be exposed to the basic elements of Arabic culture via the topics covered in the syllabus.

Course Outcomes:

1. Ability to identify basic simple words, phrases and short texts using Romanized transliteration.
2. Ability to respond to everyday expressions & activities dealing with everyday needs in very short, slow, and repeated speech.
3. Ability to describe personal information (e.g., name, age, nationality, spoken language) using short phrases and simple dialogues.

SMB11602 PREPARATORY ARABIC LANGUAGE [BAHASA ARAB PERSEDIAAN]

No of Credits: 2

Course Synopsis:

This course is designed for students who have no prior background in Arabic language. The course focuses on receptive and productive skills. Student will be introduced to Arabic phonetic transcriptions, read and write short simple sentences using Arabic transliterations, and learn daily expressions used in daily speaking. Students will acquire the correct Arabic language pronunciation using romanized transliteration, to enable them to interact in various everyday situations. Simple conversations such as self introduction, introducing one self to others, describing objects/people and expressing everyday activities are taught. In addition, students will be exposed to the basic elements of Arabic culture via the topics covered in the syllabus.

Course Outcomes:

1. Ability to respond to repeated speech in everyday expressions & activities dealing with daily needs.
2. Ability to describe themselves and personal information (e.g., name, age, nationality, spoken language) using short phrases and simple dialogues.
3. Ability to comprehend words and phrases in simple informational texts.
4. Ability to reproduce personal information and details using simple phrases and short sentences.

SMB01702 JAPANESE LANGUAGE PREPARATORY [BAHASA JEPUN PERMULAAN]

No of Credits: 2

Course Synopsis:

This course is designed for beginners with no prior knowledge of Japanese language. This course focuses on developing the learner's basic listening, speaking and reading skills. Students will acquire the correct Japanese language pronunciation using Japanese Kana in Romaji, to enable them to interact in various everyday situations. Simple conversations such as self introduction, introducing one self to others, describing objects/people and expressing everyday activities are taught. In addition, students will be exposed to the basic elements of Japanese culture via the topics covered in the syllabus.

Course Outcomes:

1. Ability to identify basic simple words, phrases and short texts using Romaji transliteration.
2. Ability to respond to everyday expressions & activities dealing with everyday needs in very short, slow, and repeated speech.
3. Ability to describe personal information (e.g., name, age, nationality, spoken language) using short phrases and simple dialogues.

SMB11702 PREPARATORY JAPANESE LANGUAGE [BAHASA JEPUN PERSEDIAAN]

No of Credits: 2

Course Synopsis:

This course is designed for students who have no prior background in Japanese language. The course focus on receptive and productive skills. Student will be introduced to Japanese Writing System, read and write short sentences using Japanese characters and learn daily expressions.

Course Outcomes:

1. Ability to comprehend words and phrases in simple informational texts.
2. Ability to reproduce personal information and details using simple phrases and short sentences.
3. Ability to respond to repeated speech in everyday expressions & activities dealing with daily needs.
4. Ability to describe themselves and personal information (e.g., name, age, nationality, spoken language) using short phrases and simple dialogues.

SMB21702 ELEMENTARY JAPANESE LANGUAGE 1 [BAHASA JEPUN ASAS 1]

No of Credits: 2

Course Synopsis:

At this Elementary 1 level, students will be introduced to grammatical structures used in common everyday language and related to the workplace. Students will also be able to read, understand and write longer sentences and conversations in different social contexts.

Course Outcomes:

1. Ability to understand short, simple texts written in common everyday language and related to my job.
2. Ability to describe longer sentences, dialogues, basic descriptions of events and activities using Japanese characters.
3. Ability to identify essential information from short recorded passage dealing with everyday matters which are spoken slowly and clearly.
4. Ability to express simple aspects of their everyday life in a series of simple sentences, simple words and basic phrases.

SMB31702 ELEMENTARY JAPANESE LANGUAGE 2 [BAHASA JEPUN ASAS 2]

No of Credits: 2

Course Synopsis:

The objective of this course is the introduction to, and use of vocabulary related to personal experiences in different real-life formal and social contexts or situations. Students will be able to read longer texts and learn to construct complex sentences to produce longer dialogues and essays.

Course Outcomes:

1. Ability to apply specific information in different social contexts.
2. Ability to write sentences using correct grammar to produce longer dialogues and essay relating to personal experiences and social contexts.
3. Ability to interpret clear, standard speech on familiar matters in real life situations.
4. Ability to describe their plans and arrangements, activities and personal experiences.

SMB41702 PRE-INTERMEDIATE JAPANESE LANGUAGE [BAHASA JEPUN PERTENGAHAN]

No of Credits: 2

Course Synopsis:

The objective of this course is the introduction to developing productive and reflective language skills which focuses more on workplace related topics and contexts. Students will also be exposed to advanced communicative and grammatical structures.

Course Outcomes:

1. Ability to identify general information in formal and informal texts relating to a variety of workplace contexts.
2. Ability to write formal and informal texts and describe informative materials relating to workplace contexts.
3. Ability to interpret information and conversations on topics and contexts related to workplace contexts.
4. Ability to describe main information of experiences, events and opinions using descriptive language on workplace related topics and contexts.

SMB01802 GERMAN LANGUAGE FOR BEGINNERS [BAHASA JERMAN PERMULAAN]

No of Credits: 2

Course Synopsis:

This course is designed for beginners with no prior knowledge of German language. This course focuses on developing the learner's basic listening, speaking and reading skills. Students will acquire the correct German language pronunciation, to enable them to interact in various everyday situations. Simple conversations such as self introduction, introducing one self to others, describing objects/people and expressing everyday activities are taught. In addition, students will be exposed to the basic elements of German culture via the topics covered in the syllabus.

Course Outcomes:

1. Ability to identify basic simple words, phrases and short texts using romanized transliteration.
2. Ability to respond to everyday expressions & activities dealing with everyday needs in very short, slow, and repeated speech.
3. Ability to describe personal information (e.g., name, age, nationality, spoken language) using short phrases and simple dialogues.

SMB11802 PREPARATORY GERMAN LANGUAGE [BAHASA JERMAN PERSEDIAAN]

No of Credits: 2

Course Synopsis:

This course is designed for students who have no prior background in German language. The course focus on receptive and productive skills. Student will be introduced to German phonetic transcriptions, read and write short simple sentences and learn daily expressions.

Course Outcomes:

1. Ability to comprehend words and phrases in simple informational texts.
2. Ability to reproduce personal information and details using simple phrases and short sentences.
3. Ability to respond to repeated speech in everyday expressions & activities dealing with daily needs.
4. Ability to describe themselves and personal information (e.g., name, age, nationality, spoken language) using short phrases and simple dialogues. words and basic phrases.

SMB21802 ELEMENTARY GERMAN LANGUAGE 1 [BAHASA JERMAN ASAS 1]

No of Credits: 2

Course Synopsis:

At this Elementary 1 level, students will be introduced to grammatical structures used in common everyday language and related to the workplace. Students will also be able to read, understand and write longer sentences and conversations in different social contexts.

Course Outcomes:

1. Ability to understand short, simple texts written in common everyday language and related to my job.
2. Ability to describe longer sentences, dialogues, basic descriptions of events and activities.
3. Ability to identify essential information from short recorded passage dealing with everyday matters which are spoken slowly and clearly.
4. Ability to express simple aspects of their everyday life in a series of simple sentences, simple words and basic phrases.

SMB31802 ELEMENTARY GERMAN LANGUAGE 2 [BAHASA JERMAN ASAS 2]

No of Credits: 2

Course Synopsis:

The objective of this course is the introduction to, and use of vocabulary related to personal experiences in different real-life formal and social contexts or situations. Students will be able to read longer texts and learn to construct complex sentences to produce longer dialogues and essays.

Course Outcomes:

1. Ability to apply specific information in different social and formal contexts.
2. Ability to write sentences using correct grammar to produce longer dialogues and essay relating to personal experiences and social and formal contexts.
3. Ability to interpret clear, standard speech on familiar matters in real life situations.
4. Ability to describe their plans and arrangements, activities and personal experiences.

SMB41802 PRE-INTERMEDIATE GERMAN LANGUAGE [BAHASA JERMAN PERTENGAHAN]

No of Credits: 2

Course Synopsis:

The objective of this course is the introduction to developing productive and reflective language skills which focuses more on workplace related topics and contexts. Students will also be exposed to advanced communicative and grammatical structures.

Course Outcomes:

1. Ability to identify general information in formal and informal texts relating to a variety of workplace contexts.
2. Ability to write formal and informal texts, and describe informative materials relating to workplace context.
3. Ability to interpret information and conversations on topics and contexts related to workplace.
4. Ability to describe main information of experiences, events and opinions using descriptive language on workplace related topics and contexts.

SMB01902 KOREAN LANGUAGE FOR BEGINNERS [BAHASA KOREA ASAS]

No of Credits: 2

Course Synopsis:

This course is designed for beginners with no prior knowledge of Korean language. This course focuses on developing the learner's basic listening, speaking and reading skills. Students will acquire the correct Korean language pronunciation using Hangul, to enable them to interact in various everyday situations. Simple conversations such as self introduction, introducing one self to others, describing objects/people and expressing everyday activities are taught. In addition, students will be exposed to the basic elements of Korean culture via the topics covered in the syllabus.

Course Outcomes:

1. Ability to identify basic simple words, phrases and short texts using Hangul transliteration.
2. Ability to respond to everyday expressions & activities dealing with everyday needs in very short, slow, and repeated speech.
3. Ability to describe personal information (e.g., name, age, nationality, spoken language) using short phrases and simple dialogues.

SMB11902 PREPARATORY KOREAN LANGUAGE [BAHASA KOREA PERSEDIAAN]

No of Credits: 2

Course Synopsis:

This course is designed for students who have no prior background in Korean language. This course focuses on receptive and productive skills. Student will be introduced to Korean Character and pronunciation, read and write short simple sentences using Hangul, and learn daily expressions.

Course Outcomes:

1. Ability to comprehend words and phrases in simple informational texts.
2. Ability to reproduce personal information and details using simple phrases and short sentences using Hangul.
3. Ability to respond to repeated speech in everyday expressions & activities dealing with daily needs.
4. Ability to describe themselves and personal information (e.g., name, age, nationality, spoken language) using short phrases and simple dialogues.

FACULTY OF INTELLIGENT COMPUTING (FIC)

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Programmes Offered:

- Bachelor of Computer Engineering with Honours
- Bachelor in Data Science (Artificial Intelligence) with Honours
- Diploma in Computer Engineering

EXCO DIRECTORY



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Prof. Ts. Dr. Azremi bin Abdullah Al-Hadi

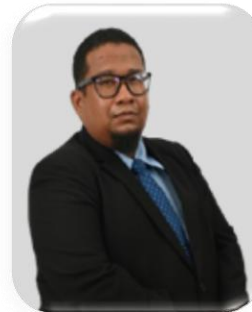
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UR6523002

Bachelor of Computer Engineering with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates who have demonstrated career advancement in the field of Computer Engineering or related engineering fields.

PEO 2

Graduates who have contributed to a professional body or society.

PEO 3

Graduates who have engaged in lifelong learning or pursuing continuing education opportunities .



PROGRAMME OUTCOMES (PO)

PO 1

Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization as specified in WK1 to WK4 respectively to develop solutions to complex engineering problems.

PO 2

Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development (WK1 to WK4).

PO 3

Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required (WK5).

PO 4

Conduct investigation of complex engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions (WK8).

PO 5

Create, select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, (WK2 and WK6).

PO 6

Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving complex engineering problems (WK1, WK5, and WK7).

PO 7

Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion (WK9).

PO 8

Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings (WK9).

PO 9

Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO 10

Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments

PO 11

Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change (WK8).

CURRICULUM STRUCTURE UR6523002 BACHELOR OF COMPUTER ENGINEERING WITH HONOURS INTAKE 2025/2026									
YEAR	FIRST		SECOND		THIRD			FOURTH	
SEMESTER	1	2	3	4	5	6	BREAK	7	8
DISCIPLINE CORE & ELECTIVE COURSES (102 CREDITS)	IMJ11103 Electronic Devices	IMJ12103 Analog Electronics 1	IMJ21103 Analog Electronics 2	IMJ22103 Electromagnetic Theory	IMJ31404 Electronic Instrumentation and Measurement	IMJ32104 Embedded System Design	IMJ33005 Industrial Training	IMJ41002 Final Year Project 1	IMJ42004 Final Year Project 2
	IMJ11203 Circuit Theory 1	IMJ12203 Circuit Theory 2	IMJ21303 Signals and Systems	IMJ22203 Control Systems	IMJ31103 Communication Systems	IMJ32204 Computer Architecture		IMJ41103 Modern Operating System	IMJ42103 Real Time System
	IMJ11304 Computer Programming	IMJ12303 Digital Electronics 1	IMJ21404 Digital Electronics 2	IMJ22404 Microprocessor Systems	IMJ31303 Digital Signal Processing	IMJ32004 Integrated Design Project		IMJ41203 Artificial Intelligence	IMJ48XX3 Open Elective
		IMJ12403 Electrical Engineering	IMJ21203 Algorithm and Data Structures	IMJ22303 Object-oriented Programming	IMJ31203 Computer Networks			IMJ47XX3 Program Elective 1	
								IMJ47XX3 Program Elective 2	
COMMON CORE COURSES (17 CREDITS)	IMQ10103 Engineering Mathematics 1	IMQ10203 Engineering Mathematics 2	IMQ22103 Discrete Mathematics and Linear Algebra	IMQ27203 Probability and Statistic	IMJ31403 Management for Engineers	IMJ32102 Professional Engineers			
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMZ1XX01 Co-Curriculum 1	SMZ2XX01 Co-Curriculum 2	SMB20102 English for General Communication ^[3]	SMB41002 University Malay Language ^[4]	SMB31202 English for Technical Communication	SMU22402 Engineering Entrepreneurship			SMU12102 Integrity and Anti- Corruption ^[5]
	SMU13002 Philosophy and Current Issues		SMBXXX02 Optional Courses						
	SMU13102 Appreciation of Ethics and Civilization								
TOTAL CREDITS (135 CREDITS)	18	16	18	18	18	16	5	14	12
AUDIT COURSES	IMJ11202 Fundamental of Engineering Physics ^[1]	SMB10102 Preparatory English ^[2]							

Program Elective 1 & 2 (select any 2 courses) : IMJ47103 Image Processing, IMJ47203 Software Engineering, IMJ47303 Internet of Things, IMJ47403 Computer Network Security, IMJ47503 Cloud Computing.
Open Elective (select 1 course) : IMJ48103 Data Analytics, IMJ48203 Network Programming, IMJ48303 FPGA Programming.

[1] Compulsory to students with insufficient background in Physical Science.

[2] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).
SMB10102 Preparatory English is an Audit course.

[3] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) and must take any other Optional Course with 2 credits.

[4] International students other than Indonesia, Singapore and Brunei need to register SMB11002 Basic Malay Language course.

[5] International students should register SMU13202 Malaysian Studies.

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
IMJ11103	Peranti Elektronik [Electronic Devices]	-
IMJ11203	Teori Litar 1 [Circuit Theory 1]	-
IMJ11304	Pengaturcaraan Komputer [Computer Programming]	SDG 09
IMJ12103	Elektronik Analog 1 [Analog Electronics 1]	SDG 09
IMJ12203	Teori Litar 2 [Circuit Theory 2]	-
IMJ12303	Elektronik Digit 1 [Digital Electronics 1]	-
IMJ12403	Kejuruteraan Elektrik [Electrical Engineering]	SDG 09
IMJ11202	Asas Fizik Kejuruteraan [Fundamental of Engineering Physics]	-
IMJ21103	Elektronik Analog 2 [Analog Electronics 2]	SDG 09
IMJ21303	Isyarat dan Sistem [Signals and Systems]	SDG 09
IMJ21404	Elektronik Digit 2 [Digital Electronics 2]	SDG 09
IMJ21203	Algoritma dan Struktur-struktur Data [Algorithm and Data Structures]	-
IMJ22103	Teori Elektromagnet [Electromagnetic Theory]	-
IMJ22203	Sistem Kawalan [Control Systems]	-
IMJ22404	Sistem Mikropemproses [Microprocessor Systems]	-
IMJ22303	Pengaturcaraan Berasaskan Objek [Object Oriented Programming]	-
IMJ31404	Instrumentasi Elektronik dan Pengukuran [Electronic Instrumentation and Measurement]	SDG 09
IMJ31103	Sistem Perhubungan [Communication Systems]	SDG 07

COURSE CODE	COURSE NAME	SDG
IMJ31303	Pemprosesan Isyarat Digit [Digital Signal Processing]	-
IMJ31203	Rangkaian Komputer [Computer Networks]	SDG 09
IMJ31403	Pengurusan Untuk Jurutera [Management for Engineers]	-
IMJ32104	Rekabentuk Sistem Terbenam [Embedded Systems Design]	SDG 09
IMJ32204	Senibina Komputer [Computer Architecture]	SDG 09
IMJ32004	Projek Reka Bentuk Bersepadu [Integrated Design Project]	SDG 03
IMJ32102	Jurutera Profesional [Professional Engineers]	-
IMJ33005	Latihan Industri [Industrial Training]	-
IMJ41002	Projek Tahun Akhir 1 [Final Year Project 1]	SDG 09
IMJ42004	Projek Tahun Akhir 2 [Final Year Project 2]	SDG 04
IMJ41103	Sistem Operasi Moden [Modern Operating System]	SDG 09
IMJ41203	Kecerdasan Buatan [Artificial Intelligence]	SDG 09
IMJ42103	Sistem Masa Nyata [Real-time Systems]	SDG 09
IMJ47103	Pemprosesan Imej [Image Processing]	-
IMJ47203	Kejuruteraan Perisian [Software Engineering]	-
IMJ47303	Internet Benda [Internet of Things]	SDG 09
IMJ47403	Keselamatan Rangkaian Komputer [Computer Network Security]	SDG 09
IMJ47503	Pengkomputeran Awan [Cloud Computing]	SDG 09

COURSE CODE	COURSE NAME	SDG
IMJ48103	Analitik Data [Data Analytics]	SDG 09
IMJ48203	Pengaturcaraan Rangkaian [Network Programming]	SDG 09
IMJ48303	Pengaturcaraan FPGA [FPGA Programming]	SDG 09

IMJ11103 PERANTI ELEKTRONIK [ELECTRONIC DEVICES]

No of Credits: 3

Course Synopsis:

This course focuses on electronic devices, namely diodes and transistors. Firstly, types of semiconductor materials and pn junction are introduced. Then, operation, characteristics and applications of diodes are covered. Finally, operation and characteristics of Bipolar Junction Transistors (BJTs) and Field Effect Transistors (FETs) are evaluated under various types of biasing.

Course Outcomes:

1. Ability to apply basic principles of semiconductor materials to explain the operation of diodes, BJTs, and FETs in electronic circuits.
2. Ability to analyse diode characteristics and applications in electronic circuits.
3. Ability to examine various biasing techniques employed in transistor amplifier circuits.

IMJ11203 TEORI LITAR 1 [CIRCUIT THEORY 1]

No of Credits: 3

Course Synopsis:

This course provides a foundational introduction to the analysis of linear electric circuits under both direct current (DC) and alternating current (AC) conditions. Core topics include fundamental circuit laws and theorems, DC circuit analysis, phasor representation, sinusoidal steady-state analysis, RLC circuits, and AC circuit analysis. Upon completing the course, students will be able to apply key principles and analytical techniques to effectively evaluate and solve problems involving linear electrical circuits.

Course Outcomes:

1. Ability to apply fundamental circuit laws and theorems to effectively solve basic direct current (DC) electrical circuit problems.
2. Ability to analyse alternating current (AC) circuits containing resistive, inductive, and capacitive components using appropriate methods to assess circuit behaviour and performance.

IMJ11304 PENGATURCARAAN KOMPUTER [COMPUTER PROGRAMMING]

No of Credits: 4

Course Synopsis:

This course is offered to provide students from the newly established Faculty of Intelligent Computing (FKC) with essential programming skills using the C language. It serves as a foundation for solving problems logically through structured programming, helping students to understand basic coding concepts, algorithms, and debugging. As programming is a core skill in computer engineering, this course helps students build a strong foundation to prepare for more advanced subjects and real-world applications.

Course Outcomes:

1. Ability to analyze programming concepts and principles to solve structured problems effectively
2. Ability to design solutions for complex engineering problems using computer programming techniques
3. Ability to demonstrate proper use of appropriate tools for coding, compiling, executing, and debugging computer programs
4. Ability to evaluate critical thinking skills in solving programming-related challenges involving emerging technologies

IMJ12103 ELEKTRONIK ANALOG 1 [ANALOG ELECTRONICS 1]

No of Credits: 3

Course Synopsis:

This course exposes students to the fundamentals of analog electronic circuits, including amplifier circuits based on bipolar junction and field effect transistors for single and multistage configurations, power amplifiers, and amplifier frequency response. It has been designed to provide basic analog electronics skills, covering theoretical analyses, simulations, and practical experiments.

Course Outcomes:

1. Ability to apply knowledge of circuit theory and the principles of electronic devices in analog applications.
2. Ability to analyze amplifier circuits in analog applications.
3. Ability to demonstrate appropriate techniques and engineering tools to solve experimental problems in amplifier circuits.

IMJ12203 TEORI LITAR 2 [CIRCUIT THEORY 2]

No of Credits: 3

Course Synopsis:

In this course, students will begin by applying circuit analysis techniques to determine the parameters of two-port networks. They will then progress to analyzing circuits using transfer functions and demonstrating the frequency response of AC circuits through frequency response and Bode plots. Finally, students will learn to utilize advanced mathematical tools, specifically the Laplace Transform and Fourier Transform, for a comprehensive frequency-domain analysis of AC circuits.

