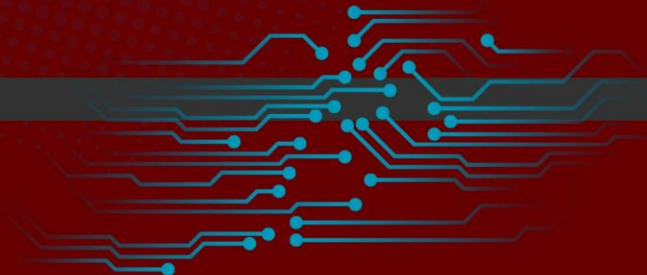
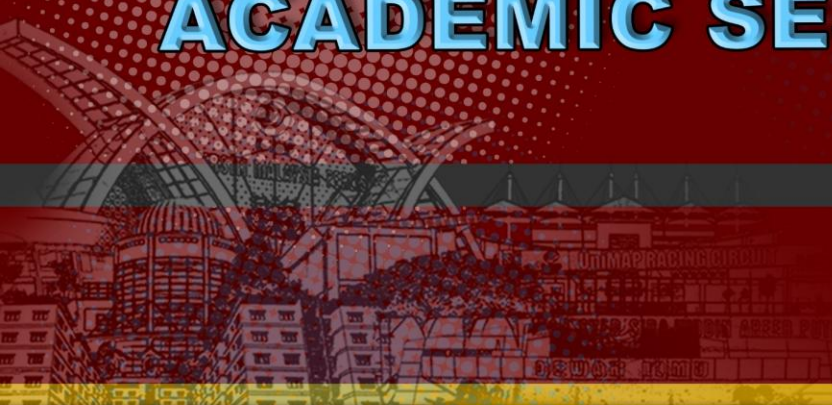




UNIVERSITI
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ACADEMIC GUIDEBOOK DIPLOMA PROGRAMME ACADEMIC SESSION 2026/2027



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Mrs. Mazmin Mat Akhir

And/ dan

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all Deans and Directors of Centres in Universiti Malaysia Perlis

And/ serta

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



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PENGENALAN

Buku Panduan Program Diploma 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 Diploma 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.

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 Diploma / *List of Diploma Programmes:*

1. Diploma Kejuruteraan Elektrik / *Diploma in Electrical Engineering*
2. Diploma Kejuruteraan Mekatronik / *Diploma in Mechatronic Engineering*
3. Diploma Kejuruteraan Komputer / *Diploma in Computer Engineering*
4. Diploma Kejuruteraan Pembuatan / *Diploma in Manufacturing Engineering*
5. Diploma Kejuruteraan Alam Sekitar / *Diploma in Environmental Engineering*
6. Diploma Kejuruteraan Elektronik / *Diploma in Electronic Engineering*
7. Diploma Kejuruteraan Bahan / *Diploma in Materials Engineering*
8. Diploma Teknologi Kejuruteraan Kimia / *Diploma in Chemical Engineering Technology*
9. Diploma Teknologi Kejuruteraan Polimer / *Diploma in Polymer Engineering Technology*
10. Diploma Teknologi Kejuruteraan Mekanikal / *Diploma in Mechanical Engineering Technology*



VISI / VISION:

Universiti Teknikal yang berdaya saing di persada antarabangsa.
An internationally competitive technical university.

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.

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





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

(CANSOLOR / CHANCELLOR)



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AKASHAH KHALIL
S.P.M.P., PhD.**

(PRO CANSELOR / PRO CHANCELLOR)



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(PRO CANSELOR / PRO CHANCELLOR)



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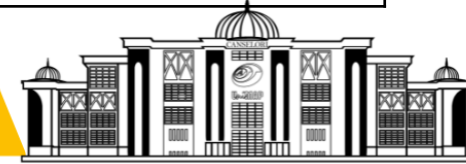
**KALENDAR AKADEMIK DIPLOMA / DIPLOMA ACADEMIC CALENDAR
SIDANG AKADEMIK / ACADEMIC SESSION 2026/2027**

| AKTIVITI / ACTIVITIES | SEMESTER PERTAMA / FIRST SEMESTER 22 Jun – 25 Oktober 2026 (18 minggu / weeks) | | |
|--|---|-------------------|---|
| | JANGKA MASA / PERIOD OF TIME | TEMPOH / DURATION | CATATAN / REMARKS |
| Pendaftaran Pelajar Baharu & Minggu Suai Kenal / <i>New Intake Registration & Orientation Week</i> | 15 – 21 Jun 2026 | 1 minggu / week | - |
| Pembelajaran / <i>Learning</i> | 22 Jun – 9 Ogos 2026 | 7 minggu / weeks | - |
| Cuti Pertengahan Semester / <i>Mid Semester Break</i> | 10 – 16 Ogos 2026 | 1 minggu / week | - |
| Pembelajaran / <i>Learning</i> | 17 Ogos – 4 Oktober 2026 | 7 minggu / weeks | Maulidur Rasul/ Prophet Muhammad's Birthday 25.08.2026 [Selasa / Tuesday] Hari Kebangsaan/ National Day 31.08.2026 [Isnin / Monday] Hari Malaysia/ Malaysia Day 16.09.2026 [Rabu / Wednesday] |
| Minggu Ulangkaji / <i>Revision Week</i> | 5 – 11 Oktober 2026 | 1 minggu / week | - |
| Peperiksaan / <i>Examination</i> | 12 – 25 Oktober 2026 | 2 minggu / weeks | - |
| Cuti Semester / <i>Semester Break</i> | 26 Oktober – 15 November 2026 | 3 minggu / weeks | Hari Deepavali / Happy Deepavali 08.11.2026 [Ahad / Sunday] |



**KALENDAR AKADEMIK DIPLOMA / DIPLOMA ACADEMIC CALENDAR
SIDANG AKADEMIK / ACADEMIC SESSION 2026/2027**

| AKTIVITI / ACTIVITIES | SEMESTER KEDUA / SECOND SEMESTER 16 November 2026 – 28 Mac 2027 (19 minggu / weeks) | | |
|---|--|-------------------|---|
| | JANGKA MASA / DATE | TEMPOH / DURATION | CATATAN / NOTES |
| Pembelajaran / Learning | 16 November – 20 Disember 2026 | 5 minggu / weeks | - |
| Cuti Pertengahan Semester / Mid Semester Break | 21 – 27 Disember 2026 | 1 minggu / week | Hari Krismas / Christmas 25.12.2026 [Jumaat / Friday] |
| Pembelajaran / Learning | 28 Disember 2026 – 28 Februari 2027 | 9 minggu / weeks | Israk Mikraj 16.01.2027 [Rabu / Wednesday] Tahun Baru Cina / Chinese New Year 06 – 07.02.2027 [Sabtu - Ahad/ Saturday - Sunday] Nuzul Al-Quran 24.02.2027 [Rabu / Wednesday] |
| Minggu Ulangkaji / Revision Week | 1 – 14 Mac 2027 | 1 minggu / week | Hari Raya Aidilfitri / Eid-ul Fitr 10 - 11.03.2027 [Rabu – Khamis / Wednesday– Thursday] |
| Peperiksaan / Examination | 15 – 28 Mac 2027 | 2 minggu / weeks | - |
| Cuti Akhir Sidang Akademik / End of Academic Year Break | 29 Mac – 6 Jun 2027 | 10 minggu / weeks | Hari Pekerja / Labour Day 1.05.2027 [Sabtu / Saturday] Hari Keputeraan Raja Perlis / Birthday of DYMM Perlis 17.05.2027 [Isnin / Monday] Hari Raya Haji / Eid-ul Adha 17 - 18.05.2027 [Isnin - Selasa/ Monday - Tuesday] Hari Wesak / Wesak Day 20.05.2027 [Khamis / Thursday] |



SISTEM AKADEMIK

Tahun Akademik Universiti terdiri daripada 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 comprises two (2) long semesters and one (1) short semester. The offering of a short semester is subject to programme needs and Senate approval. Each long semester consist of 18 weeks, including weeks for lectures, revision, the mid-semester break, and examinations. Each short semester shall consist of nine (9) weeks, including weeks for learning, revision, and examinations.