Course Outcomes:

1. Ability to analyze two-port circuits to evaluate their transmission characteristics, signal flow, and impedance
2. Ability to analyze frequency response of AC circuits using transfer function, Bode Plot and RLC resonance
3. Ability to apply knowledge of Laplace Transform and Fourier Transform in solving electric circuits problem

IMJ12303 ELEKTRONIK DIGIT 1 [DIGITAL ELECTRONICS 1]

No of Credits: 3

Course Synopsis:

This course introduces the fundamentals of digital circuit design and analysis. Topics covered in the lectures include Boolean algebra, numbering systems, basic logic gates, combinational circuit design, timing diagrams, bi-state memory devices, and sequential circuit design.

Course Outcomes:

1. Ability to apply different numbering systems and to understand basic theory of binary system.
2. Ability to apply method of minimizing Boolean functions for digital logic circuit.
3. Ability to design combinational logic circuits based on Boolean functions.
4. Ability to design sequential logic circuits based on Boolean functions.

IMJ12403 KEJURUTERAAN ELEKTRIK [ELECTRICAL ENGINEERING]

No of Credits: 3

Course Synopsis:

This course is designed to provide the students with the fundamental's knowledge and applications of electrical engineering technology. This course emphasizes the students to the three phase system, magnetism and electromagnetism. These theories and concepts are then applied in the power transformer and electrical machines technology. General concepts and basic operation principles for power transformer, electrical transmission, AC and DC generator and AC and DC motor, including their characteristics and performance analysis are also covered in this course.

Course Outcomes:

1. Ability to apply the basic concept of single-phase, three-phase system, magnetism and electromagnetism.
2. Ability to analyze the fundamental, operation and application of electrical transformer.
3. Ability to analyze the fundamental, operation and application of AC machines and DC machines with respect to their equivalent circuits and performances.

IMJ11202 ASAS FIZIK KEJURUTERAAN [FUNDAMENTAL OF ENGINEERING PHYSICS]

No of Credits: 2

Course Synopsis:

This course aims to provide students with foundational knowledge in physics and engineering, focusing on physical and scientific phenomena essential to electronic and computer engineering. Emphasis is placed on theories, principles, and standard units throughout the syllabus to ensure students develop a comprehensive understanding of the subject.

Course Outcomes:

1. Ability to explain fundamental physics concepts relevant to engineering applications.
2. Ability to apply basic physics principles in solving simple engineering-related problems.

IMJ21103 ELEKTRONIK ANALOG 2 [ANALOG ELECTRONICS 2]

No of Credits: 3

Course Synopsis:

The course introduces students to the concepts, operation, analysis, and design of operational amplifier (op-amp) circuits. Students are also required to analyze and design various types of these circuits, such as active filters, feedback circuits, oscillators, and voltage regulators. In addition, students will practically conduct experiments using an op-amp.

Course Outcomes:

1. Ability to analyze operational amplifier circuits in analog applications.
2. Ability to design operational amplifier circuits for analog applications.
3. Ability to demonstrate appropriate techniques and use of engineering tools to solve experimental problems in operational amplifier circuits.

IMJ21303 ISYARAT DAN SISTEM [SIGNALS AND SYSTEMS]

No of Credits: 3

Course Synopsis:

This course develops the mathematical foundation and computational tools for processing continuous-time and discrete-time signals in both time and frequency domains. Key concepts and tools introduced and discussed in this class include linear time-invariant systems, impulse response, frequency response, convolution, filtering, sampling, Fourier series and transforms, Laplace transform, and z-transform.

Course Outcomes:

1. Ability to apply the concept of signal and system classifications, impulse response, and convolution in both continuous and discrete time domains.
2. Ability to apply the concept of the Fourier representation of continuous and discrete signals and their properties.
3. Ability to analyse linear and time-invariant systems using the Laplace transform and its application.
4. Ability to evaluate discrete systems using z transform and their properties.

IMJ21404 ELEKTRONIK DIGIT 2 [DIGITAL ELECTRONICS 2]

No of Credits: 4

Course Synopsis:

This course enhances students' knowledge of logic circuit design, focusing

particularly on sequential logic elements. Topics covered include registers operations, state machines and their applications, memory design, arithmetic logic units, and control words. The course aims to help students develop and demonstrate their technical skills in designing, simulating, analyzing, and verifying complex digital circuits and subsystems.

Course Outcomes:

1. Ability to apply basic principles of sequential logic elements in digital circuits.
2. Ability to analyze the concepts of sequential logic elements in digital circuits.
3. Ability to design sequential logic elements and arithmetic logic units for digital subsystems.
4. Ability to use engineering/CAD tools to construct, simulate, analyse and verify digital circuits/subsystems.

IMJ21203 ALGORITHM DAN STRUKTUR-STRUKTUR DATA [ALGORITHM AND DATA STRUCTURES]

No of Credits: 3

Course Synopsis:

This course provides a solid foundation in the fundamental concepts of data structures and algorithms, essential for designing efficient and reliable computing systems. It emphasizes the selection and implementation of appropriate data structures and algorithms based on engineering problem requirements, with a focus on performance, resource management, and system constraints. Students will develop a clear understanding of algorithm correctness, computational complexity, and trade-offs in implementation. Topics include algorithm analysis, abstract data types, linear and non-linear data structures, and a variety of searching and sorting algorithms commonly applied in computer engineering solutions.

Course Outcomes:

1. Ability to apply appropriate abstract data types to solve problems effectively in computer programs.
2. Ability to analyze the efficiency of computer programs by evaluating their time and space complexity.
3. Ability to create algorithms using appropriate abstract data types to solve computational problems.

IMJ22103 TEORI ELEKTROMAGNET [ELECTROMAGNETIC THEORY]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental laws and principles of electromagnetics, focusing on the behaviour of electric and magnetic fields in both static and dynamic conditions. Key topics include electrostatics, magnetostatics, electromagnetic properties of materials, electromagnetic induction, Maxwell's equations, and the propagation of electromagnetic waves. By the end of the course, students will have a solid understanding of core electromagnetics concepts, equipping them with the analytical skills needed to solve and evaluate complex real-world engineering problems.

Course Outcomes:

1. Ability to apply vector calculus principles in solving Cartesian coordinate system.
2. Ability to apply vector calculus to electromagnetic problems.
3. Ability to apply electromagnetic theory principles to solve problems related to electrostatic and magnetostatic fields.
4. Ability to analyse time-varying electromagnetic fields and wave propagation in various media.

IMJ22203 SISTEM KAWALAN [CONTROL SYSTEMS]

No of Credits: 3

Course Synopsis:

This course will cover topics such as the concepts of control system, mathematical modeling, state variable models, transient response and forced response error. Stability of the system will be evaluated using Routh-Hurwitz Criterion, root locus and frequency response methods. Finally, various compensators and controllers will be designed based on the specification given.

Course Outcomes:

1. Ability to derive mathematical models for electrical and mechanical systems.
2. Ability to evaluate system stability through time and frequency domain analysis.
3. Ability to design various controllers to achieve specified system performance requirements.

IMJ22404 SISTEM MIKROPEMROSES [MICROPROCESSOR SYSTEMS]

No of Credits: 4

Course Synopsis:

The aim of the course is to study the microprocessor architecture and knowledge that relate to the design of microprocessor-based systems. This includes the memory design, input, and output. The study of the microprocessor instruction set and various software development tools are also emphasized as knowledge is needed in the design process.

Course Outcomes:

1. Ability to apply the theory and architecture for microprocessor-based system.
2. Ability to analyze microprocessor programs to solve engineering problem.
3. Ability to design an application on a microprocessor-based system.
4. Ability to demonstrate proper use of simulation software and development kit to construct microprocessor-based system.

IMJ22303 PENGATURCARAAN BERASASKAN OBJEK [OBJECT ORIENTED PROGRAMMING]

No of Credits: 3

Course Synopsis:

This course introduces the object-oriented design, analysis and programming by using Java Programming language. The main concepts of object oriented such as data abstraction, encapsulation, inheritance and polymorphism are covered in this course. Apart from that the basic UML diagrams are introduced in the object-oriented design. Students will be exposed to real-world problems and solutions using object-oriented programming.

Course Outcomes:

1. Ability to apply the principles of object oriented programming in complex engineering problems.
2. Ability to analyze UML diagrams to derive appropriate object-oriented design solutions.
3. Ability to design object oriented solution for any UML diagram or any complex engineering problem description.

IMJ31404 INSTRUMENTASI ELEKTRONIK DAN PENGUKURAN [ELECTRONIC INSTRUMENTATION AND MEASUREMENT]

No of Credits: 4

Course Synopsis:

This course provides students with a foundational understanding of various electronic measurement systems. They will explore key concepts, including transducers, signal conditioning and conversion, data acquisition systems, virtual instrumentation, and instrumentation design. The course emphasises computer-based implementation of instrumentation design, ensuring students can effectively understand, analyse, and develop electronic instrumentation systems.

Course Outcomes:

1. Ability to apply knowledge of principle measurements for different types of physical systems and instruments.
2. Ability to analyze instrumentation methods, including transducers, signal conditioning, and Data Acquisition Systems (DAS).
3. Ability to design a complete instrumentation system based on the knowledge of transducers, signal conditioning and virtual instrumentation.
4. Ability to conduct virtual instrument experiments using tools/simulators.

IMJ31103 SISTEM PERHUBUNGAN [COMMUNICATION SYSTEMS]

No of Credits: 3

Course Synopsis:

This course covers the basic principles of analog and digital communication including elements of communication, signal analysis, amplitude modulation, angular modulation, digital modulation, various application forms and transmission channels in the presence of noise. At the end of this course, students are expected to exhibit a clear understanding of communication systems relating to various engineering applications.

Course Outcomes:

1. Ability to apply knowledge of communication system principles and modulation methods to solve typical problems in analog and digital communication systems.
2. Ability to evaluate the efficiency and limitations of various multiplexing techniques and coding schemes in the presence of channel impairments and noise.
3. Ability to perform effectively as an individual, and collaborate as team member or leader in a diverse team to communicate findings related to communication systems.

IMJ31303 PEMROSESAN ISYARAT DIGIT [DIGITAL SIGNAL PROCESSING]

No of Credits: 3

Course Synopsis:

This course is three hours of lectures per week and is designed to give the students the necessary mathematical tools to analyze discrete time signals and systems. The course also includes various techniques for the design and analyzing of digital filters and their application in signal processing applications such as speech processing and signal compression.

Course Outcomes:

1. Ability to apply knowledge of mathematical tools for discrete time signal.
2. Ability to apply knowledge of Discrete Fourier Transform and Fast Fourier Transform to transform a discrete time signal into its frequency components.
3. Ability to design finite impulse response (FIR) and infinite impulse response (IIR) filters to achieve digital filter specifications.
4. Ability to analyze various signal processing techniques for a specific digital signal processing application.

IMJ31203 RANGKAIAN KOMPUTER [COMPUTER NETWORKS]

No of Credits: 3

Course Synopsis:

This course gives exposure to computer networks. This course highlights fundamental knowledge of computer networks and its applications. This course covers related knowledge such as Local Area Network (LAN) and Wide Area Network (WAN) and also data transmission techniques as well as latest applications used.

Course Outcomes:

1. Ability to apply computer networking concepts in real-world network systems.
2. Ability to analyze network problems using appropriate networking concepts and techniques in proposing effective solutions.
3. Ability to design computer network architectures to evaluate their performance in supporting real-time communication, data integrity, and user demands.

IMJ31403 PENGURUSAN UNTUK JURUTERA [MANAGEMENT FOR ENGINEERS]

No of Credits: 3

Course Synopsis:

This course aims to teach students how to apply project management skills when undertaking projects and provide essential tools of engineering economics to enable them to conduct professional-quality economic evaluations. Additionally, students will be equipped to identify and discuss issues and challenges faced by engineers related to project management in the current economic landscape.

Course Outcomes:

1. Ability to develop engineering management principles to effectively manage projects, focusing on planning, execution, and evaluation of project outcomes.
2. Ability to formulate economic decision-making processes to assess engineering problems and their implications within the context of project management.

IMJ32104 REKABENTUK SISTEM TERBENAM [EMBEDDED SYSTEMS DESIGN]

No of Credits: 4

Course Synopsis:

This course introduces the principles and practices of embedded system development, focusing on microcontroller-based systems. Students will revisit foundational concepts of microprocessor architecture, system design, and logic control. Emphasis is placed on the practical application of embedded system features through hands-on experiences with assembly and C programming languages.

Course Outcomes:

1. Ability to analyse microcontroller-based system architectures using core engineering fundamentals.
2. Ability to design microcontroller-based embedded system solutions to meet specific requirements.
3. Ability to perform programming and debugging of embedded software in microcontrollers.
4. Ability to collaborate in teamwork and professional communication in embedded system project development.

IMJ32204 SENIBINA KOMPUTER [COMPUTER ARCHITECTURE]

No of Credits: 4

Course Synopsis:

This course focuses on the computer system which involves the design of interface techniques, organization and architecture. The syllabus coverage will be on the theory of basic computer system, format of instruction set, central processing unit, pipeline processor design, memory organization as well as certain designing issues such as bus structure, parallel processing, memory management. The students are required to design a pipelined MIPS processor during their experiments. The lab sessions will complement the theories given in the class.

Course Outcomes:

1. Ability to analyze the organization and performance of computer system.
2. Ability to design a small-scale computer system.
3. Ability to adapt the utilization of appropriate CAD tools to design, verify, and test a computer system.
4. Ability to demonstrate effective and inclusive communication on complex engineering activities.

IMJ32102 JURUTERA PROFESIONAL [PROFESSIONAL ENGINEERS]

No of Credits: 2

Course Synopsis:

This course equips students to critically explain engineering decisions considering sustainable development, occupational health and safety, legal and societal factors. It enhances ethical reasoning to address challenges under national and international engineering laws and standards. Through foundational materials and case studies, students learn the key factors that influence professional decision-making.

Course Outcomes:

1. Ability to justify sustainable development impacts to society, the economy, sustainability, occupational health and safety, legal frameworks, and the environment in professional engineering practice.
2. Ability to justify the issues and challenges of engineering ethics relevant to national and international laws and norms of engineering practice.

IMJ32004 PROJEK REKA BENTUK BERSEPADU [INTEGRATED DESIGN PROJECT]

No of Credits : 4

Course Synopsis:

This course offers students a comprehensive exposure to the engineering design process through a multidisciplinary project-based approach. It integrates practical, innovative, and inventive elements to guide students in developing effective solutions for real-world engineering challenges. Throughout the course, students will apply theoretical knowledge and technical skills to design, analyse, and implement solutions, while demonstrating professional ethics and social responsibility. Emphasis is placed on teamwork, sustainability, and effective communication within diverse and multidisciplinary teams, preparing students for future roles in engineering practice and leadership.

Course Outcomes:

1. Ability to design solutions for complex engineering problems and design systems, components, or processes with appropriate engineering analysis.
2. Ability to solve complex design challenges through the effective utilisation of engineering tools and techniques.
3. Ability to explain the impacts of sustainable development on society, the economy, health and safety, legal frameworks, and the environment in the context of solving complex engineering problems.
4. Ability to practice professionalism and ethical responsibilities in project implementation.
5. Ability to work effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings to accomplish the design project.
6. Ability to communicate effectively on complex engineering activities via written, oral presentation and demonstration of the design solution.
7. Ability to demonstrate knowledge and understanding of Engineering management principles and economic decision making.
8. Ability to evaluate the necessity for independent and lifelong learning in the context of adapting to new and emerging technologies.

IMJ33005 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]

No of Credits: 5

Course Synopsis:

The course will expose students to technical and practical application as well as other aspects such as the company's operation, work culture, safety procedure, project management, communication, technical skills, and presentation, with the aim of fostering appreciation and enhancing their capability to carry out

complex engineering activities. Students are required to submit their logbook and written report at the end of the industrial training.

Course Outcomes:

1. Ability to demonstrate technical knowledge and practical skills.
2. Ability to justify reasoning in engineering practice with consideration of health, legal and cultural requirements in a working environment.
3. Ability to organize tasks with professional ethics and responsibilities.
4. Ability to work independently, interact with co-workers and work in a team.
5. Ability to communicate effectively, both verbally and in writing, to demonstrate skills and knowledge.

IMJ41103 SISTEM OPERASI MODEN [MODERN OPERATING SYSTEM]

No of Credits: 3

Course Synopsis:

This course introduces the fundamentals of operating systems. It also covers theoretical and practical issues underlying operating system design and implementation. The topics include inter-process communication, process scheduling, deadlock, memory management, virtual memory, and file management system. Formal principles are illustrated with examples and case studies of the Modern Operating System.

Course Outcomes:

1. Ability to apply basic principles of modern operating systems structures.
2. Ability to evaluate problems related to process, thread, resource access control mechanisms (concurrency, etc.), physical and virtual memory, scheduling, I/O and files.
3. Ability to design synchronized multiprocess/multithreaded programs using industry-standard
4. APIs to solve computing problems.

IMJ41002 PROJEK TAHUN AKHIR 1 [FINAL YEAR PROJECT 1]

No of Credits: 2

Course Synopsis:

This course is designed to engage final-year students in investigative, research-based projects within the field of computer engineering. Students will undertake a systematic inquiry into a chosen engineering problem, applying appropriate research methodologies to formulate solutions grounded in engineering principles and practices. Emphasis is placed on developing students' ability to critically analyze complex problems, design experiments or simulations, and interpret results effectively.

Throughout the course, students will gain experience in managing a research project from conception to completion, including proposal development, literature review, data collection, analysis, and evaluation. In addition, the course aims to strengthen essential professional skills such as technical report writing, research documentation, and oral presentation. Assessment components will cover project planning and execution, the quality and originality of the research output, and communication effectiveness.

Course Outcomes:

1. Ability to apply engineering knowledge to formulate a well-defined research problem with relevant background, clear objectives, and appropriate scope to support effective engineering solutions.
2. Ability to critically review relevant existing works, focusing on theoretical foundations, previously proposed methodologies, and research gaps.
3. Ability to design a structured research methodology, including research flow, experimental setup, or system framework, suitable for addressing the defined research problem.
4. Ability to conduct investigative work by synthesizing existing knowledge from research literature and addressing identified research gaps to establish a well-justified research direction.
5. Ability to communicate effectively in written and oral forms to defend and justify proposed solutions.
6. Ability to execute research activities systematically to meet the required research objectives and timeline.

IMJ42004 PROJEK TAHUN AKHIR 2 [FINAL YEAR PROJECT 2]

No of Credits: 4

Course Synopsis:

Final Year Project 2 focuses on the execution phase of a research or design project initiated in Final Year Project 1. Students are required to implement the proposed solution or system, conduct testing and validation, analyze results, and present their findings through technical documentation and oral presentation. Emphasis is placed on systematic project execution, data analysis, critical evaluation, and effective communication. Assessments will be based on project management, technical writing, and oral presentation to ensure students demonstrate both technical proficiency and professional skills essential for engineering practice.

Course Outcomes:

1. Ability to design effective engineering solutions based on well-defined objectives, aligned methodology, and validated experiments.
2. Ability to conduct investigations through data analysis and interpretation, critical assessment and information synthesis to derive meaningful research findings.
3. Ability to construct engineering solutions using appropriate techniques, tools, and resources.
4. Ability to communicate effectively through written and oral presentations to defend and justify engineering solutions.
5. Ability to execute research activities systematically to achieve defined research objectives within the specified timeline.
6. Ability to critically reflect on project outcomes to identify areas for improvement and adapt to emerging technologies.

IMJ41203 KECERDASAN BUATAN [ARTIFICIAL INTELLIGENCE]

No of Credits: 3

Course Synopsis:

In this course, the students will learn the fundamental concepts of Artificial Intelligence (AI), modern AI techniques and tools; and apply them to the design of intelligent systems that solve real-world AI problems. This course will cover search and optimization algorithms, machine learning, deep learning, and AI. The students will also learn the AI applications, history, philosophy, ethics, and the future of AI.

Course Outcomes:

1. Ability to apply fundamental principles, models and algorithms of artificial intelligence to solve complex problems.
2. Ability to analyze the effectiveness of different artificial intelligence techniques in addressing complex problems.
3. Ability to design solutions for complex engineering problems by using appropriate artificial intelligence techniques.

IMJ42103 SISTEM MASA NYATA [REAL-TIME SYSTEMS]

No of Credits: 3

Course Synopsis:

The course shall discuss the most important concepts in real-time systems which are the real-time reference model, real-time scheduling theory, and resource access control. Hence, terminologies which include hard/soft real-time, feasible interval, jitter, release time, absolute and relative deadline, clock-driven, static, and dynamic scheduling are discussed. On the application side, concepts relevant to concurrent programming based on a particular Real-Time Operating System like PREEMPT-RT Linux or Free RTOS will be undertaken.

Course Outcomes:

1. Ability to apply knowledge of major concepts relevant to real time system and RTOS.
2. Ability to evaluate real time system problems utilizing algorithms/formulas of various real time system concepts.
3. Ability to design software that adheres to established principles of real time software requirements.
4. Ability to demonstrate construction of real-time software using industry-compliant real-time APIs and evaluation tools, ensuring adherence to real-time software design principles and requirements.

IMJ47103 PEMROSESAN IMEJ [IMAGE PROCESSING]

Type of courses : Programme Elective

No of Credits: 3

Course Synopsis:

This subject is prepared for the growing needs of scientists and engineers in digital imaging and computer vision. The course will introduce a core knowledge of digital image processing in spatial and frequency domains by applying several mathematical tools. The syllabus covers the fundamental theory of image sampling, filtering, compression and multiresolution image analysis. Topics covered include image enhancement in spatial and frequency domain, image restoration model, image segmentation, linear and nonlinear image classification and statistical image analysis. The students will be exposed to various applications of image processing such as biometric recognition systems and machine vision inspection systems.

Course Outcomes:

1. Ability to evaluate the digital images in spatial and frequency domain.
2. Ability to evaluate a filter in frequency and spatial domain for image enhancement.
3. Ability to design image processing application with multiresolution image, image compression in grey and colour, feature extraction with segmentation.

IMJ47203 KEJURUTERAAN PERISIAN [SOFTWARE ENGINEERING]

Type of courses : Programme Elective

No of Credits: 3

Course Synopsis:

The course shall introduce principles and techniques in software engineering, management integration concept, method or process and software metrics. In addition, this course exposes presentation and discussion on specific software engineering methods, documentation and tools. This course explains relevant methods to verify and validate prototypes developed.

Course Outcomes:

1. Ability to apply knowledge of software engineering in computer engineering.
2. Ability to evaluate evidence-based conclusions using concepts and principles of software engineering.

3. Ability to design software by developing related software engineering documentations.
4. Ability to work as an individual and collaborate in a team to defend and justify the software design.
5. Ability to demonstrate effective communication in written and oral forms to justify software design.

IMJ47303 INTERNET BENDA [INTERNET OF THINGS]

Type of courses : Programme Elective

No of Credits: 3

Course Synopsis:

In this course, students will be introduced to IoT hardware design, IoT systems integration, sensors and actuator controls, IoT device integration to network communications and cloud computing. The course would also cover security topics regarding IoT implementation and authentication protocols. Reliability perspective in IoT architecture will also be discussed together with privacy and ethics regarding IoT implementation in real life data gathering.

Course Outcomes:

1. Ability to apply sensors and actuators to IoT devices.
2. Ability to evaluate input-output signals using external interface on IoT devices.
3. Ability to design a complete Internet of Things solution.

IMJ47403 KESELAMATAN RANGKAIAN KOMPUTER [COMPUTER NETWORK SECURITY]

Type of courses : Programme Elective

No of Credits: 3

Course Synopsis

The course focuses on the design and implementing of secure computer network systems. The studies include threat models, attacks that compromise security, and techniques for achieving security, based on recent technology advancements. It is important to meet the basic needs of a variety of security applications. Topics include operating system (OS) security, cryptography, capabilities, information flow control, language security, network protocols, hardware security, and security in web applications. Additionally, the sub-topics covers on the Information security concept, information security standards and specifications, common attack methods, basic operating system security, firewall security policy,

firewall NAT technology, firewall hot standby technology, intrusion prevention technology, cryptography foundation, PKI mechanism, IPSec/SSL VPN technology, data monitoring and analysis, electronic forensics technology, cyber security, and emergency response technology.

Course Outcomes:

1. Ability to analyze principles of computer network security, models, and various protocols for network security.
2. Ability to design a complex application due to security threats and vulnerabilities issues as well as the subsequent implications for the computer network security. Ability to design a complex application due to security threats and vulnerabilities issues as well as the subsequent implications for the computer network security.
3. Ability to design computer network systems to produce solutions that manage security issues.

IMJ47503 PENGKOMPUTERAN AWAN [CLOUD COMPUTING]

Type of courses : Programme Elective

No of Credits: 3

Course Synopsis

Cloud Computing is one of the main technologies in the Digital environment nowadays. This Cloud Computing course provides students the ability to characterize the structure of Cloud Computing which is relevant with current technology. Knowledge in Cloud computing is particularly important in defining Cloud architecture and technologies involved in compute virtualization Computing (Major Elements in Cloud Computing). Output from this course is students are expected to gain a deep understanding of Cloud Computing as added value as computer engineering students.

Course Outcomes:

1. Ability to apply basic theories structure of Cloud Computing technologies.
2. Ability to analyse structure of Cloud Computing components or elements.
3. Ability to design a feasible cloud computing architecture by applying a comprehensive range of methodologies and best practices necessary for developing its components.

IMJ48103 ANALITIK DATA [DATA ANALYTICS]

Type of courses : Open Elective

No of Credits: 3

Course Synopsis

This course introduces students to comprehensive data analytics practices and methodologies for data-driven decision-making in modern business environments. Students will learn to collect, manage, process, analyze, and visualize data using industry-standard approaches, progressing systematically through exploratory data analysis (EDA), SQL techniques, data pipeline architecture, and predictive modeling techniques including regression, clustering, and classification. The curriculum emphasizes practical application through hands-on projects covering the complete data analytics lifecycle, from data acquisition and preparation to model evaluation and business presentation. Students will develop competencies in designing end-to-end analytics solutions, building automated data pipelines, creating predictive models for business forecasting, and constructing interactive dashboards for stakeholder communication.

Course Outcomes:

1. Ability to apply exploratory data analysis (EDA) and data visualization techniques for exploring, visualizing, and communicating data insights.
2. Ability to apply SQL for managing and analyzing data in relational databases.
3. Ability to design effective models using data analytics techniques to address complex data problems.
4. Ability to evaluate model performance and analytical findings to support data-driven decision-making.

IMJ48203 PENGATURCARAAN RANGKAIAN [NETWORK PROGRAMMING]

Type of courses : Open Elective

No of Credits: 3

Course Synopsis

This course is to educate students to write programs that communicate with each other using an application program interface (API). The course covers the basic and advanced issues of TCP/IP networking programming such as multiple processes, I/O multiplexing, multi-threaded processes and secure networking programming.

Course Outcomes:

1. Ability to analyze the suitable protocol type (TCP and UDP) to make connection in network socket.
2. Ability to design elementary network programming basic client-server communication using sockets and protocols.
3. Ability to design the advanced socket into the network programming.

IMJ48303 PENGATURCARAAN FPGA [FPGA PROGRAMMING]

Type of courses : Open Elective

No of Credits: 3

Course Synopsis

This course aims to develop the knowledge and skill necessary for students in modelling, design, analysis and implementation of complex digital systems using state-of-the-art Field Programmable Gate Array (FPGA) programming. Students are introduced with hardware description language (HDL) in modelling, design, and analysis of complex digital systems. To facilitate the learning process, Computer-Aided Design (CAD) software/tool and FPGA programming techniques are used throughout this course. An actual environment of problems and solutions are provided.

Course Outcomes:

1. Ability to apply hardware description language to model building block of digital system.
2. Ability to analyze complex design problems in digital system.
3. Ability to create a testbench of complex digital systems.

UR6481001

Bachelor in Data Science (Artificial Intelligence) with Honours

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Computing practitioners who are able to provide computing solutions for non-routine problems based on appropriate knowledge and technical skills in the data science discipline according to the industry requirement.

PEO 2

Computing practitioners have leadership skills and good interpersonal and communication skills to interact with stakeholders.

PEO 3

Computing practitioners who engage in lifelong learning and have an entrepreneurial mindset for self and career development.

PEO 4

Computing practitioners who uphold ethical conduct and professional practices in maintaining integrity.

PROGRAMME OUTCOMES (PO)

PO 1

Analyse data, concepts, principles and theories relating to Data Science.

PO 2

Apply appropriate concepts and methods for optimised Data Science solutions.

PO 3

Build Data Science solutions using appropriate concepts and methods for non-routine problems.

PO 4

Demonstrate effective interaction with diverse stakeholders.

PO 5

Exhibit effective communication with diverse stakeholders.

PO 6

Utilise digital skills for problem-solving in the field of Data Science.

PO 7

Apply numeracy skills for problem-solving in the field of Data Science.

PO 8

Demonstrate teamwork, accountability, autonomy and responsibility in delivering solutions related to the field of Data Science.

PO 9

Exhibit capabilities to extend relevant knowledge through life-long learning.

PO 10

Apply an entrepreneurial mindset in delivering solutions.

PO 11

Uphold professional and ethical practices in the work environment.

CURRICULUM STRUCTURE UR6481001 BACHELOR IN DATA SCIENCE (ARTIFICIAL INTELLIGENCE) WITH HONOURS INTAKE 2025/2026								
YEAR	FIRST			SECOND			THIRD	
SEMESTER	1	2	SHORT SEM	3	4	SHORT SEM	5	6
DISCIPLINE CORE & ELECTIVE COURSES (106 CREDITS)	IMC11103 Foundation of Programming	IMC12103 Database	IMC13103 Object Oriented Programming	IMC21103 Computer Architecture & Organization	IMC22103 Computer Vision	IMC23203 Natural Language Processing	IMC23110 Data Science Project	IMC32112 Industrial Training
	IMC11203 Introduction to Computing & Data Science	IMC12203 Algorithm and data Structures	IMC13203 Data Governance	IMC21203 Artificial Intelligence	IMC22203 Machine Learning	IMCXXX2 Elective 2	IMCXXX4 Elective 3	
	IMC11303 Systems Analysis and Design	IMC12303 Operating System	IMC13303 Big Data System	IMC21303 Data Mining	IMC22303 Deep Learning		IMCXXX4 Elective 4	
	IMC11403 Computer Networks	IMC12403 Data Visualization			IMC22403 Software Development and Maintenance			
	IMC11503 Discrete Mathematics	IMC12503 Probability and Statistics		IMC21403 Mathematics for Machine Learning	IMC22503 Data Security			
				IMCXXX2 Elective 1	IMC22603 Business Analytics			
UNIVERSITY REQUIREMENT COURSES (16 CREDITS)	SMZ1XX01 Co-Curriculum 1	SMZ2XX01 Co-Curriculum 2		SMB20102 English for General Communication ^[2]	SMB31202 English for Technical Communication			
	SMB41002 University Malay Language ^[3]	SMU13102 Appreciation of Ethics & Civilization		SMU12102 Integrity and Anti- Corruption ^[4]				
	SMU13002 Philosophy and Current Issues			SMU22402 Engineering Entrepreneurship				
TOTAL CREDITS (122 CREDITS)	20	18	9	20	20	5	18	12
AUDIT COURSES	SMB10102 Preparatory English ^[1]							

Electives : IMC20102 Principles of Management , IMC20202 Strategic management, IMC20203 Management Information System, IMC30404 Principles of Marketing(WBL), IMC30504 Principles of Project Management(WBL), IMC30604 Information System Auditing (WBL) & IMC30704 Strategic Information System Planning (WBL)

[1] Compulsory to students with MUET 2.5 and below (local students) or TOEFL 4.5/ IELTS 4.0 and below (international students who have completed an English & Pre-University Preparatory Programme).
SMB10102 Preparatory English is an Audit course.

[2] Exemption to students with MUET 4.0 and above (local students) or TOEFL 8.0/IELTS 5.5 and above (international students) but must take any other Optional Course with 2 credits.

[3] International students other than Indonesia, Singapore and Brunei need to register the SMB11002 Basic Malay Language course.

[4] International students should register SMU13202 Malaysian Studies.

LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
IMC11103	Asas Pengaturcaraan [Foundation of Programming]	-
IMC11203	Pengenalan Kepada Komputeran & Sains Data [Introduction to Computing & Data Science]	-
IMC11303	Analisa Dan Reka Bentuk Sistem [Systems Analysis and Design]	-
IMC11403	Rangkaian Komputer [Computer Networks]	-
IMC11503	Matematik Diskret [Discrete Mathematics]	-
IMC12103	Pangkalan Data [Database]	-
IMC12203	Algoritma Dan Struktur-Struktur Data [Algorithm & Data Structures]	-
IMC12303	Sistem Pengoperasian [Operating System]	-
IMC12403	Visualisasi Data [Data Visualisation]	-
IMC12503	Statistik Dan Kebarangkalian [Probability And Statistics]	-
IMC13103	Pengaturcaraan Berasaskan Objek [Object Oriented Programming]	-
IMC13203	Tadbir Urus Data [Data Governance]	-
IMC13303	Sistem Data Raya [Big Data System]	-
IMC21103	Organisasi & Senibina Komputer [Computer Architecture & Organization]	-
IMC21203	Kecerdasan Buatan [Artificial Intelligence]	-
IMC21303	Perlombongan Data [Data Mining]	-
IMC21403	Matematik Untuk Pembelajaran Mesin [Mathematics for Machine Learning]	-
IMC22103	Penglihatan Komputer [Computer Vision]	-

COURSE CODE	COURSE NAME	SDG
IMC22203	Pembelajaran Mesin [Machine Learning]	-
IMC22303	Pembelajaran Mendalam [Deep Learning]	-
IMC22403	Pembangunan Dan Penyelenggaraan Perisian [Software Development and Maintenance]	-
IMC22503	Keselamatan Data [Data Security]	-
IMC22603	Analitik Perniagaan [Business Analytics]	-
IMC23110	Projek Sains Data [Data Science Project]	-
IMC23203	Pemprosesan Bahasa Alami [Natural Language Processing]	-
IMC32012	Latihan Industri [Industrial Training]	-
IMC20102	Prinsip Asas Pengurusan [Principles of Management]	-
IMC20202	Pengurusan Strategik [Strategic Management]	-
IMC20302	Pengurusan Sistem Maklumat [Management Information System]	-
IMC30404	Prinsip-Prinsip Pemasaran [Principles of Marketing]	-
IMC30504	Prinsip-Prinsip Pengurusan Projek [Principles of Project Management]	-
IMC30604	Pengauditan Sistem Maklumat [Information System Auditing]	-
IMC30704	Perancangan Strategik Sistem Maklumat [Strategic Information System Planning]	-

IMC11103 ASAS PENGATURCARAAN [FOUNDATION OF PROGRAMMING]

No of Credits: 3

Course Synopsis:

This course introduces the students to the foundation of programming using Python. It is about the programming basics (what it is and how it works), problem-solving methods and algorithm development. It includes procedural and data abstractions, program design, debugging, testing, and documentation. At the end of this course, the students will understand the concepts of problem-solving methods and algorithm development by using Python. The knowledge from this course will be a foundation.

Course Outcomes:

1. Ability to apply basic computer systems and programming concepts, including operations,
2. data types, control structures, functions, and data collections.
3. Ability to evaluate technology problems and prepare the solutions to the problem using structured programming.
4. Ability to build solutions by applying programming techniques, conducting systematic debugging, and refining programs based on problem-solving design principles.

IMC11203 PENGENALAN KEPADA KOMPUTERAN & SAINS DATA [INTRODUCTION TO COMPUTING & DATA SCIENCE]

No of Credits: 3

Course Synopsis:

This foundational course provides students with essential knowledge and skills in computing systems and data science, establishing a solid groundwork for advanced studies in the field. Beginning with fundamental computing concepts including computer architecture, operating systems, networking principles, and web technologies, the course progressively advances to explore big data systems and architectures, covering the characteristics and challenges of Big Data, distributed computing platforms, cloud computing models, and parallel processing principles. The curriculum integrates professional practice and ethics throughout, addressing data privacy regulation, ethical decision-making frameworks, professional communication skills, and continuing professional development through real-world case studies involving privacy breaches, AI ethics, and societal impact of emerging technologies. Students engage in hands-on laboratory exercises that reinforce theoretical concepts through practical application using industry-standard tools, while developing both technical competencies and professional skills essential for successful careers in data

science. By completion, students will possess a comprehensive understanding of computing systems, big data technologies, and professional practices, enabling them to make informed decisions about technology adoption and ethical data handling in their future careers, while preparing them for advanced coursework in data science, artificial intelligence, and related discipline

Course Outcomes:

1. Ability to explain key concepts of computing systems, data science methodologies, and professional practices in data science contexts.
2. Ability to apply key concepts of computing systems, data science methodologies, and professional practices to solve data science problems.
3. Ability to develop data science solutions using appropriate computing tools, methodologies, and professional practices.
4. Ability to integrate professional, ethical, legal, and societal considerations in data science practice.

IMC11303 ANALISA DAN REKA BENTUK SISTEM [SYSTEMS ANALYSIS AND DESIGN]

No of Credits: 3

Course Synopsis:

Throughout the course, students will engage in practical activities that align with the Software Development Life Cycle (SDLC), executing key deliverables for each phase, including requirements gathering, system design, implementation, testing, and maintenance. Emphasis will be placed on the application of these phases within the context of project development, ensuring that students gain hands-on experience in managing and executing real-world system development projects. Additionally, students will learn to prepare comprehensive documentation that supports the entire system analysis and design process. This includes the creation of functional and non-functional requirements documents, design specifications, user manuals, and maintenance guides.

Course Outcomes:

1. Ability to analyse the appropriate model, tool and techniques concept in object-oriented and structural system analysis and design.
2. Ability to apply the appropriate process involved in a software project development.
3. Ability to produce documentation for system analysis and design using relevant tools and techniques.

IMC11403 RANGKAIAN KOMPUTER [COMPUTER NETWORKS]

No of Credits: 3

Course Synopsis:

This course will cover the fundamentals of computer networks, including network standards, components, and the requirements of network protocols. Focusing on the TCP/IP Internet protocol stack, the course begins by exploring the importance and usage of computer networks in common applications, such as cloud computing. The course will then delve deeper into the technical aspects of data communication. From a network systems perspective, students will be introduced to the principles of data communications, network architecture, and various types of efficient internetworking systems tailored for specific tasks or problems. Additionally, the course will address the main issues related to network management. By the end of this course, students will gain an understanding and appreciation of how computer networks operate and how their applications function.

Course Outcomes:

1. Ability to apply concepts and principles of computer networking.
2. Ability to analyze problems related to computer networks.
3. Ability to demonstrate network design and configuration for diverse requirements.

IMC11503 MATEMATIK DISKRET [DISCRETE MATHEMATICS]

No of Credits: 3

Course Synopsis:

This course introduces fundamental concepts in discrete mathematics that underpin computer science and related fields, covering sets, relations, functions, cardinality, logic, and proof techniques for rigorous problem-solving and algorithm verification. Students will explore recursion, modular arithmetic, combinatorics, and graph theory from basic structures to advanced applications like network flows, graph coloring, and scheduling alongside algorithm complexity analysis using Big-O, Big-omega, and Big-theta notation. Emphasis is placed on connecting theory to practical applications in computing, enabling students to model, analyze, and optimize solutions for real-world problems.

Course Outcomes:

1. Ability to apply discrete mathematical concepts for data science problem-solving.
2. Ability to analyze discrete mathematical concepts and their applications in data science.

3. Ability to construct computational models and solutions using discrete mathematics tools and software.

IMC12103 PANGKALAN DATA [DATABASE]

No of Credits: 3

Course Synopsis:

This course will discuss database concepts, emphasizing the relational database model and structured query language. The course will also illustrate concepts and application of the entity relationship diagram as well as the principles and application of normalization. The student will understand the advantages of using SQL query to extract information from the database.

Course Outcomes:

1. Able to apply knowledge and concept of database system.
2. Able to design conceptual models of an application domain for database applications.
3. Able to build a database program by using development tools.

IMC12203 ALGORITMA DAN STRUKTUR-STRUKTUR DATA [ALGORITHM & DATA STRUCTURES]

No of Credits: 3

Course Synopsis:

This course provides solid foundation in the basic concepts of data structures and algorithms. This course makes easy to select and design data structures and algorithms in problem solving manner and clear concept on the correctness of algorithms and their computational complexities. This course covers data types, linear and nonlinear data structures as well as various searching and sorting algorithms.

Course Outcomes:

1. Ability to appropriately apply various abstract data types in computer programs.
2. Ability to analyze the performance of computer programs in terms of space and time complexity.
3. Ability to perform suitable algorithms to solve computational problems.

IMC12303 SISTEM PENGOPERASIAN [OPERATING SYSTEM]

No of Credits: 3

Course Synopsis:

This course introduces the various data and control structures necessary for the design and implementation of modern computer operating systems: Memory, Processor, Concurrent, File, Device and Network Management are explored as the basic of all Operating Systems.

Course Outcomes:

1. Ability to apply the theory and principles of operating systems to solve practical computing problems.
2. Ability to distinguish the relationship between an operating system and hardware.
3. Ability to manipulate OS instructions via command line and shell scripting.

IMC12403 VISUALISASI DATA [DATA VISUALISATION]

No of Credits: 3

Course Synopsis:

The course will aim to create data analysts who can identify patterns and display information from data from several sources. The course will encourage statistical thinking through examples of good and not-so-good visualizations and will guide students to develop their creativity within a scientific framework. Hands-on experience in data analytics software tools for visualization will also be covered. This course will cover the fundamentals of effective data-driven storytelling. Students will learn how to detect and articulate the stories behind datasets and communicate data findings in visual, oral, and written contexts for various audiences and the public. Topics to be explored include Introduction to Exploratory Data Analysis and Visualization, Pattern Discovery, Graphical Visualization, Testing data quality through graphs, Storytelling with Data and Case Studies in Exploratory Data Analysis for different applications.

Course Outcomes:

1. Ability to apply data visualisation principles and techniques to develop optimised solutions for data science problems.
2. Ability to implement data visualisation tools and techniques proficiently to create meaningful visualisations.
3. Ability to evaluate digital visualisation approaches to solve complex data science problems.

IMC12503 STATISTIK DAN KEBARANGKALIAN [PROBABILITY AND STATISTICS]

No of Credits: 3

Course Synopsis:

This course provides an elementary introduction to probability and statistics with applications. Topics include probability theorem, random variables, probability distribution, statistical inference which is including estimation and hypothesis testing, multivariate data analysis and finally the regression topics.

Course Outcomes:

1. Ability to apply appropriate probability and statistical techniques to evaluate and solve problems in computing using numerical methods and data analysis.
2. Ability to demonstrate to collect, compute, and interpret data using statistical tools and techniques to support decision-making in computing.
3. Ability to apply statistical programming functions systematically to conduct routine data analyses.

IMC13103 PENGATURCARAAN BERASASKAN OBJEK [OBJECT ORIENTED PROGRAMMING]

No of Credits: 3

Course Synopsis:

This course introduces the object-oriented programming concept. The main concepts of object oriented such as data abstraction, encapsulation, inheritance and polymorphism are covered in this course. The course details on applying and developing a program using object-oriented concept and Object-Oriented Design(OOD).