To be eligible for graduation, students are required to pass all courses, fulfil the total credit requirements of their respective programmes of study, and attain a minimum CGPA of 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 faculty on their programme courses during the orientation week.*



- 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.
- *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.*



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 kelulusan daripada Dekan Fakulti.
- Pelajar dengan status Percubaan tidak dibenarkan untuk mendaftar sendiri secara dalam talian. 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 approval from 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 or 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, TARIK DIRI KURSUS ATAU MENGULANG SEMULA KURSUS

1. Tambah Kursus

- Tempoh yang dibenarkan untuk penambahan kursus adalah sehingga minggu ke-2 kuliah sahaja.
- Penambahan kursus selepas minggu kedua hendaklah menggunakan borang yang ditetapkan dan perlu mendapatkan kelulusan Ketua Jabatan. Tempoh penambahan kursus lewat adalah sehingga minggu ketiga kuliah.
- Penambahan kursus selepas tempoh yang dibenarkan hendaklah menggunakan borang yang ditetapkan dan perlu mendapatkan kelulusan Ketua Jabatan beserta dikenakan denda sebanyak RM50.00.
- 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 kelulusan Dekan Fakulti boleh memohon untuk menarik diri daripada kursus yang telah didaftarkan pada semester yang berkenaan mulai minggu ke-8 hingga minggu ke-12 kuliah. Pelajar yang ingin menarik diri daripada kursus perlulah mengisi Borang HEA(B)-04 (Borang Permohonan Tarik Diri Kursus).

ADDING, DROPPING, WITHDRAWAL OR REPEATING A COURSE

1. Adding Courses

- *The period allowed for course addition is limited to the second (2nd) week of lectures only.*
- *Course addition after the second week must be done using the prescribed form and must obtain approval from the Head of Department. The late course addition period is allowed until the third week of lectures.*
- *Course addition after the permitted period must be done using the prescribed form and must obtain approval from the Head of Department with a penalty fee of RM50.00.*
- *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. Withdrawal From A Course

- *With the approval of the Dean, students may apply to withdraw from registered courses in the relevant semester between the 8th and 12th weeks of lectures. Such applications must be submitted using Form HEA(B)-04 (Course Withdrawal Application Form).*



- Pelajar perlu memastikan baki kredit didaftarkan selepas tarik diri tidak kurang daripada kredit minimum yang dibenarkan, kecuali dengan kelulusan Dekan.
- Status Tarik Diri akan dicatatkan dalam rekod pendaftaran kursus dan slip keputusan semester pelajar. Walau bagaimanapun, gred tidak akan diambil kira dalam pengiraan PNG dan PNGK.
- Permohonan tarik diri kursus selepas minggu kedua belas dibenarkan dengan kelulusan khas Dekan dan dikenakan bayaran denda RM50.00 bagi setiap permohonan.

4. Mengulang Semula Kursus

- Semua pelajar dibenarkan mengulang semula kursus yang gagal dalam semester lazim (panjang dan pendek) atau semester tambahan tertakluk kepada syarat kelayakan.
- Pelajar yang gagal dalam sesuatu kursus hendaklah mengulang semula kursus tersebut hingga lulus.
- Pelajar yang telah memenuhi kredit terkumpul untuk tujuan penganugerahan tetapi Purata Nilai Gred Kumulatif terakhir kurang daripada 2.00, maka pelajar dikehendaki mengulang mana-mana kursus yang mendapat C- dan D+ untuk memastikan Purata Nilai Gred Kumulatif mencapai sekurang-kurangnya 2.00.
- Pelajar yang mendapat gred C- dan D+ dalam sesuatu kursus dibenarkan untuk menambahbaik gred kursus tersebut pada semester lazim sahaja. Walau bagaimanapun, hanya pelajar tahun akhir dibenarkan menambahbaik gred C- dan D+ pada semester tambahan.
- Bagi tujuan pengiraan Purata Nilai Gred Kumulatif terkini, kredit kira dan nilai gred tertinggi kursus tersebut akan diambil kira menggantikan kredit kira serta nilai gred yang asal.

- *Students must ensure that the remaining registered credit hours after the withdrawal are not less than the minimum credits allowed, except with the approval of the Dean.*
- *The Withdrawal status will be recorded in the student's course registration record and semester result slip. However, the grade will not be included to contribute towards the GPA and CGPA.*
- *Applications for course withdrawal after the twelfth week are allowed only with the special approval of the Dean and are subject to a penalty fee of RM50.00 per application.*

4. Repeating Course

- *All students are allowed to repeat any failed courses during the regular semesters (long and short) or during the additional semester, subject to eligibility requirements.*
- *A student who fails a course must repeat that course until a pass is obtained.*
- *A student who has fulfilled the total accumulated credits required for graduation but whose final Cumulative Grade Point Average (CGPA) is less than 2.00, is required to repeat any courses with grades of C- and D+ in order to ensure that the CGPA reaches at least 2.00.*
- *Students who have obtained grades of C- and D+ in a course, are allowed to improve their grades for that course during the regular semester only. However, the final year students are permitted to improve grades of C- and D+ during the additional semester.*
- *For the purpose of calculating the latest Cumulative Grade Point Average (CGPA), the credit calculation and the higher-grade value of the repeated course will be taken into account to replace the old credit counts and grade value.*