Course Outcomes:

1. Ability to apply the principles of object oriented programming in any computational problems.
2. Ability to analyze computational problem and draw appropriate UML diagrams.
3. Ability to construct object-oriented solution for any UML diagram or any computational problem description.

IMC13203 TADBIR URUS DATA [DATA GOVERNANCE]

No of Credits: 3

Course Synopsis:

This course will discuss the topics of principles, frameworks and practices involved in managing data assets effectively within an organization. This course covers the policies, procedures and technologies essential for ensuring data quality, privacy, compliance and security. Topics include data governance frameworks, data quality management, regulatory compliance and the roles and responsibilities within a data governance program. At the end of this course, students will have an understanding and appreciation of how the applications of data governance works.

Course Outcomes:

1. Ability to apply the concepts of data governance.
2. Ability to analyze data governance frameworks and models.
3. Ability to demonstrate data governance frameworks and policies.

IMC13303 SISTEM DATA RAYA [BIG DATA SYSTEM]

No of Credits: 3

Course Synopsis:

This course introduces students to the concepts, architectures, and technologies underpinning modern big data systems. It covers key topics such as distributed data storage, parallel processing frameworks, data ingestion, and cloud-based big data platforms. Students will learn to implement big data solutions using tools like Hadoop Distributed File System (HDFS), Apache Spark, Flink, Kafka, and NoSQL databases. Practical sessions focus on setting up, managing, and optimizing large-scale data workflows. Through case studies and lab work, students will develop the ability to design and execute scalable data processing pipelines, enabling efficient handling of diverse, high-volume datasets for analytics and decision-making.

Course Outcomes:

1. Ability to discuss the fundamentals and key technologies of big data processing and management.
2. Ability to analyze the functions and interactions of distributed big data systems to identify suitable technologies to solve data processing challenges.
3. Ability to execute big data operations with accuracy using relevant tools and platforms.

IMC21103 ORGANISASI & SENIBINA KOMPUTER [COMPUTER ARCHITECTURE & ORGANIZATION]

No of Credits: 3

Course Synopsis:

This course discusses the component, structure and function of a computer. It exposes student with the architecture and organization of a computer. This subject covers on the numbering system, data representation, the internal and external computer communication through system buses and Input/Output, computer storage, internal architecture of Central Processing Unit, Logic Gates and Boolean Algebra. Assembly languages are exposed to student for better understanding of the computer structure and its component.

Course Outcomes:

1. Ability to analyse the concept of data representation to solve problems involving number systems in computing.
2. Ability to apply arithmetic technique on number system and performance metrics.
3. Ability to assemble a functional system using assembly language programming to perform basic data operations.

IMC21203 KECERDASAN BUATAN [ARTIFICIAL INTELLIGENCE]

No of Credits: 3

Course Synopsis:

This course introduces students to the fundamental concepts and applications of artificial intelligence within the context of data science. Students will learn about important AI topics like smart agents, search methods, solving problems with rules, how to represent knowledge using logic and chance, Bayesian networks, and making decisions when things are uncertain. The course emphasizes practical implementation through hands-on laboratory sessions where students build AI systems, develop machine learning applications, and work with knowledge graphs and reasoning engines. Additionally, students will examine critical contemporary issues in AI including privacy, security, explainability, and ethical considerations in AI development and deployment. By learning both the theory and how to create AI solutions, students will gain the skills needed to use artificial intelligence to tackle real-world data science challenges while ensuring they follow responsible and ethical practices.

Course Outcomes:

1. Ability to analyse the available appropriate reasoning, search, and learning techniques related to data science.
2. Ability to apply appropriate reasoning, search, and learning techniques to solve data science problem.
3. Ability to construct AI-based solutions for data science problems using appropriate reasoning, search, and learning techniques.

IMC21303 PERLOMBONGAN DATA [DATA MINING]

No of Credits: 3

Course Synopsis:

This course equips students with the ability to apply essential data preprocessing techniques and data mining algorithms to optimize solutions for complex data science problems. It covers key topics such as clustering, classification, and frequent pattern mining, and emphasizes the use of statistical and mathematical techniques to analyze and interpret results. The course also explores advanced topics like graph and network analysis, anomaly detection, and practical applications in various industries, providing a well-rounded foundation for tackling real-world data challenges.

Course Outcomes:

1. Ability to apply appropriate data preprocessing techniques and data mining algorithms to optimize solutions for complex data science problems.
2. Ability to apply digital tools to analyse and interpret results from various data mining algorithms, including clustering, classification, and frequent pattern mining.
3. Ability to analyse data, concepts and principles to provide solutions for complex data mining problems.

IMC21403 MATEMATIK UNTUK PEMBELAJARAN MESIN [MATHEMATICS FOR MACHINE LEARNING]

No of Credits: 3

Course Synopsis:

Mathematics is fundamental to Machine Learning (ML). This course, integrated into the curriculum as a cornerstone for ML, equips students with the theoretical foundations and tools essential for comprehending, building, and implementing ML systems efficiently. Through this course, students will apply mathematical principles to strengthening their ability to address engineering challenges in ML. This course covers topic such as Linear Algebra and Calculus.

Course Outcomes:

1. Ability to demonstrate understanding and application of matrix and vector operations for machine learning data representation and transformation.
2. Ability to apply concepts of differentiation, numerical methods, and integration to solve mathematical problems in machine learning and related computational context.
3. Ability to apply programming techniques systematically to implement mathematical operations and algorithms for machine learning computational requirements.

IMC22103 PENGLIHATAN KOMPUTER [COMPUTER VISION]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental concepts, techniques, and applications of computer vision. Students will explore how machines perceive, interpret, and analyse visual information from the real world. The course begins with basic image formation principles and image processing techniques, including image representation, enhancement, and filtering. Students will then learn methods for segmenting images and extracting useful features for recognition and tracking. The course further explores geometric vision tasks such as image alignment, stitching, stereo vision, and motion estimation. The final part introduces modern deep learning approaches that power many current computer vision systems, including image classification, object detection, and semantic segmentation.

Course Outcomes:

1. Ability to evaluate the fundamental knowledge of computer vision techniques.
2. Ability to apply fundamental knowledge of computer vision to solve real-world problems.
3. Ability to integrate and implement computer vision knowledge using appropriate tools and techniques to solve real-world problems.

IMC22203 PEMBELAJARAN MESIN [MACHINE LEARNING]

No of Credits: 3

Course Synopsis:

This course introduces fundamental concepts and practical applications of machine learning in data science. Students will explore supervised and unsupervised learning techniques, including regression, classification, and clustering. The course emphasizes hands-on implementation using popular machine learning libraries. Topics covered include algorithm selection, data preprocessing, model training, and performance evaluation. Students will learn to address challenges such as overfitting and the bias-variance trade-off, while considering ethical implications of machine learning. Through programming exercises and projects, students will apply theoretical concepts to real-world problems. By the course's end, students will be able to design and implement machine learning solutions for complex, non-routine data science problems, selecting appropriate algorithms, evaluating performance, and interpreting results.

Course Outcomes:

1. Ability to analyze the performance of machine learning models to gain insights for addressing real-world problems.
2. Ability to apply appropriate machine learning techniques to solve real-world problems.
3. Ability to construct machine learning solutions by integrating suitable data preparation, model training, and evaluation techniques.

IMC22303 PEMBELAJARAN MENDALAM [DEEP LEARNING]

No of Credits: 3

Course Synopsis:

This course provides comprehensive coverage of deep learning fundamentals through advanced applications, enabling students to apply core concepts, evaluate model performance, and build AI systems. Beginning with neural network foundations, students progress through major architectures including convolutional neural networks for computer vision, recurrent networks for sequential data, and transformer models for natural language processing. The course emphasizes hands-on implementation covering everything from basic neural networks to cutting-edge generative AI applications including GANs, VAEs, and large language models. Students will develop practical skills in model optimization, performance evaluation, and deployment strategies while working on real-world projects that culminate in building advanced generative AI applications. The curriculum also addresses critical contemporary issues including

AI ethics, bias detection, and responsible AI development, preparing graduates for successful careers in the rapidly evolving field of artificial intelligence and machine learning.

Course Outcomes:

1. Ability to apply the available fundamental concepts and architectures of deep learning.
2. Ability to evaluate deep learning models and improving their performance.
3. Ability to build various deep learning models using appropriate tools and frameworks.

IMC22403 PEMBANGUNAN DAN PENYELENGGARAAN PERISIAN [SOFTWARE DEVELOPMENT AND MAINTENANCE]

No of Credits: 3

Course Synopsis:

This course is designed to provide students with hands-on experience in the implementation, testing, support, and maintenance of software projects. Students will engage in a small-scale software development project, adhering to a defined coding standard throughout the process. In addition to development and testing, students will be exposed to configuration management, operational software assurance, helpdesk activities, operational data analysis, and software retirement. The course will also focus on the implementation of software maintenance processes and plans. By the end of the course, students will have developed the skills needed to support and maintain software systems in a real-world environment, ensuring their continued effectiveness, security, and usability over time.

Course Outcomes:

1. Ability to analyse the elements of software testing and software maintenance process and plan.
2. Ability to perform software testing using appropriate methods and tools to ensure functionality and quality.
3. Ability to communicate effectively with team members in collaborative project environments.
4. Ability to demonstrate a positive attitude and commitment in applying project management practices during project execution.

IMC22503 KESELAMATAN DATA [DATA SECURITY]

No of Credits: 3

Course Synopsis:

This course covers the principles, technologies and practices that form the foundation of data security. Topics include cryptography, network security, access control, risk management and the latest trends in data security threats and countermeasures. At the end of this course, students will have the necessary knowledge and skills to protect data from unauthorized access, use, disclosure, disruption, modification or destruction.

Course Outcomes:

1. Ability to apply the concepts of data security.
2. Ability to analyze cryptographic techniques and applications.
3. Ability to design access control and authentication systems.

IMC22603 ANALITIK PERNIAGAAN [BUSINESS ANALYTICS]

No of Credits: 3

Course Synopsis:

This course introduces students to the fundamentals of business analytics, emphasizing how data-driven insights can enhance decision-making in various business contexts. The curriculum focuses on the theoretical foundations and practical applications of analytics in solving real-world business problems. Students will explore the strategic importance of business analytics in today's data-rich environment. The course covers how to frame business problems for analytics and align analytics strategies with organizational objectives. Key areas of study include customer analytics, financial analytics, and marketing analytics, providing a comprehensive overview of how analytical techniques are applied across different business domains. Throughout the course, students will learn about transforming data into actionable insights, including customer segmentation, financial risk assessment, and marketing campaign optimization. The curriculum also covers the principles of effective business intelligence and data-driven decision making. Through case studies, theoretical discussions, and examples of real-world applications, students will gain a solid understanding of how business analytics is used to drive strategic decisions. By the end of the course, students will be equipped with the knowledge to effectively interpret and apply analytics in various business scenarios, preparing them for data-informed decision-making roles in diverse industries.

Course Outcomes:

1. Ability to discuss key concepts of business analytics and their relevance in

addressing various business problems.

2. Ability to analyze analytics techniques to address practical business challenges.
3. Ability to develop data-driven solutions by applying relevant tools and analytical methods on business-oriented datasets.
4. Ability to apply entrepreneurial strategies in developing innovative data-driven solutions in business context.

IMC23110 PROJEK SAINS DATA [DATA SCIENCE PROJECT]

No of Credits: 10

Course Synopsis:

This course is designed to provide students with practical, real-world experience in managing and executing a complete data science project. By working through the entire project lifecycle, from problem identification to solution deployment, students will strengthen their technical, analytical, and problem-solving skills while applying industry best practices. Collaboration with industry mentors and academic supervisors ensures that students' work is relevant, aligned with current market needs, and reflective of professional standards. The course also develops essential soft skills such as communication, teamwork, and project management, preparing graduates to contribute effectively in data-driven industries.

Course Outcomes:

1. Ability to formulate project problems and objectives, and to identify the project scope by analysing relevant background information.
2. Ability to engage with stakeholders to review existing works, discuss theoretical foundations, and identify relevant gaps.
3. Ability to design a structured methodology to solve a defined problem.
4. Ability to develop a data science solution using appropriate tools, methods, and technologies.
5. Ability to communicate effectively on the proposed solutions and the progress of the project.
6. Ability to perform project activities with accountability and consistency in planning and execution to meet defined objectives and timelines.

IMC23203 PEMROSESAN BAHASA ALAMI [NATURAL LANGUAGE PROCESSING]

No of Credits: 3

Course Synopsis:

This course offers an in-depth exploration of Natural Language Processing (NLP), focusing on techniques for processing and analyzing both structured and unstructured textual data. Students will learn methods such as text pre-processing, information retrieval, classification, and clustering. Emphasis is also placed on interpreting textual insights for real-world applications. The course also will introduce the role of NLP in powering modern Large Language Models (LLMs) and examines how LLMs are transforming industries through automation, personalized communication, and intelligent decision-making. Practical case studies and hands-on projects will equip students with the skills to apply NLP techniques in solving complex, language-based challenges in today's digital landscape.

Course Outcomes:

1. Ability to apply the fundamental concepts and techniques in NLP.
2. Ability to analyze linguistic structures and NLP models to derive insights and assess the effectiveness of NLP task performance.
3. Ability to construct NLP-based applications to solve real-world text-related problems.

IMC32012 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]

No of Credits: 12

Course Synopsis:

The course will expose students to technical and practical application as well as other aspects such as the company's operation, work culture, safety procedure, project management, communication, technical skills, and presentation in achieve appreciation and/or capability of carrying out complex engineering activities. Students are required to submit their logbook and written report at the end of the industrial training.

Course Outcomes:

1. Ability to correlate theory and practical with the knowledge gained from industrial training.
2. Ability to apply technical knowledge and practical skills to solve problems in data science.
3. Ability to demonstrate self-discipline and motivation in pursuing continuous personal and professional development.

IMC20102 PRINSIP ASAS PENGURUSAN [PRINCIPLES OF MANAGEMENT]

No of Credits: 2

Course Synopsis:

This course provides students with a comprehensive introduction to the foundational principles and practices of management, with a strong emphasis on the evolving role of data in shaping effective organisational strategies. Students will explore key management functions such as planning, organising, leading, and controlling within the context of today's increasingly data-driven and technology-enabled business environment. Particular attention is given to how data is gathered, analysed, and utilised to support strategic decision-making, optimise operations, manage diverse teams, and foster innovation. Through real-world examples, case studies, and practical applications, students will gain valuable insights into how managers leverage data to address complex challenges, enhance performance, and sustain competitive advantage. By the end of the course, students will have a sound understanding of both traditional management theories and modern data-centric approaches essential for effective leadership in the digital age.

Course Outcomes:

1. Ability to describe the fundamental management concepts and principles, including key roles, skills, and functions, within the context of data-driven organisations.
2. Ability to apply historical and theoretical foundations of management within data-centric and technology-driven environments.
3. Ability to analyse the interaction between organisational environment, data technologies, human capital, and digital resources to support strategic decision-making and achieve organisational objectives.

IMC20202 PENGURUSAN STRATEGIK [STRATEGIC MANAGEMENT]

No of Credits: 2

Course Synopsis:

The strategic management course prepares future managers to face the unpredictable and turbulent business environment and relentlessly pursue the organisation objectives. Strategic management involves continuous environmental analysis to keep a firm aligned with its external environment, formulate appropriate strategies, implement those strategies, and perform performance evaluation to ensure the organisation is on the right track towards fulfilling its vision and mission. The organisation aims to capitalise on environmental opportunities by using its strengths while avoiding threats by minimising its weaknesses. Strategic management as a capstone-multidisciplinary course integrates the knowledge from other related functional courses such as production and operation, marketing, finance, accounting, human resources, business law, organisational behavior, leadership, etcetera to discuss a broad range of topics spectrum of business, management, and strategic direction issues.

Course Outcomes:

1. Ability to apply strategic factors within the business environment to support organisational success.
2. Ability to analyse strategies to achieve and sustain competitive advantage for the organisation.
3. Ability to access the appropriateness of strategies implemented and taking corrective action to get the organisation back on track to attain goals and objective.

IMC20302 PENGURUSAN SISTEM MAKLUMAT [MANAGEMENT INFORMATION SYSTEM]

No of Credits: 2

Course Synopsis:

Management Information Systems (MIS) is a formal discipline within business education that bridges the gap between computer science and well-known business disciplines such as operations, finance, marketing, and management. A management information system (MIS) is a computer system consisting of hardware and software that serves as the backbone of an organisation's operations. An MIS gathers data from multiple online systems, analyses the information, and reports data to aid in management decision-making. This course will expose students to the Management Information System (MIS) topics, including organisations, strategies, management, infrastructures, issues, and applications for managing the information system.

Course Outcomes:

1. Ability to explain principles and the role of Management Information Systems (MIS) in organisations.
2. Ability to analyse tools and techniques of the information system hardware, software, database, and networking technologies.
3. Ability to examine the core information system applications to improve operational excellence and decision making.

IMC30404 PRINSIP-PRINSIP PEMASARAN [PRINCIPLES OF MARKETING]

No of Credits: 4

Course Synopsis:

This course provides a comprehensive introduction to marketing theories and their real-world applications. The course emphasizes experiential learning through work-based projects and industrial attachments to equip students with practical skills and industry insights. Key topics include consumer behavior, market research, segmentation, and the marketing mix, alongside digital marketing, global strategies, and ethical practices. Students gain hands-on experience, enabling them to design and implement marketing strategies effectively within professional environments.

Course Outcomes:

1. Ability to explain the principles of marketing its functions within a business organization.
2. Ability to analyze the theories and concepts of marketing strategies.
3. Ability to demonstrate managerial skills in marketing practices.

IMC30504 PRINSIP-PRINSIP PENGURUSAN PROJEK [PRINCIPLES OF PROJECT MANAGEMENT]

No of Credits: 4

Course Synopsis:

This course provides a comprehensive introduction to the principles and practices of project management. Students will learn to initiate, plan, execute, monitor, control, and close projects effectively. The course covers key concepts, methodologies, and tools used in modern project management across various industries. Students are required to work on a real-world project for a selected organization. In this project, students will apply project management techniques to plan, execute, and control a significant undertaking, such as developing a new product, implementing a new system, or improving an existing process.

Course Outcomes:

1. Ability to identify the fundamental concepts and principle of management, including the basic roles, skills, and function of management.
2. Ability to analyze project performance using key performance indicators.
3. Ability to design comprehensive project plans, including scope, schedule, budget, and risk management strategies.

IMC30604 PENGAUDITAN SISTEM MAKLUMAT [INFORMATION SYSTEM AUDITING]

No of Credits: 4

Course Synopsis:

This course focuses on evaluating and ensuring the integrity, security, and reliability of information systems. Key topics include risk assessment, control mechanisms, audit procedures, and compliance with regulations. Students learn to identify vulnerabilities, implement controls, and conduct audits throughout the Systems Development Life Cycle (SDLC). The course also covers change management and emergency controls, preparing students for roles such as IT auditors and for certifications like the Certified Information Systems Auditor (CISA).

Course Outcomes:

1. Ability to explain the principles of information system auditing, its functions within a business organization.
2. Ability to analyse the theories and concepts of information system auditing.
3. Ability to demonstrate information system auditing practices in organization.

IMC30704 PERANCANGAN STRATEGIK SISTEM MAKLUMAT [STRATEGIC INFORMATION SYSTEM PLANNING]

No of Credits: 4

Course Synopsis:

This course focuses on aligning information systems with business strategies to gain competitive advantages. It covers data governance, business intelligence, project management, and the impact of emerging technologies like AI and big data. Through case studies, students learn to strategically plan and manage information resources, equipping them with the skills needed for effective decision-making and organizational success.

Course Outcomes:

1. Ability to explain the principles of Strategic Information System Planning, its functions within a business organization.
2. Ability to analyse the theories and concepts of Strategic Information System Planning.
3. Ability to demonstrate information planning practices in organization.

LIST OF COMMON CORE COURSES

COURSE CODE	COURSE NAME	SDG
IMQ10002	Matematik Asas [Fundamentals Of Mathematics]	SDG 4
IMQ10103	Matematik Kejuruteraan 1 [Engineering Mathematics 1]	SDG 4
IMQ10203	Matematik Kejuruteraan 2 [Engineering Mathematics 2]	SDG 4
IMQ11103	Matematik Untuk Teknologi Kejuruteraan 1 [Mathematics For Engineering Technology 1]	SDG 4
IMQ11203	Matematik Untuk Teknologi Kejuruteraan 2 [Mathematics For Engineering Technology 2]	SDG 4
IMQ20303	Matematik Kejuruteraan 3 [Engineering Mathematics 3]	SDG 4
IMQ21303	Matematik Untuk Teknologi Kejuruteraan 3 [Mathematics For Engineering Technology 3]	SDG 4
IMQ22103	Matematik Diskrit Dan Aljabar Linear [Discrete Mathematics And Linear Algebra]	SDG 4
IMQ27103	Statistik Kejuruteraan [Engineering Statistics]	SDG 4
IMQ27203	Kebarangkalian Dan Statistik [Probability And Statistics]	SDG 4
IMQ27303	Statistik Untuk Teknologi Kejuruteraan [Statistics For Engineering Technology]	SDG 4

IMQ10002 MATEMATIK ASAS [FUNDAMENTALS OF MATHEMATICS]

Type of courses : Audit

No of Credits: 2

Course Synopsis:

This course develops basic mathematical concepts for many scientific disciplines including engineering and engineering technology. Topics included are: basic algebra and basic calculus. This course is applied to students who needs a basic to advanced understanding of mathematics concepts and its operations.

Course Outcomes:

1. Ability to solve the basic concepts of algebra.
2. Ability to solve the basic concepts of calculus.

IMQ10103 MATEMATIK KEJURUTERAAN 1 [ENGINEERING MATHEMATICS 1]

No of Credits: 3

Course Synopsis:

This course introduces fundamental concepts in algebra and calculus that are essential for engineering students. The algebra topics include complex numbers, matrices, and vectors, focusing on basic operations and applications. In the calculus section, students will learn techniques to solve problems involving differentiation and integration of single-variable functions. Toward the end of the course, the topic of partial derivatives will be covered. Throughout the course, students will develop problem-solving skills and learn how to apply mathematical methods in engineering contexts.

Course Outcomes:

1. Ability to apply complex numbers, matrices, and vectors in solving basic engineering problems.
2. Ability to apply differentiation and integration in solving common engineering problems.
3. Ability to analyze solutions involving partial derivatives in engineering applications.

IMQ10203 MATEMATIK KEJURUTERAAN 2 [ENGINEERING MATHEMATICS 2]

No of Credits: 3

Course Synopsis:

In this course, preliminaries of differential equations will be presented. Analytical methods for solving the first and second order ordinary and partial differential equations will be introduced. Theory of Laplace transforms and its applications on solving ordinary differential equation will be taught. Fourier series of periodic function will be covered.

Course Outcomes:

1. Ability to analyse first and second order ordinary differential equations, partial differential equations and selected physical problems related to differential equations.
2. Ability to analyse the function and appropriate properties of Laplace transform in solving initial value problem that relate to first and second order ordinary differential equations.
3. Ability to analyse periodic function using the fundamental understanding of Fourier series in generating Fourier series and Fourier series expansions.

IMQ11103 MATEMATIK UNTUK TEKNOLOGI KEJURUTERAAN 1 [MATHEMATICS FOR ENGINEERING TECHNOLOGY 1]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental principles and concepts in algebra, calculus and statistics which are the essential tools in engineering technology. The topics discussed in algebra are the basics of complex numbers, matrices and vectors. In the calculus topic, several techniques will be introduced to solve the differentiation and integration. Regression and correlation techniques will be introduced in statistics topic, for investigating the relationship between two variables.

Course Outcomes:

1. Ability to apply basic concepts of algebra in solving mathematical problems using complex numbers, matrices and vectors.
2. Ability to apply basic concepts of calculus in solving mathematical problems using methods of differentiation and integration.
3. Ability to analyze related problems by using statistical data analysis.

IMQ11203 MATEMATIK UNTUK TEKNOLOGI KEJURUTERAAN 2 [MATHEMATICS FOR ENGINEERING TECHNOLOGY 2]

No of Credits: 3

Course Synopsis:

This course introduces the fundamental concepts of ordinary differential equations. It covers various methods for solving differential equations, with a focus on first and second-order equations and their applications. The course will also explore the use of Laplace transform as a method to solve differential equations. Toward the end, students will be introduced to the Fourier Series expansion of functions.

Course Outcomes:

1. Ability to analyse first and second order ordinary differential equations and certain physical problems that relate to differential equations.
2. Ability to analyse the function and appropriate properties of Laplace transform in solving initial value problem that relate to first and second order ordinary differential equations.
3. Ability to analyse periodic function using the fundamental understanding of Fourier series in generating Fourier series and Fourier series expansions.

IMQ20303 MATEMATIK KEJURUTERAAN 3 [ENGINEERING MATHEMATICS 3]

No of Credits: 3

Course Synopsis:

This course provides an introduction to the concepts of vector calculus, the fundamental theorems of vector calculus, and numerical methods. Topics include differentiation and integration in vector calculus; line, surface, and volume integrals as well as Green, Gauss, and Stokes theorems. The numerical methods component covers techniques for solving nonlinear equations, interpolation, differentiation, integration, ordinary differential equations, and partial differential equations.

Course Outcomes:

1. Ability to analyse vector calculus concepts in solving single, double, or triple integrals.
2. Ability to evaluate classical theorems in vector calculus based on the concept of differentiation and integration in vector calculus.
3. Ability to predict the approximate solution by using appropriate numerical methods for solving mathematical problems.

IMQ21303 MATEMATIK UNTUK TEKNOLOGI KEJURUTERAAN 3 [MATHEMATICS FOR ENGINEERING TECHNOLOGY 3]

No of Credits: 3

Course Synopsis:

This course will focus on understanding the concept of partial derivatives, vector calculus, and numerical methods. Students will be exposed to an introduction to fundamental theorems in vector calculus. At the end of the study, the topic of numerical methods will be discussed, which will introduce students to a variety of techniques for solving mathematical problems.

Course Outcomes:

1. Ability to solve mathematical problems by using the concepts of partial derivatives.
2. Ability to evaluate vector calculus problems and its applications using single, double and triple integrals.
3. Ability to predict the approximate solution by using appropriate numerical methods for solving mathematical problems.

IMQ22103 MATEMATIK DISKRIT DAN ALJABAR LINEAR [DISCRETE MATHEMATICS AND LINEAR ALGEBRA]

No of Credits: 3

Course Synopsis:

This course introduces key concepts and definitions in discrete mathematics and linear algebra, both of which are essential tools in various subfields of computer science and communication systems. Topics covered include sets and functions, logic, number theory, cryptography, matrices, linear transformations, vector spaces, and inner product spaces.

Course Outcomes:

1. Ability to apply the concepts of discrete mathematics in solving engineering problems.
2. Ability to apply the concept of linear algebra in solving engineering problems.
3. Ability to evaluate engineering problems using the knowledge in discrete mathematics and linear algebra.

IMQ27103 STATISTIK KEJURUTERAAN [ENGINEERING STATISTICS]

No of Credits: 3

Course Synopsis:

This course covers basic statistical concepts, including data analysis, interpretation, and probability. Students will learn how to collect, organize, and analyze data using appropriate methods. Emphasis is placed on applying statistical techniques and probability to real-life problems, helping students develop practical skills for data-driven decision-making across disciplines.

Course Outcomes:

1. Ability to analyze data using descriptive statistics and probability distributions to enhance statistical reasoning skills.
2. Ability to evaluate statistical inference methods to enhance data-driven decision-making.
3. Ability to evaluate the usefulness of linear regression models for making predictions and interpreting relationships between variables.

IMQ27203 KEBARANGKALIAN DAN STATISTIK [PROBABILITY AND STATISTICS]

No of Credits: 3

Course Synopsis:

This course introduces probability and statistics with applications. Topics include probability theory, random variables, probability distributions, statistical inference including estimation and hypothesis testing, and the last topic is simple linear regression. Students will gain practical skills to analyze data, interpret results, and apply statistical methods effectively for problem-solving and decision-making in various fields, especially in computer engineering.

Course Outcomes:

1. Ability to apply the theory of probability for discrete and continuous random variables.
2. Ability to solve discrete and continuous probability distribution problems.
3. Ability to evaluate statistical inference methods and simple linear regression model in solving engineering problems.

IMQ27303 STATISTIK UNTUK TEKNOLOGI KEJURUTERAAN [STATISTICS FOR ENGINEERING TECHNOLOGY]

No of Credits: 3

Course Synopsis:

This course introduces descriptive statistics, fundamental probability concepts and both discrete and continuous probability distributions. It then covers inferential methods, including estimation and hypothesis testing for a single population and comparisons between two population parameters. The course concludes with analysis of variance (ANOVA) for comparing more than two populations, followed by nonparametric statistical methods used when the assumptions of parametric tests are not met and linear regression for modeling the relationship between two quantitative variables.

Course Outcomes:

1. Ability to apply fundamentals of statistical data analysis and concepts of probability distributions in enhancing statistical reasoning skills.
2. Ability to apply statistical inference methods for decision making.
3. Ability to evaluate the significance of a linear regression model for making predictions.

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LIST OF COURSES

COURSE CODE	COURSE NAME	SDG
SMZ11001	Sukarelawan Siswa/Siswi Koreksional Jabatan Penjara Malaysia I (KOR SISKOR) [Students Voluntary Correctional Malaysian Prison Department I (KOR SISKOR I)]	SDG 16
SMZ11101	Sukarelawan Siswa/Siswi Koreksional Jabatan Penjara Malaysia II (KOR SISKOR) [Students Voluntary Correctional Malaysian Prison Department II (KOR SISKOR II)]	SDG 16
SMZ21001	Sukarelawan Siswa/Siswi Koreksional Jabatan Penjara Malaysia III (KOR SISKOR) [Students Voluntary Correctional Malaysian Prison Department III (KOR SISKOR III)]	SDG 16
SMZ21101	Sukarelawan Siswa/Siswi Koreksional Jabatan Penjara Malaysia IV (KOR SISKOR) [Students Voluntary Correctional Malaysian Prison Department IV (KOR SISKOR IV)]	SDG 16
SMZ11201	Kumpulan Latihan Kelanasiswa Malaysia I (Udara) [Malaysian University Rover Training Group I (Air)]	SDG 16
SMZ11301	Kumpulan Latihan Kelanasiswa Malaysia II (Udara) [Malaysian University Rover Training Group II (Air)]	SDG 16
SMZ11401	Sukarelawan Muda Bantuan Perubatan Malaysia (MERCY MUDA 1) [Student Voluntary Malaysian Medical Relief Society [YOUNG MERCY 1]	SDG 16
SMZ11501	Sukarelawan Muda Bantuan Perubatan Malaysia (MERCY MUDA 2) [Student Voluntary Malaysian Medical Relief Society [YOUNG MERCY 2]	SDG 16
SMZ11601	Pasukan Kadet Maritim Malaysia I (PASKAM) [Malaysian Maritime Cadet I (PASKAM)]	SDG 16
SMZ11701	Pasukan Kadet Maritim Malaysia II (PASKAM) [Malaysian Maritime Cadet II (PASKAM)]	SDG 16
SMZ21601	Pasukan Kadet Maritim Malaysia III [Malaysian Maritime Cadet III (PASKAM)]	SDG 16
SMZ21701	Pasukan Kadet Maritim Malaysia IV (PASKAM) [Malaysian Maritime Cadet IV (PASKAM)]	SDG 16
SMZ11801	Briged RELA Siswa Siswi 1 [Malaysian People's Volunteer Corps 1]	SDG 16
SMZ11901	Briged RELA Siswa Siswi 2 [Malaysian People's Volunteer Corps 2]	SDG 16
SMZ12201	Pandu Puteri Klover I [Clover I]	SDG 16
SMZ12301	Pandu Puteri Klover II [Clover II]	SDG 16
SMZ12401	Kor St. John Ambulans Malaysia I [Malaysian St. John Ambulance I]	SDG 16

COURSE CODE	COURSE NAME	SDG
SMZ12501	Kor St. John Ambulans Malaysia II [Malaysian St. John Ambulance II]	SDG 16
SMZ12601	Kumpulan Latihan Kelanasiswa Malaysia I (Darat) [Malaysian University Rover Training Group I]	SDG 16
SMZ12701	Kumpulan Latihan Kelanasiswa Malaysia II (Darat) [Malaysian University Rover Training Group II]	SDG 16
SMZ12801	Kumpulan Latihan Kelanasiswa Malaysia I (Laut) [Malaysian University Rover Training Group I (Sea)]	SDG 16
SMZ12901	Kumpulan Latihan Kelanasiswa Malaysia II (Laut) [Malaysian University Rover Training Group II (Sea)]	SDG 16
SMZ15101	Asas Gamelan [Foundation of Gamelan]	SDG 04
SMZ25101	Gamelan II [Gamelan II]	SDG 04
SMZ15201	Kumpulan Jazz I [Jazz Band I]	SDG 04
SMZ25201	Kumpulan Jazz II [Jazz Band II]	SDG 04
SMZ15301	Pancaragam I [Brass Band I]	SDG 04
SMZ25301	Pancaragam II [Brass Band II]	SDG 04
SMZ15401	Angklung I [Angklung I]	SDG 04
SMZ25401	Angklung II [Angklung II]	SDG 04
SMZ16001	Palapes Darat I [ROTU Army I]	SDG 16
SMZ16101	Palapes Darat II [ROTU Army II]	SDG 16
SMZ26001	Palapes Darat III [ROTU Army III]	SDG 16
SMZ26101	Palapes Darat IV [ROTU Army IV]	SDG 16
SMZ36001	Palapes Darat V [ROTU Army V]	SDG 16
SMZ36101	Palapes Darat VI [ROTU Army VI]	SDG 16

COURSE CODE	COURSE NAME	SDG
SMZ16201	Kor Siswa Siswi Pertahanan Awam I (Kor SISPA I) [Malaysia Civil Defence Department I]	SDG 16
SMZ16301	Kor Siswa Siswi Pertahanan Awam II (Kor SISPA II) [Malaysia Civil Defence Department II]	SDG 16
SMZ26201	Kor Siswa Siswi Pertahanan Awam III (Kor SISPA III)[Malaysia Civil Defence Department III]	SDG 16
SMZ26301	Kor Siswa Siswi Pertahanan Awam IV (Kor SISPA IV) [Malaysia Civil Defence Department IV]	SDG 16
SMZ36201	Kor Siswa Siswi Pertahanan Awam V (Kor SISPA V) [Malaysia Civil Defence Department V]	SDG 16
SMZ16401	Kursus Persijilan Bulan Sabit Merah Malaysia I [The Malaysian Red Crescent Certification Course I]	SDG 16
SMZ26401	Kursus Persijilan Bulan Sabit Merah Malaysia II [The Malaysian Red Crescent Certification Course II]	SDG 16
SMZ16601	Kor Sukarelawan Polis Siswa/Siswi 1 [SVPC-1 @ Students Voluntary Polis Corp 1]	SDG 16
SMZ16701	Kor Sukarelawan Polis Siswa/Siswi 2 [SVPC-2 @ Students Voluntary Polis Corp 2]	SDG 16
SMZ26601	SUKSIS-3 @ Kor Sukarelawan Polis Siswa/Siswi [SVPC-3 @ Students Voluntary Polis Corp 3]	SDG 16
SMZ26701	Kor Sukarelawan Polis Siswa/Siswi 4 [SVPC-4 @ Students Voluntary Polis Corp 4]	SDG 16
SMZ36601	SUKSIS-5 @ Kor Sukarelawan Polis Siswa/Siswi [SVPC-5 @ Students Voluntary Polis Corp 5]	SDG 16
SMZ36701	Kor Sukarelawan Polis Siswa/Siswi 6 [SVPC-6 @ Students Voluntary Polis Corp 6]	SDG 16
SMZ17101	Seni Silat Cekak I [Seni Silat Cekak I]	SDG 16
SMZ27101	Seni Silat Cekak II [Seni Silat Cekak II]	SDG 16
SMZ17401	Taekwon-Do ITF I [Taekwon-Do ITF I]	SDG 16
SMZ27401	Taekwon-Do ITF II [Taekwon-Do ITF II]	SDG 16
SMZ17301	Karate-Do I [Karate-Do I]	SDG 16
SMZ27301	Karate-Do II [Karate-Do II]	SDG 16

COURSE CODE	COURSE NAME	SDG
SMZ17601	Taekwon-Do WTF I [Taekwon-Do WTF I]	SDG 16
SMZ27601	Taekwon-Do WTF II [Taekwon-Do WTF II]	SDG 16
SMZ17701	Silat Olahraga I [Sport Silat I]	SDG 16
SMZ17801	Silat Olahraga II [Sport Silat II]	SDG 16
SMZ17501	Futsal [Futsal]	SDG 03
SMZ19301	Tajwid [Tajwid]	SDG 04
SMZ19601	Student In-Free Enterprise (SIFE) [Student In-Free Enterprise (SIFE)]	SDG 04
SMZ19801	Manusia dan Kelestarian Alam [People and Environmental Sustainability]	SDG 04
SMZ10101	Golf [Golf]	SDG 03
SMZ18901	Sofbol [Softball]	SDG 03
SMZ10301	Woodball [Woodball]	SDG 03
SMZ10401	Bola Sepak [Football]	SDG 03
SMZ10501	Bola Jaring [Netball]	SDG 03
SMZ10601	Tenis [Tennis]	SDG 03
SMZ10801	Angkat Berat [Weightlifting]	SDG 03
SMZ10901	Bola Tampar [Volleyball]	SDG 03
SMZ13201	Penerbitan Video [Video Publishing]	SDG 04
SMZ15501	Seni Pergerakan Kreatif [Arts of Creative Movement]	SDG 04
SMZ15601	Drama, Pementasan & Seni Lakon [Drama, Playwright & Acting]	SDG 04

COURSE CODE	COURSE NAME	SDG
SMZ18101	Boling Padang [Lawn Ball]	SDG 03
SMZ18201	Petanque [Petanque]	SDG 03
SMZ17901	Olahraga [Athletic]	SDG 03
SMZ18401	Badminton [Badminton]	SDG 03
SMZ18701	Ragbi [Rugby]	SDG 03
SMZ18801	Memanah [Archery]	SDG 03
SMZ18901	Sofbol [Softball]	SDG 03
SMZ18601	Sepak Takraw [Sepak Takraw]	SDG 03
SMZ19001	Sukan Berbasikal [Cycling]	SDG 03
SMZ19101	Khidmat Masyarakat [Community Services]	SDG 04
SMZ19201	Daya Usaha & Inovasi [Initiative & Innovation]	SDG 04
SMZ19501	Radio Kampus [Campus Radio]	SDG 04
SMZ19901	Tulisan Jawi [Jawi Orthography]	SDG 04
SMZ30101	Program Inbound-Outbound Mobiliti I [Mobility Inbound-Outbound Program I]	SDG 04
SMZ30201	Program Inbound-Outbound Mobiliti I [Mobility Inbound-Outbound Program II]	SDG 04
SMZ30301	Program Inbound-Outbound Mobiliti I [Mobility Inbound-Outbound Program III]	SDG 04
ZMZ14401	Kor Siswa Bomba 1 [Student Firefighter Corps 1]	SDG 16
ZMZ14001	Tahfiz 1[Tahfiz]	SDG 04
ZMZ13401	Bitara Sukan 1 [Sport Bitara 1]	SDG 03

COURSE CODE	COURSE NAME	SDG
ZMZ13601	Bitara Kesenian & Kebudayaan 1 [Art and Culture Bitara 1]	-
ZMZ13801	Bitara Kepimpinan 1 [Leadership Bitara 1]	SDG 16
ZMZ19601	Pidato & Debat [Speech & Debate]	SDG 04

SMZ11001 SUKARELAWAN SISWA/SISWI KOREKSIONAL JABATAN PENJARA MALAYSIA I
No. of Credits: 1
Course Synopsis:

Kursus ini adalah kursus awalan dalam siri kursus-kursus Pengurusan Kepenjaran. Melalui kursus ini, para pelajar akan diperkenalkan dengan organisasi kepenjaran, sejarah serta kepentingannya dalam pembangunan negara. Pelajar akan didedahkan dengan aktiviti, latihan dan tugas tentang peranan Jabatan Penjara Malaysia. Di samping memberi pendedahan berkaitan Asas Kesukarelawan, Akta Penjara 1995 Pindaan Tahun 2008, Peraturan-Peraturan Penjara Tahun 2000, United Nations Standard Minimum Rules (UNSMR) & latihan kawad kaki..

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan dalam aktiviti SISKOR.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan sifat setia dan kecintaan pada keamanan dalam komuniti.

SMZ11101 SUKARELAWAN SISWA/SISWI KOREKSIONAL JABATAN PENJARA MALAYSIA II
No. of Credits: 1
Course Synopsis:

Siswa Siswi Koreksional II (SISKOR II) adalah lanjutan daripada SISKOR I yang mana ia memberi penekanan terhadap pengurusan keselamatan, pengurusan penahanan, pengurusan layanan dan pengurusan pemulihan (PPI) di Jabatan Penjara Malaysia. Kursus ini juga memberi penekanan kepada pembinaan kemahiran interpersonal dan sahsiah pelajar. Pelajar akan didedahkan dengan latihan kemahiran kawad, SENTAP dan pengendalian senjata api.

Course Outcomes:

1. Keupayaan untuk menunjuk cara kemahiran asas bela diri dalam kumpulan kecil.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan aktiviti kepenjaran yang bersesuaian dengan komuniti.

SMZ21001 SUKARELAWAN SISWA/SISWI KOREKSIONAL JABATAN PENJARA MALAYSIA III
No. of Credits: 1
Course Synopsis:

Siswa Siswi Koreksional III (SISKOR III) adalah lanjutan daripada SISKOR II yang mana ia memberi penekanan kefahaman terhadap Dasar Kepenjaran, Memasyarakatkan Penjara, Pemulihan dan Rumah Perantaraan (RP). Siswa Siswi juga diberi latihan luar serta kemahiran kawad kaki.

Course Outcomes :

1. Keupayaan untuk menunjukkan etika dan kepimpinan dalam acara berprotokol.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Berkeupayaan untuk mengorganisasikan aktiviti rawatan pemulihan yang bersesuaian dalam komuniti.

SMZ21101 SUKARELAWAN SISWA/SISWI KOREKSIONAL JABATAN PENJARA MALAYSIA IV
No. of Credits: 1
Course Synopsis:

Siswa Siswi Koreksional IV (SISKOR IV) merupakan kursus lanjutan SISKOR III yang memberi penekanan terhadap Pengurusan Keselamatan dan Program Parol dan Perkhidmatan Komuniti di Institusi Penjara yang menjadi core business dalam perkhidmatan koreksional. Pelajar juga akan didedahkan dengan ilmu pengetahuan asas program pemulihan Pemasyarakatan, latihan teori & praktikal senjata api, Program Pemulihan & Unit Keselamatan Dalam. Pelajar dikehendaki menjalankan aktiviti jalinan Universiti dan komuniti.