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 Diploma ialah:

a) Perlembagaan dan Masyarakat Berintegriti (SDU13002) – (2 kredit)

Semua pelajar wajib mengambil dan lulus kursus ini. Kursus ini ditawarkan kepada pelajar tempatan dengan mengikut kepada struktur kursus dalam penawaran kurikulum program masing-masing.

b) Pengenalan Kepada Kecerdasan Buatan Dalam Masyarakat (SDU33602) – (2 kredit)

Semua pelajar wajib mengambil kursus ini. Kursus ini ditawarkan kepada pelajar tempatan dan antarabangsa dengan mengikut kepada struktur kursus dalam penawaran kurikulum program masing-masing.

c) Asas Keusahawanan (SDU22502) – (2 kredit)

Semua pelajar wajib mengambil dan lulus kursus ini. Kursus ini ditawarkan kepada pelajar tempatan dengan mengikut kepada struktur kursus dalam penawaran kurikulum program masing-masing.

d) Bahasa Melayu (SDB31002) - (2 kredit)

Kursus ini wajib diambil oleh pelajar yang memperoleh gred B+ dan ke bawah dalam subjek Bahasa Melayu, Sijil Pelajaran Malaysia (SPM) 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.

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 Diploma programmes are:

a) *The Constitution and Integrity Society (SDU13002) – (2 credits)*

All students are required to take and pass this course. This course is offered to local students by following the course structure in the curriculum of their respective programs.

b) *Introduction to Artificial Intelligence in Society (SDU33602) – (2 credits)*

All students are required to take and pass this course. This course is offered to local students by following the course structure in the curriculum of their respective programs.

c) *Basics of Entrepreneurship (SDU22502) – (2 credits)*

All students are required to take and pass this course. This course is offered to local students by following the course structure in the curriculum of their respective programs.

d) *Malay Language (SDB31002) - (2 credits)*

This course is compulsory for student who obtained a grade B+ and below in Bahasa Melayu subject for Sijil Pelajaran Malaysia (SPM) certificate including international students from countries where Malay Language is used as their national language or spoken language, e.g. students from Indonesia, Brunei and Singapore.



e) Bahasa Inggeris Komunikasi 1 (SDB11102) - (2 kredit)

Semua pelajar yang mendapat gred B+ dan ke bawah dalam subjek Bahasa Inggeris, Sijil Pelajaran Malaysia (SPM) wajib mengambil kursus Bahasa Inggeris Komunikasi 1 dan lulus kursus ini dengan minimum gred D+.

f) Bahasa Inggeris Komunikasi 2 (SDB11202) - (2 kredit)

Pelajar yang lulus SDB11102 Bahasa Inggeris Komunikasi 1 dan pelajar yang memperoleh gred A- dan ke atas dalam subjek Bahasa Inggeris, Sijil Pelajaran Malaysia (SPM) wajib mendaftar dan lulus kursus ini dengan minimum gred D+.

g) Bahasa Inggeris Komunikasi 3 (SDB11302) - (2 kredit)

Pelajar yang lulus SDB11202 Bahasa Inggeris Komunikasi 2 wajib mendaftar dan lulus kursus ini dengan minimum gred D+.

h) Ko-kurikulum (SDZXXXXX)- (2 kredit)

Semua pelajar diploma **DIWAJIBKAN** untuk mengambil **DUA (2)** kredit kursus kokurikulum Badan Beruniform yang ditawarkan secara berpakej. Pendaftaran **DUA (2)** kredit kursus ini perlu dilengkapkan pada semester pertama (1) dan semester kedua (2) tahun pertama pengajian. Bagi pelajar yang mengambil melebihi **DUA (2)** kredit seperti Pasukan Askar Wataniah, pelajar **DIWAJIBKAN** melengkapkan **EMPAT (4)** kredit tersebut bagi tujuan pemakaian pangkat. Manakala, bagi pelajar yang mendaftar program pensijilan Tahfiz TVET, pelajar tidak perlu mengambil kursus kokurikulum badan beruniform tetapi **WAJIB** mendaftar kursus tahfiz dan melengkapkan semua kredit yang ditetapkan. Pemilihan bagi kedua-dua kursus tersebut akan melalui proses saringan.