Course Outcomes:

1. Keupayaan untuk mengamalkan sikap profesional dan bertanggungjawab dalam menjalankan tugas.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Berkeupayaan untuk menganjurkan program dan aktiviti pemulihan yang bersesuaian dalam komuniti.

SMZ11201 KUMPULAN LATIHAN KELANASISWA MALAYSIA I (UDARA)**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum badan beruniform Kumpulan Latihan Kelanasiswa Udara I ini merupakan satu unit baru yang ditubuhkan dalam kumpulan Kelana Siswa di Malaysia. UniMAP merupakan perintis kepada penubuhan Pengakap Kelana Udara di universiti-universiti di Malaysia. Pelajar akan didedahkan kepada Skim Latihan Pengakap Kelana Udara yang baru serta kursus Kepimpinan Manikayu. Pengakap Kelana Udara ini terdiri daripada remaja yang berumur dari 17 tahun sehingga 25 tahun. Kursus ini menawarkan pelbagai aktiviti dan latihan dalam membangunkan kemahiran modal insan individu secara langsung mahupun tidak langsung. Tumpuan juga diberikan pada pembangunan kesedaran diri yang menekankan aspek tanggungjawab terhadap diri sendiri, patuh kepada ketua, organisasi, masyarakat dan negara serta memberi perkhidmatan kesukarelaan kepada masyarakat, selaras dengan cogan kata Pengakap Kelana iaitu "Berkhidmat".

Course Outcomes :

1. Keupayaan untuk menunjukkan kemahiran kepimpinan dalam aktiviti pengakap.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kaedah dan kemahiran yang bersesuaian dalam aktiviti pengakap dengan komuniti.

SMZ11301 KUMPULAN LATIHAN KELANASISWA MALAYSIA II (UDARA)**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum badan beruniform Kumpulan Latihan Kelanasiswa Udara II ini dengan nama lain Unit Pengakap Kelana merupakan satu unit baru yang ditubuhkan dalam kumpulan Kelana Siswa di Malaysia. UniMAP merupakan perintis kepada penubuhan Pengakap Kelana Udara. Ia merupakan satu-satunya Universiti di Malaysia yang mempunyai Pengakap Kelana Udara dan juga akan didedahkan kepada Skim Latihan Pengakap Kelana Udara yang baru serta kursus Kepimpinan Manikayu. Pengakap Kelana Udara ini terdiri daripada remaja yang berumur dari 17 tahun sehingga ke 25 tahun yang menawarkan pelbagai aktiviti dan latihan dalam membangunkan kemahiran modal insan individu secara langsung mahupun tidak langsung. Penumpuan juga diberikan

kepada pembangunan kesedaran diri yang menekankan aspek tanggungjawab terhadap diri sendiri, patuh kepada ketua, organisasi, masyarakat dan Negara serta memberi perkhidmatan kesukarelaan kepada masyarakat, selaras dengan cogan kata Pengakap Kelana iaitu "Berkhidmat".

Course Outcomes:

1. Keupayaan untuk menunjuk cara kemahiran asas aktiviti pengakap dalam kumpulan kecil.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk menganjurkan program dan aktiviti pengakap bersama komuniti.

SMZ11401 SUKARELAWAN MUDA BANTUAN PERUBATAN MALAYSIA (MERCY MUDA 1)**No. of Credits: 1****Course Synopsis:**

Kursus MERCY merupakan salah satu kursus kokurikulum yang memberi pendedahan awal tentang kesukarelawan. Kursus MERCY I ini menggabungkan pengetahuan asas aspek bantuan kemanusiaan dengan latihan praktikal. Pelajar akan menjalani Latihan Sukarelawan dan Misi Asas sebelum terlibat dalam merancang dan melaksanakan projek kemanusiaan.

Course Outcomes :

1. Keupayaan untuk menunjukkan kemahiran kepimpinan dalam aktiviti kesukarelawan.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran teknikal dan kaedah yang bersesuaian dalam melaksanakan aktiviti kesukarelawan.

SMZ11501 SUKARELAWAN MUDA BANTUAN PERUBATAN MALAYSIA (MERCY MUDA 2)
No. of Credits: 1
Course Synopsis:

The MERCY II course is a continuation from MERCY I where early exposure to volunteerism is instilled. The basic knowledge of the humanitarian relief aspect blended with practical exercise is integrated in this MERCY I course. The students will undergo a Basic Volunteer & Mission Training before getting involved in the planning & implementing a humanitarian project.

Course Outcomes:

1. Keupayaan untuk mengamalkan tanggungjawab sosial dalam melaksanakan aktiviti dan program kesukarelawan dalam kumpulan kecil.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk menganjurkan program dan aktiviti kesukarelawan bersama komuniti.

SMZ11601 PASUKAN KADET MARITIM MALAYSIA I (PASKAM)
No. of Credits: 1
Course Synopsis:

Pasukan Kadet Maritim Malaysia I (PASKAM I) adalah kursus permulaan kepada para pelajar tentang pengurusan Agensi Penguatkuasaan Maritim Malaysia (APMM). Melalui kursus ini, para pelajar akan diperkenalkan kepada organisasi APMM, sejarah penubuhan serta kepentingan APMM kepada Negara. Pada peringkat awal, para pelajar akan didedahkan dengan aktiviti, latihan, tugas dan silibus pelajaran tentang peranan APMM serta latihan kawad kaki.

Course Outcomes :

1. Keupayaan untuk menunjukkan kemahiran kepimpinan dalam aktiviti maritim.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi dengan berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran dan langkah-langkah asas aktiviti maritim yang bersesuaian dalam komuniti.

SMZ11701 PASUKAN KADET MARITIM MALAYSIA II (PASKAM)
No. of Credits: 1
Course Synopsis:

Pasukan sukan Kadet Maritim Malaysia II (PASKAM II) merupakan sambungan kepada Pasukan Kadet Maritim Malaysia I. Melalui kursus ini, para pelajar akan diperkenalkan kepada Penguatkuasaan undang-undang di bawah Akta APMM, pendedahan ilmu mencari & menyelamatkan dan ilmu kelautan. Selain itu, para pelajar akan didedahkan dengan aktiviti, latihan, tugas latihan kawad kaki.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam aktiviti maritim secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi dengan berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan teknik dan langkah-langkah aktiviti menyelamatkan dalam dunia maritim.

SMZ21701 PASUKAN KADET MARITIM MALAYSIA III (PASKAM)
No. of Credits: 1
Course Synopsis:

Pasukan Kadet Maritim Malaysia III (PASKAM III) merupakan kursus peringkat ketiga Pasukan Kadet Maritim Malaysia. Melalui kursus ini, Pada peringkat ini, selain itu didedahkan dengan aktiviti latihan, tugas dan latihan kawad kaki, para pelajar akan diperkenalkan kepada pengetahuan undang-undang yang lebih tinggi di bawah Akta APMM, asas tempur tanpa senjata, pengendalian senjata kecil, latihan menembak dan ilmu kelautan.

Course Outcomes:

1. Keupayaan untuk mengamalkan undang-undang, peraturan dan kerjasama dalam pasukan.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Berkeupayaan untuk mengorganisasikan sesuatu aktiviti dalam pengendalian kapal.

SMZ11701 PASUKAN KADET MARITIM MALAYSIA IV (PASKAM)**No. of Credits: 1****Course Synopsis:**

Pasukan Kadet Maritim Malaysia IV (PASKAM IV) merupakan peringkat akhir kursus Pasukan Kadet Maritim Malaysia (APMM). Pada peringkat ini, para pelajar akan didedahkan lebih lanjut berkaitan operasi mencari & menyelamatkan, latihan penembakan, dan kaedah komunikasi & navigasi. Para pelajar juga akan didedahkan dengan ilmu siasatan & forensik, kaedah-kaedah penggeledahan dan peranan pegawai pemerintah kapal.

Course Outcomes :

1. Keupayaan untuk mengamalkan sikap profesional, berdisiplin dan bertanggungjawab dalam kumpulan.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Berkeupayaan untuk menganjurkan aktiviti dan program keselamatan maritim dengan komuniti

SMZ11801 BRIGED RELA SISWA SISWI 1**No. of Credits: 1****Course Synopsis:**

Kursus ini memberikan pendedahan kepada pelajar mengenai asas kawad tangan kosong. Selain itu, konsep kesukarelawan dan penyatuan bangsa, kepimpinan dan pengucapan wawam, pengurusan media sosial, pengurusan dan pengendalian meyarat serta pengurusan program akan didedahkan kepada pelajar.

Course Outcomes:

1. Keupayaan untuk mengamalkan undang-undang, peraturan dan kerjasama dalam pasukan.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kaedah kemahiran RELA yang bersesuaian dalam aktiviti berpasukan.

SMZ11801 BRIGED RELA SISWA SISWI 2**No. of Credits: 1****Course Synopsis:**

Kursus ini memberikan pendedahan kepada pelajar berkenaan dengan asas pertolongan cemas, kemahiran menyelamatkan, kemahiran medan, kemahiran asas pertahanan diri, khidmat bakti RELA, pengendalian senjata api, dan kawad senjata.

Course Outcomes:

1. Keupayaan untuk mengamalkan ilmu asas kemahiran medan, pertahanan diri, dan semangat kerja dalam aktiviti khidmat masyarakat dan menyelamatkan.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan aktiviti dan program kesukarelawan dengan komuniti.

SMZ12201 PANDU PUTERI KLOVER I**No. of Credits: 1****Course Synopsis:**

Kursus Badan Beruniform Pandu Puteri Klover 1 ini dilaksanakan dengan tujuan untuk melahirkan graduan yang mempunyai kemahiran insaniah melalui Program Pandu Puteri Siswi terutamanya dari aspek pengetahuan dan kemahiran asas Pandu Puteri berteraskan kerja berpasukan yang boleh diaplikasikan dalam kerjaya yang diceburi.

Course Outcomes :

1. Keupayaan untuk menunjukkan kemahiran kepimpinan dalam aktiviti Pandu Puteri.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran asas kepanduan dalam aktiviti khidmat komuniti.

SMZ12301 PANDU PUTERI KLOVER II**No. of Credits: 1****Course Synopsis:**

Kursus Badan Beruniform Pandu Puteri ni dilaksanakan bertujuan melahirkan graduan yang mempunyai kemahiran insaniah melalui Program Pandu Puteri klover terutamanya dari aspek pengetahuan dan kemahiran asas Pandu Puteri berteraskan kerja berpasukan yang boleh diaplikasikan dalam kerjaya yang diceburi.

Course Outcomes :

1. Keupayaan untuk menunjuk cara kemahiran asas aktiviti pandu puteri dalam kumpulan kecil.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk menganjurkan program pandu puteri bersama komuniti.

SMZ12401 KOR ST. JOHN AMBULANS MALAYSIA I**No. of Credits: 1****Course Synopsis:**

Kursus ini bertujuan memperkenalkan prinsip-prinsip asas serta matlamat pertolongan cemas. Pelajar akan didedahkan bagaimana memberi bantuan dalam sesuatu kecemasan. Mereka akan belajar kaedah pembalutan dan pembebatan, serta cara mengendali pendarahan luaran dan keadaan renjatan. Pelajar juga akan mengenali kepatahan tulang, terseliuh, dislokasi dan cara memberi rawatan kecemasan ke atas kes-kes tersebut.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan dalam aktiviti pertolongan cemas.
2. Keupayaan untuk mempraktik kemahiran berkomunikasi dengan berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk menunjukkan langkah-langkah pertolongan cemas dalam aktiviti menyelamatkan dengan komuniti.

SMZ12501 KOR ST. JOHN AMBULANS MALAYSIA II**No. of Credits: 1****Course Synopsis:**

Kursus ini merupakan kesinambungan SMZ12401 Kor St. John Ambulans Malaysia I. Pelajar akan didedahkan bagaimana memberi bantuan dalam sesuatu kecemasan. Mereka akan belajar kaedah merawat keracunan, melecur akibat kebakaran, serangan sawan & jantung serta pengurusan ambulan. Pelajar juga akan didedahkan dengan pengurusan dan operasi bencana.

Course Outcomes :

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam aktiviti menyelamatkan dan pertolongan cemas secara berkumpulan.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk menunjukkan kemahiran asas pertolongan cemas dalam aktiviti menyelamatkan dengan komuniti.

SMZ12601 KUMPULAN LATIHAN KELANASISWA MALAYSIA I (DARAT)**No. of Credits: 1****Course Synopsis:**

KLKM merupakan badan beruniform bersifat antarabangsa yang membincangkan mengenai ilmu kemahiran hidup dan iktiar hidup. Para pelajar juga akan didedahkan dengan tatacara kehidupan yang beretika, saling membantu, hormat-menghormati, kasih sesama manusia dan alam sekitar melalui penghayatan Persetiaan dan Undang-Undang Pengakap.

Course Outcomes :

1. Keupayaan untuk menunjukkan kemahiran kepimpinan dalam aktiviti pengakap.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran yang bersesuaian dalam aktiviti pengakap.

SMZ12701 KUMPULAN LATIHAN KELANASISWA MALAYSIA II (DARAT)**No. of Credits: 1****Course Synopsis:**

KLKM merupakan badan beruniform bersifat antarabangsa yang membincangkan mengenai ilmu kemahiran hidup dan iktihar hidup. Para pelajar juga akan didedahkan dengan tatacara kehidupan yang beretika, saling membantu, hormat-menghormati, kasih sesama manusia dan alam sekitar melalui penghayatan Persetiaan dan Undang-Undang Pengakap.

Course Outcomes :

1. Keupayaan untuk menunjuk cara kemahiran asas aktiviti pengakap darat dalam kumpulan kecil.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpul.
3. Keupayaan untuk menganjurkan aktiviti dan program pengakap darat bersama komuniti.

SMZ12801 KUMPULAN LATIHAN KELANASISWA MALAYSIA I (LAUT)**No. of Credits: 1****Course Synopsis:**

KLKM LAUT I merupakan kumpulan pengakap dewasa di bawah Persekutuan Pengakap Malaysia. Kumpulan ini ditubuhkan di bawah institusi-institusi pengajian tinggi tempatan. Disifatkan sebagai satu kumpulan di bawah unit KLKM (Negeri). Krew KLKM ditubuhkan dengan polisi unit KLKM. Ia juga sama seperti KLKM Darat dan Udara, tetapi KLKM Laut lebih menekankan unsur-unsur ilmu kelautan. Ilmu kemahiran, kepimpinan, iktihar hidup dan khidmat masyarakat ditekankan.

Course Outcomes :

1. Keupayaan untuk menunjukkan kemahiran kepimpinan dalam aktiviti pengakap.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpul.
3. Keupayaan untuk mempamerkan kemahiran yang bersesuaian dalam aktiviti pengakap.

SMZ12901 KUMPULAN LATIHAN KELANASISWA MALAYSIA II (LAUT)**No. of Credits: 1****Course Synopsis:**

KLKM merupakan badan beruniform bersifat antarabangsa yang membincangkan mengenai ilmu kemahiran hidup dan iktihar hidup. Para pelajar juga akan didedahkan dengan tatacara kehidupan yang beretika, saling membantu, hormat-menghormati, kasih sesama manusia dan alam sekitar melalui penghayatan Persetiaan dan Undang-Undang Pengakap.

Course Outcomes :

1. Keupayaan untuk menunjuk cara kemahiran asas aktiviti pengakap darat dalam kumpulan kecil.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpul.
3. Keupayaan untuk menganjurkan aktiviti dan program pengakap darat bersama komuniti.

SMZ15101 ASAS GAMELAN**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar kepada ilmu seni asas tradisional gamelan dari segi kemahiran teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan tradisional asas gamelan. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran bermain gamelan.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam permainan muzik gamelan secara berkumpul.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpul.
3. Keupayaan untuk mempamerkan alunan muzik melalui persembahan gamelan.

SMZ25101 GAMESAN II**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu seni asas tradisional gamesan dari segi kemahiran teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan tradisional asas gamesan. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali (praktikal) dari segi kemahiran bermain gamesan.

Course Outcomes:

1. Keupayaan untuk mempamerkan sikap profesional dan kerja berpasukan dalam permainan muzik gamesan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan program atau aktiviti berkaitan muzik gamesan dengan komuniti.

SMZ15201 KUMPULAN JAZZ I**No of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu muzik jazz dari segi kemahiran teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan seni muzik jazz. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali (praktikal) dari segi kemahiran bermain muzik jazz.

Course Outcomes :

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam permainan muzik jazz secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan alunan muzik melalui persembahan kumpulan jazz.

SMZ25201 KUMPULAN JAZZ II**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu muzik jazz dari segi kemahiran teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan seni muzik jazz. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali (praktikal) dari segi kemahiran bermain muzik jazz.

Course Outcomes:

1. Keupayaan untuk mempamerkan sikap profesional dan kerja berpasukan dalam permainan muzik jazz.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan program atau aktiviti berkaitan muzik kumpulan jazz dengan komuniti.

SMZ15301 PANCARAGAM I**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu pancaragam dari segi kemahiran teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, pengurusan diri dan lain-lain yang berkaitan pancaragam. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan dari segi kemahiran bermain alatan pancaragam.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam permainan muzik pancaragam secara berkumpulan.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan alunan muzik melalui persembahan pancaragam.

SMZ25301 PANCARAGAM II**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu Pancaragam II dari segi kemahiran teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, pengurusan diri dan lain-lain yang berkaitan Pancaragam II. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan dari segi kemahiran bermain alatan Pancaragam II.

Course Outcomes:

1. Keupayaan untuk mempamerkan sikap profesional dan kerja berpasukan dalam permainan pancaragam.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan program atau aktiviti pancaragam dengan komuniti.

SMZ15401 ANGKLUNG I**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada seni muzik tradisional angklung dari segi kemahiran teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan seni muzik tradisional angklung. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali (praktikal) dari segi kemahiran bermain muzik angklung.

Course Outcomes :

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam permainan muzik angklung secara berkumpulan.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan alunan muzik melalui persembahan angklung.

SMZ25401 ANGKLUNG II**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada seni muzik tradisional angklung dari segi kemahiran teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan seni muzik tradisional angklung. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali (praktikal) dari segi kemahiran bermain muzik angklung.

Course Outcomes:

1. Keupayaan untuk menunjuk sikap profesional dan kerja berpasukan dalam permainan muzik angklung.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk menganjurkan program atau aktiviti berkaitan permainan muzik angklung dengan komuniti.

SMZ16001 PALAPES DARAT I**No. of Credits: 1****Course Synopsis:**

Kursus ini bertujuan untuk mendedahkan pelajar kepada Latihan Asas Ketenteraan (Teori dan Praktikal) yang merangkumi aspek taktikal, latihan, persenjataan, kepimpinan, kerja berpasukan, membaca peta, tugas-tugas rejimen dan etika sosial serta pengetahuan am ketenteraan. Melalui latihan-latihan yang diberikan, potensi dan keupayaan pegawai kadet dapat dipertingkatkan dari segi pengetahuan, kepimpinan, disiplin, keyakinan diri dan semangat juang dan patriotisme yang tinggi.

Course Outcomes:

1. Keupayaan untuk mematuhi undang-undang dan peraturan dalam pasukan Palapes.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran yang bersesuaian dalam aktiviti Palapes.

SMZ16101 PALAPES DARAT II**No. of Credits: 1****Course Synopsis:**

Kursus ini bertujuan untuk mendedahkan pelajar kepada Latihan Asas Ketenteraan (Teori dan Praktikal) yang merangkumi aspek taktikal, latihan, persenjataan, kepimpinan, kerja berpasukan, membaca peta, tugas-tugas rejimen dan etika sosial serta pengetahuan am ketenteraan. Melalui latihan-latihan yang diberikan, potensi dan keupayaan pegawai kadet dapat dipertingkatkan dari segi pengetahuan, kepimpinan, disiplin, keyakinan diri dan semangat juang dan patriotisme yang tinggi.

Course Outcomes:

1. Keupayaan untuk mematuhi undang-undang, berdisiplin dan bersemangat patriotik yang tinggi dalam aktiviti berkumpulan.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan sikap profesional dan tanggungjawab dalam pasukan.

SMZ26001 PALAPES DARAT III**No. of Credits: 1****Course Synopsis:**

Kursus ini bertujuan untuk mendedahkan pelajar kepada Latihan Asas Ketenteraan (Teori dan Praktikal) yang merangkumi aspek taktikal, latihan, persenjataan, kepimpinan, kerja berpasukan, membaca peta, tugas-tugas rejimen dan etika sosial serta pengetahuan am ketenteraan. Melalui latihan-latihan yang diberikan, potensi dan keupayaan pegawai kadet dapat dipertingkatkan dari segi pengetahuan, kepimpinan, disiplin, keyakinan diri dan semangat juang dan patriotisme yang tinggi.

Course Outcomes:

1. Keupayaan untuk mengamalkan undang-undang dan peraturan Palapes dengan jelas dalam pasukan.
2. Berkeupayaan untuk menunjuk cara pengendalian senjata api secara berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran yang bersesuaian dalam aktiviti ketenteraan.

SMZ26101 PALAPES DARAT IV**No. of Credits: 1****Course Synopsis:**

Kursus ini bertujuan untuk mendedahkan pelajar kepada Latihan Asas Ketenteraan (Teori dan Praktikal) yang merangkumi aspek taktikal, latihan, persenjataan, kepimpinan, kerja berpasukan, membaca peta, tugas-tugas rejimen dan etika sosial serta pengetahuan am ketenteraan. Melalui latihan-latihan yang diberikan, potensi dan keupayaan pegawai kadet dapat dipertingkatkan dari segi pengetahuan, kepimpinan, disiplin, keyakinan diri dan semangat juang dan patriotisme yang tinggi.

Course Outcomes:

1. Keupayaan untuk menunjuk cara kemahiran taktikal dan sikap profesional dalam membuat keputusan secara berkumpulan.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan sikap profesional dan disiplin dalam formasi kawad yang bersesuaian dalam ketenteraan.