e) Communicative English 1 (SDB11102) - (2 credits)

Students who obtained a grade B+ and below in English language subject for Sijil Pelajaran Malaysia (SPM) certificate are required to take Communicative English 1 and pass this course with minimum grade D+.

f) Communicative English 2 (SDB11202) - (2 credits)

Students who passed SDB11102 Communicative English 1 and students who obtained a grade A- and above in English language subject for Sijil Pelajaran Malaysia (SPM) certificate are required to take and pass this course with minimum of grade D+.

g) Communicative English 3 (SDB11302) - (2 credits)

Students who passed SDB11202 Communicative English 2 are required to take and pass this course with minimum of grade D+.

h) Co-curriculum (SDZXXXXX)- (2 credits)

*All Diploma students are **COMPULSORY** to register for **TWO (2)** credits of a Co-Curriculum Uniform Bodies Course offered as a package. **TWO (2)** credits of the course must be completed during both the first and second semesters of the first year of study. Students who take a exceeding **TWO (2)** credits, such as the Territorial Army Unit, students are **COMPULSORY** to complete those **FOUR (4)** credits for rank conferment purposes. Meanwhile, students registered in the Tahfiz TVET Certification Programme are not required to take Co-Curriculum Uniform Bodies Course but **MUST** register for the Tahfiz course and complete all the required credits. Selection for both courses will go through a screening process.*



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 daripada 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:-
 - a) Menyemai sikap profesional di kalangan pelajar.
 - b) Menyedarkan pelajar tentang kepentingan dan kaitan yang kuat antara latihan industri, makmal/amali dan teori yang dipelajari.
 - c) 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 life 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:-*
 - a) *Instill professionalism in students*
 - b) *Raise students' awareness on the importance and connection between industrial and lab-intensive training, and engineering theories.*
 - c) *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.*

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

| Bidang Pengajian / <i>Field of Study</i> | Kredit / <i>Credits</i> | Tempoh Latihan Industri / <i>Industrial Training Period</i> |
|---|-------------------------|---|
| Diploma Kejuruteraan / <i>Diploma in Engineering</i> | 8 | 16 Minggu / <i>weeks</i> |
| Diploma Teknologi Kejuruteraan / <i>Diploma in Engineering Technology</i> | 8 | 16 Minggu / <i>weeks</i> |



PERTUKARAN PROGRAM PENGAJIAN

- Permohonan pertukaran program pengajian pelajar bermaksud permohonan seseorang pelajar untuk menukar program pengajian sama ada program pengajian yang ditawarkan dalam Fakulti yang sama atau pertukaran program sedia ada kepada program pengajian yang ditawarkan oleh Fakulti yang lain atas sebab-sebab tertentu yang diperakukan oleh Dekan Fakulti yang berkaitan.
- Pertukaran program pengajian adalah tidak digalakkan. Permohonan pertukaran program pengajian boleh dipertimbangkan tertakluk kepada syarat-syarat berikut:
 - a) hanya dibenarkan kepada pelajar tahun pertama sahaja;
 - b) memenuhi syarat khas kemasukan ke Program Pengajian baharu dan lain-lain syarat yang ditetapkan oleh Universiti dari semasa ke semasa;
 - c) terdapat kekosongan tempat bagi Program Pengajian baharu yang dipohon;
 - d) mendapat kelulusan penaja secara bertulis bagi pelajar yang mendapat penajaan;
 - e) pertukaran program hanya dibenarkan sekali sahaja sepanjang tempoh pengajian;
 - f) mendapat perakuan daripada Ketua Jabatan dan Dekan asal dan Fakulti baharu; dan
 - g) menjelaskan bayaran pemprosesan sebanyak RM150.00 bagi setiap permohonan pertukaran program.
- Bagi permohonan pertukaran program yang dihantar dalam tempoh tiga (3) minggu dari tarikh pendaftaran dan mendapat kelulusan, status pelajar dengan program baharu akan berkuat kuasa pada semester semasa. Manakala bagi permohonan selepas tempoh tersebut serta permohonan dari pelajar antarabangsa, status pertukaran program hanya akan berkuat kuasa pada semester berikutnya.
- Pelajar yang telah diluluskan pertukaran Program Pengajian tidak dibenarkan untuk menarik semula permohonan kecuali dengan kebenaran Timbalan Naib Canselor (Akademik dan Antarabangsa).

CHANGE OF PROGRAMME STUDY

- *Student application for a change of programme of study shall mean an application to transfer to another programme, whether within the same Faculty or to a programme offered by another Faculty, for valid reasons duly endorsed by the Faculty Dean.*
- *Consideration for an application to change the Study Programme is subject to the following conditions:*
 - a) *only permitted for first-year students;*
 - b) *fulfills the special entry requirements for the new Study Programme and other conditions determined by the University from time to time;*
 - c) *there is a vacancy in the new Study Programme applied for;*
 - d) *obtains written approval from the sponsor for sponsored students;*
 - e) *the change of programme is only permitted once throughout the duration of study;*
 - f) *obtains endorsement from the original Head of Department and Dean, and the new Faculty; and*
 - g) *settles a processing fee of RM150.00 for each programme change application.*
- *For a programme change application submitted within three (3) weeks from the date of registration and subsequently approved, the student's status with the new programme shall come into effect in the current semester. However, for applications submitted after that period, as well as applications from international students, the programme change status shall only come into effect in the following semester.*
- *A student whose change of Study Programme has been approved is not allowed to withdraw the application except with the permission of the Deputy ViceChancellor (Academic and International).*



PENANGGUHAN PENGAJIAN

- Penangguhan pengajian adalah kebenaran kepada pelajar untuk tidak mengikuti pengajian pada sesuatu semester atas alasan-alasan tertentu yang dibenarkan Universiti.
- Pelajar boleh memohon penangguhan pengajian atas sebab-sebab berikut:
 - a) masalah peribadi yang memerlukan perhatian segera;
 - b) masalah kesihatan yang disahkan oleh hospital yang diiktiraf;
 - c) mengikuti program mobiliti;
 - d) mengikuti program “Gap Year”; atau
 - e) apa-apa alasan lain yang dirasakan sesuai.
- Pelajar hanya dibenarkan menangguhkan pengajian bermula pada semester kedua kecuali atas sebab kesihatan atau kes khas dengan kelulusan Timbalan Naib Canselor (Akademik dan Antarabangsa).
- Permohonan penangguhan hendaklah menggunakan borang yang ditetapkan dan dikemukakan sebelum minggu ketujuh (semester panjang) atau minggu keempat (semester pendek) kecuali atas sebab kesihatan.
- Permohonan hendaklah mendapat perakuan daripada Dekan dan kelulusan Timbalan Naib Canselor (Akademik dan Antarabangsa).
- Tempoh penangguhan pengajian dibenarkan tidak melebihi satu (1) tahun pengajian di sepanjang tempoh pengajian kecuali dengan kelulusan Timbalan Naib Canselor (Akademik dan Antarabangsa).
- Bagi kes kesihatan yang berlanjutan, Senat berhak untuk menentukan sama ada pelajar dibenarkan meneruskan pengajian atau diberhentikan berdasarkan perakuan Pegawai Kesihatan Universiti.

DEFERMENT OF STUDIES

- *Postponement of studies is an authorization for students to postpone their studies for a semester for specific reasons permitted by the University.*
- *A student may apply for deferment of study for the following reasons:*
 - a) personal problems that require immediate attention;*
 - b) health issues certified by a recognized hospital;*
 - c) participation in a mobility program;*
 - d) participation in a “Gap Year” program; or*
 - e) any other reasons deemed appropriate.*
- *Students are only allowed to defer their studies starting from the second semester, except for health reasons or special cases approved by the Deputy Vice-Chancellor (Academic and International).*
- *Application for deferment must be made using the provided form and submitted before the seventh week (long semester) or the fourth week (short semester), except for health reasons.*
- *Application must be endorsed by the Dean and approved by the Deputy Vice-Chancellor (Academic and International).*
- *Period of study deferment allowed shall not exceed one (1) academic year throughout the duration of study, except with the approval of the Deputy Vice-Chancellor (Academic and International).*
- *In cases of prolonged illness, the Senate reserves the right to decide whether the student may continue their studies or be terminated, based on the recommendation of the University Health Officer.*



- Tempoh penangguhan yang mendapat kelulusan tidak diambil kira dalam penentuan tempoh pengajian pelajar
- Pelajar tajaan perlu menyertakan kelulusan bertulis daripada penaja masing-masing semasa membuat permohonan penangguhan pengajian.
- Fakulti hendaklah memberikan peringatan secara bertulis kepada pelajar sekiranya didapati tidak mendaftar pada sesuatu semester tanpa memberi sebarang permohonan penangguhan pengajian. Pelajar yang tidak memberi sebarang maklum balas dalam sesuatu tempoh yang ditetapkan akan digantung pengajian.