SMZ36001 PALAPES DARAT V**No. of Credits: 1****Course Synopsis:**

Kursus ini bertujuan untuk mendedahkan pelajar kepada Latihan Asas Ketenteraan (Teori dan Praktikal) yang merangkumi aspek taktikal, latihan, persenjataan, kepimpinan, kerja berpasukan, membaca peta, tugas-tugas rejimen dan etika sosial serta pengetahuan am ketenteraan. Melalui latihan-latihan yang diberikan, potensi dan keupayaan pegawai kadet dapat dipertingkatkan dari segi pengetahuan, kepimpinan, disiplin, keyakinan diri dan semangat juang dan patriotisme yang tinggi.

Course Outcomes:

1. Berkeupayaan untuk menunjuk cara pengendalian senjata api berdasarkan SOP ATM.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan kaedah dan kemahiran yang bersesuaian dalam aktiviti ketenteraan.

SMZ36101 PALAPES DARAT VI

No. of Credits: 1

Course Synopsis:

Kursus ini bertujuan untuk mendedahkan pelajar kepada Latihan Asas Ketenteraan (Teori dan Praktikal) yang merangkumi aspek taktikal, latihan, persenjataan, kepimpinan, kerja berpasukan, membaca peta, tugas-tugas rejimen dan etika sosial serta pengetahuan am ketenteraan. Melalui latihan-latihan yang diberikan, potensi dan keupayaan pegawai kadet dapat dipertingkatkan dari segi pengetahuan, kepimpinan, disiplin, keyakinan diri dan semangat juang dan patriotisme yang tinggi.

Course Outcomes :

1. Keupayaan untuk mengamalkan teori dan kemahiran ketenteraan dengan jelas berdasarkan undang-undang ketenteraan.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengadaptasi kemahiran ketenteraan dalam komuniti.

SMZ16201 KOR SISWA SISWI PERTAHANAN AWAM I

No. of Credits: 1

Course Synopsis:

Kursus ini menawarkan pengetahuan dan kemahiran asas kawad kaki, asas pertolongan cemas, sistem pendarahan tubuh manusia, rawatan lecur kebakaran, rawatan kecederaan tulang, sendi dan otot, rawatan gigitan serangga dan binatang berbisa, resusitasi kardiopulmonari, dan teknik ektrikasi. Para pelajar akan diajar secara teori dan praktikal berkenaan operasi menyelamatkan dan pertolongan cemas semasa kemalangan bagi meningkatkan pemahaman dan kesediaan mental dan fizikal semasa menghadapi sebarang isu kecemasan.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan pertahanan awam dalam aktiviti kumpulan kecil.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Berkeupayaan untuk mempamerkan kaedah dan kemahiran teknikal dalam melaksanakan aktiviti menyelamatkan dalam komuniti.

SMZ16301 KOR SISWA SISWI PERTAHANAN AWAM II

No. of Credits: 1

Course Synopsis :

Kursus ini menawarkan pengetahuan & kemahiran asas kawad kaki, teknik ektrikasi & mengeluarkan mangsa, kawad usungan, ikatan & simpulan tali, manual keselamatan operasi gergaji berantai, sains kebakaran & alatan pemadam api, teknik membaca peta & kompas, mengurus pusat bantuan kecemasan & keselamatan semasa bencana alam. Para pelajar akan diajar secara teori & praktikal berkenaan operasi menyelamatkan & pertolongan cemas semasa kemalangan bagi meningkatkan pemahaman & kesediaan mental & fizikal semasa menghadapi sebarang isu kecemasan.

Course Outcomes:

1. Keupayaan untuk mengamalkan sikap profesional dan bertanggungjawab dalam aktiviti menyelamatkan secara berkumpulan.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran asas menyelamatkan mangsa bencana dalam komuniti.

SMZ26201 KOR SISWA SISWI PERTAHANAN AWAM III

No. of Credits: 1

Course Synopsis:

Kursus ini menawarkan pengetahuan & kemahiran asas kawad kaki, Pelan Integriti Nasional (PIN), penggunaan power cutter & peralatan hidraulik, peralatan & teknik ascending dan descending, teknik menyelamatkan dari tempat tinggi, pengenalan peralatan asas kebombaian, peralatan Basic Trauma & Life Support (BTLs) & pengenalan kepada peralatan ambulan. Para pelajar akan diajar secara teori & praktikal berkenaan operasi menyelamatkan & pertolongan cemas semasa kemalangan bagi meningkatkan pemahaman & kesediaan mental & fizikal semasa menghadapi sebarang isu kecemasan.

Course Outcomes:

1. Keupayaan untuk menunjuk cara langkah-langkah dan aktiviti menyelamatkan dalam kumpulan kecil.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Berkeupayaan untuk mengorganisasikan aktiviti bantuan dan operasi menyelamatkan yang bersesuaian dalam komuniti.

SMZ26301 KOR SISWA SISWI PERTAHANAN AWAM IV**No. of Credits: 1****Course Synopsis:**

Kursus ini pengetahuan dan kemahiran asas kawad kaki, Khidmat Kecemasan 999, pengurusan bencana dan krisis, kaedah pengurusan latihan, kaedah pengurusan pasukan, kursus kepimpinan dalam organisasi (PTB) dan kursus etiket dan protokol. Para pelajar akan diajar secara teori dan praktikal berkenaan operasi dan pentadbiran pasukan penyelamat Jabatan Pertahanan Awam bagi meningkatkan pemahaman para pelajar dengan struktur organisasi dan cara kerja Jabatan Pertahanan Awam Malaysia.

Course Outcomes:

1. Keupayaan untuk menunjukkan sikap profesional, kepimpinan, disiplin dan beretika dalam aktiviti Pertahanan Awam secara berkumpulan.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk menganjurkan program dan aktiviti asas menyelamat dengan komuniti.

SMZ36201 KOR SISWA SISWI PERTAHANAN AWAM V**No. of Credits: 1****Course Synopsis:**

Kursus ini pengetahuan dan kemahiran asas kawad kaki, pengendalian mesyuarat, sahsiah, etika pegawai dan kepimpinan, etiket dan protokol, latihan ketahanan diri, kursus kejurulatihan kemahiran dan kursus bakal pegawai. Para pelajar akan diajar secara teori dan praktikal berkenaan pengurusan dan pentadbiran pasukan Jabatan Pertahanan Awam Malaysia bagi meningkatkan kredibiliti dan kesiapsiagaan para pelajar dengan sebarang kemungkinan pada masa hadapan.

Course Outcomes:

1. Keupayaan untuk menunjukkan etika, etiket dan kepimpinan dalam acara berprotokol.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan pengurusan majlis berprotokol.

SMZ16401 KURSUS PERSIJILAN BULAN SABIT MERAH MALAYSIA I**No. of Credits: 1****Course Synopsis:**

Kursus ini bertujuan mendedahkan dan memberikan kefahaman pelajar kepada prinsip pertolongan cemas asas dan aspek-aspek memberi bantuan sukarela, latihan kawad asas dan khidmat masyarakat. Penekanan diberikan kepada setiap individu untuk mengetahui asas pertolongan cemas dan Pemulihan Cardiopulmonary atau CPR (Cardiopulmonary) bagi melahirkan seorang pembantu pertolongan cemas untuk kesejahteraan masyarakat.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran asas pertolongan cemas dalam aktiviti berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Berkeupayaan untuk mempamerkan kemahiran dan langkah-langkah aktiviti menyelamat dan pertolongan cemas yang bersesuaian dalam komuniti.

SMZ26401 KURSUS PERSIJILAN BULAN SABIT MERAH MALAYSIA II**No. of Credits: 1****Course Synopsis:**

Kursus ini bertujuan mendedahkan dan memberikan kefahaman pelajar kepada prinsip pertolongan cemas asas dan aspek-aspek memberi bantuan sukarela, latihan kawad asas dan khidmat masyarakat. Penekanan diberikan kepada setiap individu untuk mengetahui asas pertolongan cemas dan Pemulihan Cardiopulmonary atau CPR (Cardiopulmonary) bagi melahirkan seorang pembantu pertolongan cemas untuk kesejahteraan masyarakat.

Course Outcomes:

1. Keupayaan untuk mengamalkan sikap tanggungjawab dan berdisiplin dalam aktiviti menyelamat dan pertolongan cemas secara berkumpulan.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengaplikasikan pengetahuan dan kemahiran asas BSMM dalam komuniti.

SMZ16601 KOR SUKARELAWAN POLIS SISWA/SISWI 1**No. of Credits: 1****Course Synopsis:**

Kursus ini bertujuan membentuk sahsiah dan pembangunan mahasiswa yang berilmu, berdisiplin dan patriotik serta mempunyai tahap pengetahuan kepolisian yang baik. Program latihan dan aktiviti Kor SUKSIS adalah mengikut program latihan dan aktiviti yang telah disediakan dan diluluskan oleh PDRM. Sejumlah 672 jam diperlukan untuk memenuhi keperluan latihan dan aktiviti Kor SUKSIS bagi tujuan pentauliah. Oleh itu, 112 jam latihan diperlukan untuk tiap-tiap semester untuk memenuhi keperluan latihan dalam aspek Pentadbiran/Pengurusan, Latihan Luar dan Akademik. Tujuan penubuhan Kor SUKSIS adalah untuk melahirkan seorang Pegawai Kor SUKSIS Polis yang berpengetahuan undang-undang berkaitan, mempunyai sikap serta amalan disiplin (kepolisian) yang sesuai. Mampu memainkan peranan dan tanggungjawab dengan cekap dan berkesan sebagai seorang Pegawai Kor SUKSIS Polis. Mewujudkan kesedaran sivik dan hubungan baik polis dengan masyarakat dan memupuk ketahanan fizikal, mental serta personaliti yang kental untuk menghadapi cabaran.

Course Outcomes:

1. Keupayaan untuk mematuhi undang-undang dan peraturan dalam pasukan PDRM.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kaedah yang bersesuaian dalam aktiviti PDRM.

SMZ16701 KOR SUKARELAWAN POLIS SISWA/SISWI 2**No. of Credits: 1****Course Synopsis:**

Kursus ini merupakan lanjutan dari program yang dilaksanakan pada semester satu yang bertujuan membentuk sahsiah dan pembangunan mahasiswa yang berilmu, berdisiplin dan patriotik serta mempunyai tahap pengetahuan kepolisian yang baik. Program latihan dan aktiviti Kor SUKSIS adalah mengikut program latihan dan aktiviti yang telah disediakan dan diluluskan oleh PDRM.

Course Outcomes:

1. Berkeupayaan untuk menunjuk cara pengendalian senjata api secara berkumpulan.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti

berkumpulan.

3. Keupayaan untuk mempamerkan kaedah dan kemahiran yang bersesuaian dalam aktiviti PDRM.

SMZ26601 KOR SUKARELAWAN POLIS SISWA/SISWI 3**No. of Credits: 1****Course Synopsis:**

Kursus ini merupakan lanjutan dari program yang dilaksanakan pada semester dua yang bertujuan membentuk sahsiah & pembangunan mahasiswa yang berilmu, berdisiplin & patriotik serta mempunyai tahap pengetahuan kepolisian yang baik. Program latihan & aktiviti Kor SUKSIS adalah mengikut program latihan & aktiviti yang telah disediakan dan diluluskan oleh PDRM. Sejumlah 112 jam latihan diperlukan untuk memenuhi keperluan latihan dalam aspek Pentadbiran/Pengurusan, Latihan Luar & Akademik.

Course Outcomes:

1. Keupayaan untuk mengamalkan undang-undang dan peraturan persenjataan dengan jelas.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kaedah dan kemahiran yang bersesuaian dalam aktiviti PDRM.

SMZ26701 KOR SUKARELAWAN POLIS SISWA/SISWI 4**No. of Credits: 1****Course Synopsis:**

Kursus ini merupakan lanjutan dari program yang dilaksanakan pada semester tiga yang bertujuan membentuk sahsiah dan pembangunan mahasiswa yang berilmu, berdisiplin dan patriotik serta mempunyai tahap pengetahuan kepolisian yang baik. Program latihan dan aktiviti Kor SUKSIS adalah mengikut program latihan dan aktiviti yang telah disediakan dan diluluskan oleh PDRM. Sejumlah 112 jam latihan diperlukan untuk memenuhi keperluan latihan dalam aspek Pentadbiran/Pengurusan, Latihan Luar dan Akademik.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan sikap profesional secara berkumpulan.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan sikap profesional, integriti dan kemahiran asas PDRM dalam komuniti.

SMZ36601 KOR SUKARELAWAN POLIS SISWA/SISWI 5**No. of Credits: 1****Course Synopsis:**

Kursus ini merupakan lanjutan dari program yang dilaksanakan pada semester empat yang bertujuan membentuk sahsiah dan pembangunan mahasiswa yang berilmu, berdisiplin dan patriotic serta mempunyai tahap pengetahuan kepolisan yang baik. Program latihan dan aktiviti Kor SUKSIS adalah mengikut program latihan dan aktiviti yang telah disediakan dan diluluskan oleh PDRM. Sejumlah 112 jam latihan diperlukan untuk memenuhi keperluan latihan dalam aspek Pentadbiran/Pengurusan, Latihan Luar dan Akademik.

Course Outcomes:

1. Keupayaan untuk mensintesis akta dan undang-undang PDRM dengan jelas.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan kaedah dan kemahiran yang bersesuaian dalam aktiviti PDRM dalam komuniti.

SMZ36701 KOR SUKARELAWAN POLIS SISWA/SISWI 6**No. of Credits: 1****Course Synopsis:**

Kursus ini merupakan lanjutan dari program yang dilaksanakan pada semester lima yang bertujuan membentuk sahsiah dan pembangunan mahasiswa yang berilmu, berdisiplin dan patriotic serta mempunyai tahap pengetahuan kepolisan yang baik. Program latihan dan aktiviti Kor SUKSIS adalah mengikut program latihan dan aktiviti yang telah disediakan dan diluluskan oleh PDRM. Sejumlah 112 jam latihan diperlukan untuk memenuhi keperluan latihan dalam aspek Pentadbiran/Pengurusan, Latihan Luar dan Akademik.

Course Outcomes:

1. Keupayaan untuk mengamalkan teori dan ilmu kepolisan dengan jelas berdasarkan undang-undang PDRM.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengadaptasi kemahiran dan ilmu kepolisan dalam komuniti.

SMZ17101 SENI SILAT CEKAK I**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu Seni Silat Cekak dari segi kemahiran teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, pengurusan diri dan lain-lain yang berkaitan Seni Silat Cekak. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan dari segi kemahiran bermain Seni Silat Cekak.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam aktiviti silat dalam kumpulan kecil.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kaedah dan langkah yang bersesuaian dalam persembahan silat.

SMZ27101 SENI SILAT CEKAK II**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu Seni Silat Cekak II dari segi kemahiran teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, pengurusan diri dan lain-lain yang berkaitan Seni Silat Cekak II. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan dari segi kemahiran bermain Seni Silat Cekak II.

Course Outcomes:

1. Keupayaan untuk mempamerkan kemahiran dan teknik silat secara berdisiplin dan bertanggungjawab dalam kumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan program dan aktiviti silat dengan komuniti.

SMZ17401 TAEKWON-DO ITF I**No. of Credits: 1****Course Synopsis:**

Kursus Taekwon-Do I (International Taekwon-Do Federation - ITF) bertujuan untuk mengasah bakat seni mempertahankan diri para pelajar melalui ilmu asas serta teori dan teknikal yang terdapat dalam Taekwon-Do itu sendiri. Para pelajar akan didedahkan kepada sejarah, latar belakang, terminologi, aspek teknikal, pengurusan diri serta aspek-aspek lain yang berkaitan Taekwon-Do I. Latihan asas kemahiran kaki dan tangan juga akan didedahkan kepada pelajar dan pelajar akan diuji dari masa ke semasa.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan peraturan dalam aktiviti taekwon-do.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kaedah dan teknik yang bersesuaian dalam persembahan taekwon-do.

SMZ27401 TAEKWON-DO ITF II**No. of Credits: 1****Course Synopsis:**

Kursus Taekwon-Do II (International Taekwon-Do Federation - ITF) bertujuan untuk membangunkan bakat dan memantapkan kemahiran insaniah para pelajar melalui teori dan teknikal yang terdapat dalam seni mempertahankan diri Taekwon-Do itu sendiri. Dalam aspek teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan Taekwon-Do II. Dalam aspek teknikal pula, kursus ini akan memberi lebih tumpuan kepada latihan amali atau praktikal melalui kemahiran kaki dan tangan yang dilakukan dari masa ke semasa.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran taekwon-do secara berdisiplin dan bertanggungjawab.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan program dan aktiviti taekwon-do bersama komuniti.

SMZ17301 KARATE-DO I**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu Karate-Do dari segi kemahiran teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan Karate-Do. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan dari segi kemahiran bermain Karate -Do.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan peraturan dalam sesuatu aktiviti karate-do.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kaedah dan teknik yang bersesuaian dalam sesuatu persembahan karate-do.

SMZ27301 KARATE-DO II**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu Karate-Do dari segi kemahiran teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan Karate -Do. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan dari segi kemahiran bermain Karate -Do.

Course Outcomes:

1. Keupayaan untuk menunjukan kemahiran karate-do secara berdisiplin dan bertanggungjawab.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan program dan aktiviti karate-do dengan komuniti.

SMZ17601 TAEKWON-DO WTF I**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum Taekwon-Do WTF I bertujuan memberi pendedahan kepada para pelajar mengenai seni mempertahankan diri Taekwon-Do WTF dari segi kemahiran teori dan kemahiran secara teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, disiplin diri dan lain-lain berkaitan Taekwon-Do WTF. Manakala dari segi praktikal, kursus ini lebih menumpukan kepada latihan terhadap pergerakan serta koordinasi anggota badan melalui kemahiran-kemahiran tangan dan kaki dalam serangan dan pertahanan.

Course Outcomes:

1. Keupayaan untuk menunjukan kemahiran kepimpinan, peraturan dan disiplin dalam aktiviti taekwon-do.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kaedah dan teknik yang bersesuaian dalam persembahan taekwon-do.

SMZ27601 TAEKWON-DO WTF II**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum Taekwon-Do WTF II adalah lanjutan kepada Taekwon-Do WTF I. Melalui kursus ini, penekanan diberikan kepada aspek teknikal dan taktikal yang berkaitan bagi setiap peringkat tali pinggang. Antara aspek yang akan disampaikan termasuk Teori of Power, foot works, free sparring dan sebagainya.

Course Outcomes:

1. Keupayaan untuk menunjukan kemahiran taekwon-do secara berdisiplin dan bertanggungjawab.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan program dan aktiviti taekwon-do bersama komuniti.

SMZ17701 SILAT OLAHRAGA I**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum Silat Olahraga ini memperkenalkan dan mendedahkan para pelajar berkenaan dengan seni silat daripada segi teori dan juga praktikal. Para pelajar akan mempelajari latar belakang, konsep dan kelengkapan serta peraturan-peraturan dalam silat olahraga dan seni silat. Aspek disiplin diri turut diberi penekanan. Selain itu, para pelajar akan mempelajari asas-asas gerakan seni silat, gabungan gerakan dan teknik asas dalam pencak silat.

Course Outcomes:

1. Keupayaan untuk menunjukan kemahiran kepimpinan, disiplin dan peraturan silat dalam kumpulan kecil.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kaedah dan langkah yang tepat dalam aktiviti silat.

SMZ27701 SILAT OLAHRAGA II**No of Credits: 1****Course Synopsis:**

Kursus kokurikulum Silat Olahraga ini adalah lanjutan daripada Silat Olahraga I. Dalam kursus ini, para pelajar akan mendalami Silat Olahraga dari segi teori, teknikal dan juga praktikal. Para pelajar akan diajar tentang seni ikatan tengkolok, seni ikatan sampan serta gerakan asas permainan silat olahraga dan seni silat. Pelajar juga akan diberi penekanan dalam aspek disiplin diri. Selain itu para pelajar akan mempelajari bengkel asas kejurulatihan silat olahraga dan seni silat.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran seni silat olahraga secara berdisiplin, bertanggungjawab dan beretika.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan program dan aktiviti silat olahraga sebagai aktiviti sukan dalam komuniti.

SMZ17501 FUTSAL**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan futsal dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan sukan futsal. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran bermain sukan futsal.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan peraturan dalam permainan futsal.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran dan teknik yang bersesuaian dalam perlawanan futsal.

SMZ19301 TAJWID**No. of Credits: 1****Course Synopsis:**

Kursus ini merangkumi pengenalan kepada asas-asas ilmu tajwid, pengetahuan asas hukum-hukum bacaan Al-Quran yang tepat, dan seterusnya talaqqi dan latihan bacaan Al-Quran secara mujaawwad. Pelajar mengetahui asas-asas hukum tajwid, mengadakan perbincangan dalam sesi muzakarah, menjalani latihan bacaan Al-Quran, mengaplikasikan ilmu tajwid dan seterusnya menjalani talaqqi musyafahah dan ujian untuk penilaian.

Course Outcomes:

1. Keupayaan untuk membezakan hukum-hukum tajwid dalam bacaan al-quran.
2. Keupayaan untuk membudayakan aktiviti bacaan al-Quran dalam kumpulan kecil.
3. Keupayaan untuk mengorganisasikan aktiviti bacaan al-quran dalam komuniti

SMZ19601 STUDENT IN-FREE ENTERPRISE**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum SIFE ini adalah bagi membudayakan aktiviti keusahawanan dan memupuk semangat kemasyarakatan dalam kalangan pelajar. Di samping itu, kursus ini juga mempunyai tiga elemen terpenting yang diambil untuk memberi sumbangan kepada masyarakat, iaitu keusahawanan, pembelajaran dan persekitaran. Ia dilaksanakan agar para pelajar dapat membantu masyarakat untuk meningkatkan taraf hidup bagi mereka yang memerlukan.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam aktiviti keusahawanan.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan perniagaan yang bersesuaian dalam komuniti.

SMZ19801 MANUSIA DAN KELESTARIAN ALAM**No. of Credits: 1****Course Synopsis:**

Kursus ini bertujuan memupuk semangat kelestarian dalam kalangan pelajar. Ia juga membantu proses membentuk jaringan komunikasi dan membina intelek bagi menggiatkan diri menyumbang kepada kepentingan kelestarian alam. Pelajar dibimbing secara teori berkenaan isu-isu semasa kelestarian alam dan perkara-perkara seharian yang boleh dilakukan untuk mengurangkan kesan alam sekitar yang tidak diingini. Kemudian, mereka dibimbing kaedah merancang, melaksana, mengurus dan memantau projek. Seterusnya mereka mempraktikkan, secara berpasukan, apa yang telah dipelajari melalui perancangan, pelaksanaan, dan pemantauan sekurang-kurangnya satu projek yang mengandungi unsur kelestarian alam. Projek kelestarian yang dijalankan di dalam kampus untuk mencapai hasrat Kampus Lestari UniMAP diberi keutamaan, namun pelaksanaan projek di luar kampus dan melibatkan masyarakat setempat juga digalakkan.

Course Outcomes:

1. Keupayaan untuk membudayakan konsep dan kaedah pelestarian alam dalam aktiviti berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan
3. Keupayaan untuk mengorganisasikan aktiviti kitar semula dalam komuniti.

SMZ10101 GOLF**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan golf dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan golf. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran bermain golf.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam sukan golf secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran dan teknik asas sukan golf dalam komuniti.

SMZ18901 SOFBOL**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan sofbol dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan sukan sofbol. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran bermain sofbol. Selain itu, kursus ini dapat menarik minat pelajar untuk mewakili Universiti dalam sukan Sofbol untuk kejohanan MASUM, SUKIPTS dan kejohanan-kejohanan lain.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam sukan sofbol secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran dan teknik asas sukan sofbol dalam komuniti.

SMZ10301 WOODBALL**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan woodball dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan woodball. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran bermain woodball.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam sukan woodball secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan program berkaitan sukan woodball dengan komuniti.

SMZ10401 BOLA SEPAK**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan bola sepak dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan bola sepak. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran bermain bola sepak.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam sukan bola sepak secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan program berkaitan sukan bola sepak dengan komuniti.

SMZ10501 BOLA JARING**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan bola jaring dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan bola jaring. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran bermain bola jaring.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika sukan bola jaring dalam kumpulan
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasi program berkaitan sukan bola jaring bersama komuniti.

SMZ10601 TENIS**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan tenis dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan tenis. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran bermain tenis.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam sukan tenis secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran dan teknik asas sukan tenis dalam komuniti.

SMZ10801 ANGKAT BERAT**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan angkat berat dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan angkat berat. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali (praktikal) dari segi kemahiran sukan angkat berat.

Course Outcomes:

1. Keupayaan untuk mengamalkan kemahiran kepimpinan, disiplin dan etika dalam sukan angkat berat secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran dan teknik asas sukan angkat berat dalam komuniti.

SMZ10901 BOLA TAMPAR**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan bola tampar dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan sukan bola tampar. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran bermain sukan bola tampar.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam sukan bola tampar secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan program berkaitan sukan bola tampar dengan komuniti

SMZ13201 PENERBITAN VIDEO**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu penerbitan video dari segi kemahiran teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan penerbitan video. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali (practical) dari segi kemahiran bermain penerbitan video.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika pembikinan video secara berkumpulan.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk menghasilkan video berkualiti dan dikomersialkan dalam komuniti.

SMZ15501 SENI PERGERAKAN KREATIF**No. of Credits: 1****Course Synopsis:**

Kursus kokurikulum Seni Pergerakan Kreatif memberi pendidikan asas seni tari kepada para pelajar serta meningkatkan ilmu pengetahuan tentang nilai-nilai kesenian bangsa sebagai teras pembentukan masyarakat berbudaya.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam persembahan seni tari secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan persembahan seni tari dalam komuniti.

SMZ15601 DRAMA, PEMENTASAN & SENI LAKON**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu drama, pementasan dan seni lakon dari segi teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang terminologi, pengurusan diri dan lain-lain yang berkaitan dengan drama, pementasan dan seni lakon. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran drama, pementasan dan seni lakon.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam persembahan drama/teater dalam kumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan persembahan drama/teater dalam komuniti.

SMZ18101 BOLING PADANG**No. of Credits: 1****Course Synopsis:**

Kursus Ko-kurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan boling padang dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan boling padang. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali (praktikal) dari segi kemahiran bermain boling padang.

Course Outcomes:

1. Keupayaan untuk mengamalkan kemahiran kepimpinan, disiplin dan etika dalam sukan boling padang secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran dan teknik asas sukan boling padang dalam komuniti.

SMZ18201 PATANQUE**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan petanque dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan sukan petanque. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran bermain sukan petanque.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam sukan petanque secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran dan teknik asas petanque dalam komuniti.

SMZ17901 OLAHRAGA**No. of Credits: 1****Course Synopsis:**

Kursus Ko-Kurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu Sukan Olahraga yang merupakan asas kepada semua jenis sukan. Dalam Sukan Olahraga terdapat pelbagai jenis acara seperti berlari, melompat, merejam dan melontar. Kursus ini merangkumi perancangan, pelaksanaan dan penilaian hasil kerja, kepimpinan dan kemahiran. Di samping itu juga pelajar-pelajar dapat mempelajari pengurusan dalam menganjurkan sesuatu Sukan Olahraga.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan dan disiplin dalam sukan olahraga secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan program berkaitan sukan olahraga bersama komuniti.

SMZ18401 BADMINTON**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan badminton dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan sukan badminton. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran bermain sukan badminton.

Course Outcomes:

1. Keupayaan untuk mempamerkan kemahiran kepimpinan dan disiplin dalam sukan badminton secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan program berkaitan sukan badminton dengan komuniti.

SMZ18601 SEPAK TAKRAW**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan sepak takraw dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan sukan sepak takraw. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran bermain sukan sepak takraw.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan dan disiplin dalam sukan sepak takraw secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan program berkaitan sukan sepak takraw bersama komuniti.

SMZ18701 RAGBI**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan ragbi dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan sukan ragbi. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran bermain sukan ragbi.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan pertauraan dalam permainan ragbi.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kaedah dan teknik yang bersesuaian dalam perlawanan ragbi.

SMZ18801 MEMANAH**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan memanah dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan sukan memanah. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran bermain sukan memanah.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan dan disiplin aspek keselamatan dalam sukan memanah secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran dan teknik asas sukan memanah dalam komuniti.

SMZ18901 SOFTBOL**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu sukan softball dari segi kemahiran, teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan sukan softball. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali dari segi kemahiran bermain softball. Selain itu, kursus ini dapat menarik minat pelajar untuk mewakili Universiti dalam sukan Softbol untuk kejohanan MASUM, SUKIPTS dan kejohanan-kejohanan lain.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan etika dalam sukan softball secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran dan teknik asas sukan softball dalam komuniti.

SMZ19001 SUKAN BERBASIKAL**No. of Credits: 1****Course Synopsis:**

Kursus Kokurikulum ini bertujuan untuk memberikan kemahiran dan ilmu berbasikal kepada para pelajar dari segi teori dan praktikal. Kursus ini merangkumi sejarah sukan berbasikal di Malaysia dan antarabangsa, pengenalan tentang jenis-jenis basikal dan kegunaannya, kemahiran dan teknik berbasikal yang betul, penjagaan basikal dan teknik-teknik asas berbasikal sebagai sukan atau pertandingan. Kursus ini juga memberi pendedahan tentang sukan berbasikal dan aspek-aspek keselamatan yang perlu diutamakan ketika berbasikal.

Course Outcomes:

1. Keupayaan untuk menunjukkan teknik kayuhan asas berbasikal dan penyelenggaraan basikal.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan aktiviti dan program berbasikal dengan komuniti.

SMZ19101 KHIDMAT MASYARAKAT**No. of Credits: 1****Course Synopsis:**

Kursus kokurikulum Khidmat Masyarakat adalah bagi memupuk semangat kemasyarakatan dan kesukarelawanan di kalangan para pelajar. Di samping itu, kursus ini juga membantu proses membentuk jaringan komunikasi dan membina intelek bagi menggiatkan diri dalam program khidmat masyarakat.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan, disiplin dan semangat kerjasama dalam aktiviti secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan program dan aktiviti bersama komuniti.

SMZ19201 DAYA USAHA & INOVASI**No. of Credits: 1****Course Synopsis:**

Kursus ini bertujuan melatih pelajar untuk menguasai kemahiran asas seni reka dan kejuruteraan. Di samping itu juga, ianya memberi pendedahan kepada pelajar untuk mengetahui cara-cara menggunakan bahan-bahan kitar semula, mekanisma-mekanisma yang boleh digunakan dan seterusnya teknik-teknik merekabentuk. Kursus ini dapat memberi peluang kepada pelajar untuk meluahkan idea-idea yang bernas serta mengaplikasikannya dalam bentuk produk, kerjasama yang tinggi, bertanggungjawab dan berkemampuan membentuk sahsiah pelajar yang cemerlang.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan dan disiplin dalam aktiviti secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mereka bentuk produk inovasi yang boleh dikomersialkan dalam komuniti.

SMZ19501 RADIO KAMPUS**No. of Credits: 1****Course Synopsis:**

Radio merupakan salah satu medium penyebar maklumat yang efektif dan paling meluas liputannya berbanding televisyen. Kursus Kokurikulum Radio Kampus akan mendedahkan kepada para pelajar berkenaan etika penyiaran, cara mengurus penyuntingan, membuat rakaman, siaran langsung dan dan atur cara program radio. Kursus ini membantu para pelajar untuk berkomunikasi dengan lebih baik dan beretika semasa menyampaikan maklumat kepada masyarakat.

Course Outcomes:

1. Keupayaan untuk menunjukkan kemahiran kepimpinan dan disiplin pengurusan radio secara berkumpulan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasikan pengurusan radio dalam komuniti.

SMZ19901 TULISAN JAWI**No. of Credits: 1****Course Synopsis:**

Kursus ini bertujuan untuk memberikan kemahiran membaca dan menulis Jawi mengikut sistem baharu. Pelajar juga akan mengetahui tentang sejarah perkembangan dan penyebaran tulisan jawi. Penekanan juga diberikan terhadap kemahiran membaca dan menulis jawi dan elemen-elemen penulisan Jawi seperti huruf Jawi dan padanannya dengan huruf rumi, bentuk tulisan Jawi, jenis ejaan Jawi, kaedah mengeja Jawi dan tulisan khat. Penawaran kursus juga merupakan usaha untuk mengekalkan elemen warisan dan kegemilangan sistem tulisan jawi.

Course Outcomes:

1. Keupayaan untuk menggunakan sistem ejaan yang baharu mengamalkan nilai, disiplin dan etika dalam pembelajaran.
2. Keupayaan untuk mempraktikkan komunikasi berkesan dalam aktiviti kumpulan.
3. Keupayaan untuk mempamerkan kemahiran penguasaan kaedah dan teknik membaca dan menulis tulisan jawi dalam pelbagai konteks.

SMZ30101 PROGRAM INBOUND-OUTBOUND MOBILITI**No. of Credits: 1****Course Synopsis:**

Program Inbound-Outbound Mobiliti merupakan salah satu program melibatkan pergerakan pelajar UniMAP ke luar yang membolehkan pembentukan kemahiran insaniah, kebolehpasaran, personaliti unggul, kewibawaan, kemantapan ilmu dan keupayaan mencari ilmu dalam kalangan pelajar. Program inbound/outbound berasaskan kepada Jumlah Jam Pembelajaran Pelajar (JJPP) yang mengambil kira kerja-kerja sebelum, semasa dan selepas program mobiliti. Pemberian satu (1) kredit adalah tertakluk kepada pelaksanaan 40 jam dan ke atas bagi program mobiliti ber kredit. Program Inbound-Outbound Mobiliti ini, mempunyai ciri-ciri seperti berikut;

- Berinteraksi dengan masyarakat
- Aktiviti pembangunan masyarakat
- Penglibatan pelajar dalam aktiviti pemindahan ilmu kepada komuniti
- Penglibatan dalam pembelajaran secara tidak formal bagi meningkatkan kemahiran insaniah
- Penglibatan pelajar dalam aktiviti pembelajaran, budaya masyarakat atau

sejarah lokasi yang dilawati.

Course Outcomes:

1. Mengaplikasikan ilmu yang dipelajari dalam aktiviti pemindahan ilmu kepada komuniti.
2. Keupayaan untuk berkomunikasi, memimpin dan bekerja dengan berkesan dalam satu pasukan.

SMZ30201 PROGRAM INBOUND-OUTBOUND MOBILITI II**No. of Credits: 2****Course Synopsis:**

Program Inbound-Outbound Mobiliti merupakan salah satu program melibatkan pergerakan pelajar UniMAP ke luar yang membolehkan pembentukan kemahiran insaniah, kebolehpasaran, personaliti unggul, kewibawaan, kemantapan ilmu dan keupayaan mencari ilmu dalam kalangan pelajar. Program inbound/outbound berasaskan kepada Jumlah Jam Pembelajaran Pelajar (JJPP) yang mengambil kira kerja-kerja sebelum, semasa dan selepas program mobiliti. Pemberian dua (2) kredit adalah tertakluk kepada pelaksanaan 80 jam dan ke atas bagi program mobiliti ber kredit. Program Inbound-Outbound Mobiliti ini, mempunyai ciri-ciri seperti berikut;

- Berinteraksi dengan masyarakat
- Aktiviti pembangunan masyarakat
- Penglibatan pelajar dalam aktiviti pemindahan ilmu kepada komuniti
- Penglibatan dalam pembelajaran secara tidak formal bagi meningkatkan kemahiran insaniah
- Penglibatan pelajar dalam aktiviti pembelajaran, budaya masyarakat atau sejarah lokasi yang dilawati.

Course Outcomes:

1. Mengaplikasikan ilmu yang dipelajari dalam aktiviti pemindahan ilmu kepada komuniti.
2. Keupayaan untuk berkomunikasi, memimpin dan bekerja dengan berkesan dalam satu pasukan.

SMZ30201 PROGRAM INBOUND-OUTBOUND MOBILITI III**No. of Credits: 3****Course Synopsis:**

Program Inbound-Outbound Mobiliti merupakan salah satu program melibatkan pergerakan pelajar UniMAP ke luar yang membolehkan pembentukan kemahiran insaniah, kebolehpasaran, personaliti unggul, kewibawaan, kemantapan ilmu dan keupayaan mencari ilmu dalam kalangan pelajar. Program inbound/outbound berasaskan kepada Jumlah Jam Pembelajaran Pelajar (JJP) yang mengambil kira kerja-kerja sebelum, semasa dan selepas program mobiliti. Pemberian tiga (3) kredit adalah tertakluk kepada perlaksanaan 120 jam dan ke atas bagi program mobiliti ber kredit. Program Inbound-Outbound Mobiliti ini, mempunyai ciri-ciri seperti berikut;

- Berinteraksi dengan masyarakat
- Aktiviti pembangunan masyarakat
- Penglibatan pelajar dalam aktiviti pemindahan ilmu kepada komuniti
- Penglibatan dalam pembelajaran secara tidak formal bagi meningkatkan kemahiran insaniah
- Penglibatan pelajar dalam aktiviti pembelajaran, budaya masyarakat atau sejarah lokasi yang dilawati.

Course Outcomes:

1. Mengaplikasikan ilmu yang dipelajari dalam aktiviti pemindahan ilmu kepada komuniti.
2. Keupayaan untuk berkomunikasi, memimpin dan bekerja dengan berkesan dalam satu pasukan.

ZMZ14401 KOR SISWA BOMBA 1**No. of Credits: 1****Course Synopsis:**

Kursus Kor Siswa Bomba 1 direka bentuk untuk memberikan pendedahan asas kepada pelajar berkenaan ilmu dan kemahiran kebommbaan yang merangkumi aspek teori dan praktikal. Kursus ini membolehkan pelajar mengaplikasikan pengetahuan asas kebommbaan melalui pelbagai latihan seperti kawad kebommbaan, penggunaan peralatan kecemasan, dan simulasi situasi kebakaran. Pelajar juga akan didedahkan kepada kemahiran komunikasi yang berkesan dalam konteks kerja berpasukan dan pengurusan krisis, yang penting untuk meningkatkan kecekapan dalam tugas lapangan. Selain itu, kursus ini memberi peluang kepada pelajar untuk mengaplikasikan peranan dan

tanggungjawab dalam aktiviti berkumpulan yang melibatkan program kebommbaan dan khidmat masyarakat, selaras dengan pendekatan latihan berstruktur yang menekankan aspek kepimpinan, kerjasama, dan integriti. Secara keseluruhan, kursus ini bertujuan untuk melahirkan individu yang berdisiplin, cekap, dan berdaya saing dalam aspek kebommbaan serta peka terhadap keperluan komuniti.

Course Outcomes:

1. Kebolehan untuk mengaplikasikan pengetahuan asas kebommbaan dalam aktiviti kebommbaan.
2. Kebolehan untuk menganalisis keberkesanan kemahiran komunikasi dalam aktiviti kebommbaan.
3. ebolehan untuk mengaplikasikan peranan dan tanggungjawab dalam melaksanakan aktiviti
4. berkumpulan berkaitan program kebommbaan dan khidmat masyarakat secara berstruktur.

ZMZ14401 TAHFIZ 1**No. of Credits: 1****Course Synopsis:**

Kursus ini bertujuan untuk membentuk sahsiah dan memperkasa kemahiran insaniah pelajar melalui pendekatan berteraskan al-Quran. Pelajar akan didedahkan kepada pelbagai aspek Kemahiran seperti penjagaan dan penulisan semula al-Quran secara bertajwid dan berdisiplin, kemahiran pengurusan masa, kerjasama berpasukan, dan pembelajaran sepanjang hayat. Kursus ini juga menekankan pembentukan jati diri Muslim yang berintegriti dan berdisiplin tinggi melalui aktiviti kokurikulum berteraskan nilai-nilai murni Islam. Selain itu, kursus ini menyediakan platform kerjasama strategik antara universiti dalam dan luar negara dalam usaha memupuk semangat ukhuwwah dan jaringan global dalam kalangan pelajar tahfiz.

Course Outcomes:

1. Keupayaan untuk mengamalkan pengurusan masa secara berkesan dan kemahiran hukum tajwid dengan sebutan yang fasih dalam bacaan Al-Quran.
2. Keupayaan untuk mempersembahkan semula bacaan Al-Quran dengan sebutan yang tepat melalui aktiviti hafazan dan tajwid.

ZMZ13401 BITARA SUKAN 1**No. of Credits: 1****Course Synopsis:**

Kursus kokurikulum ini mendedahkan pelajar kepada aspek pembangunan sendiri dan prinsip asas latihan sukan. Dalam aspek pembangunan sendiri, pelajar akan didedahkan dengan elemen pengurusan masa dan disiplin harian sebagai seorang atlet. Pelajar akan mengikuti latihan secara sistematik dengan menyertai pasukan universiti/kelab sukan yang diiktiraf oleh Pusat Sukan atau setaraf dengannya.

Course Outcomes:

1. Keupayaan untuk menunjukkan disiplin diri melalui pematuhan peraturan, kehadiran konsisten, dan penglibatan aktif dalam aktiviti sukan yang berkaitan.
2. Keupayaan untuk memberi tindak balas secara aktif dengan menunjukkan minat, kesungguhan, dan kerjasama dalam mengaplikasikan kemahiran serta teknik asas dalam sukan yang berkaitan.

ZMZ13801 BITARA KEPIMPINAN 1**No. of Credits: 1****Course Synopsis:**

Kursus kokurikulum ini mendedahkan pelajar mengenai kemahiran asas dalam pengurusan kepimpinan sendiri dan berkumpul yang merangkumi aspek latihan kepimpinan, Kemahiran komunikasi, perancangan aktiviti, penulisan laporan, dan pengurusan kewangan. Pelajar juga akan diberi pendedahan untuk mempelajari kaedah pengurusan pasukan secara sistematik dan efektif untuk menjadi seorang pemimpin dan bekerjasama dengan ahli pasukan dengan lebih berkesan.

Course Outcomes:

1. Keupayaan untuk mengamalkan prinsip asas kepimpinan dengan sikap positif, bertanggungjawab, dan berintegriti dalam pengurusan aktiviti kepimpinan untuk mencapai matlamat bersama.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi yang berkesan dalam latihan kepimpinan dan perancangan aktiviti untuk mencapai matlamat bersama dengan jelas dan tepat.

ZMZ19601 SPEECH & DEBATE**No. of Credits: 1****Course Synopsis:**

This course introduces students to the fundamentals of speech and debate. Students will learn speech structure, language techniques, delivery skills, and debate formats. Through practical exercises, simulations, and in-class debates, students will develop their ability to respond appropriately to differing views and appreciate ethical, respectful communication. The course emphasizes affective elements such as openness, responsiveness, and valuing diverse perspectives.

Course Outcomes:

1. The ability to demonstrate leadership and discipline through mastery and application of speech and debate techniques individually with confidence, responsibility, and ethical behaviour.
2. The ability to apply the basics and rules of speech and debate with polite, open, and ethical communication consistently in all forms of interaction.

ACADEMIC GUIDEBOOK

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