PENGGANTUNGAN PENGAJIAN

- Pelajar boleh digantung pengajian atas sebab-sebab berikut:
 - a) tindakan tatatertib tertakluk kepada keputusan Jawatankuasa Tatatertib Pelajar;
 - b) tidak mendaftar atau menghadiri sebarang kursus pada sesuatu semester;
 - c) pelajar yang gagal menyelesaikan hutang tertunggak tanpa mendapat sebarang kelulusan Universiti; atau
 - d) pelajar yang dituduh atas kesalahan boleh daftar tertakluk kepada peruntukan di bawah seksyen 15D Akta Universiti dan Kolej Universiti 1971 [Akta 30].
- Tempoh penggantungan pengajian akan dikira bagi tujuan pengiraan tempoh pengajian.
- Pelajar yang sedang digantung pengajian tidak dibenarkan berada dalam kawasan Kampus dan menggunakan sebarang kemudahan serta perkhidmatan Universiti.

- *Approved deferment period will not be counted in determining the student's total duration of study.*
- *Sponsored students are required to attach written approval from their respective sponsors when applying for deferment of study.*
- *Faculty must issue a written reminder to students who fail to register for a semester without submitting a deferment application. Students who do not respond within the specified period will have their studies suspended.*

SUSPENSION OF STUDIES

- *A student may be suspended from studies for the following reasons:*
 - a) *disciplinary action subject to the decision of the Students Disciplinary Committee;*
 - b) *fail to register for or attend any course in a given semester;*
 - c) *fail to settle outstanding debts without obtaining approval from the University; or*
 - d) *being charged with a registrable offence under the provisions of Section 15D of the Universities and University Colleges Act 1971 [Act 30].*
- *Suspension period will be counted for the purpose of calculating the duration of studies.*
- *Students under suspension are not allowed to be present on campus or to use any University facilities and services.*



BERHENTI PENGAJIAN

- Pelajar boleh membuat permohonan berhenti pengajian secara dalam talian melalui Sistem *Online Student Information*.
- Pelajar perlu memastikan tiada yuran Universiti yang tertunggak sebelum berhenti pengajian.
- Pelajar yang telah berstatus berhenti boleh memohon untuk mendaftar semula bagi mengikuti mana-mana Program Pengajian di Universiti tertakluk kepada kelulusan Timbalan Naib Canselor (Akademik & Antarabangsa).

DIBERHENTIKAN PENGAJIAN

- Pelajar boleh diberhentikan daripada pengajian atas sebab-sebab berikut:
 - a) digantung dua (2) semester berturut-turut;
 - b) gagal dan diberhentikan iaitu mendapat Purata Nilai Gred kurang daripada 2.00 bagi tiga (3) semester berturut-turut dan Purata Nilai Gred Kumulatif kurang daripada 2.00; atau
 - c) dikenakan hukuman dibuang daripada Universiti oleh Jawatankuasa Tatatertib Pelajar.
- Rayuan untuk kemasukan semula selepas diberhentikan kecuali bagi kes hukuman tatatertib hanya dibenarkan untuk sekali permohonan sahaja.
- Rayuan kemasukan semula adalah untuk Program Pengajian yang sama (menyambung pengajian) atau bertukar program (bermula dari tahun pertama).
- Permohonan boleh dibuat dalam tempoh masa empat (4) bulan dari tarikh kuat kuasa diberhentikan pengajian dengan bayaran pemprosesan sebanyak RM200.00 bagi pelajar yang meneruskan pengajian dalam program asal dan RM350.00 bagi pelajar yang bertukar program.

WITHDRAWAL FROM STUDIES

- *Students may apply to withdraw from studies online through the Online Student Information System.*
- *Students must ensure that there are no outstanding university fees before withdrawing from studies.*
- *Students who have withdrawn may apply for re-admission to any academic programme at the University, subject to the approval of the Deputy Vice-Chancellor (Academic and International).*

TERMINATION OF STUDIES

- *A student may be terminated from studies for the following reasons:*
 - a) *suspension for two (2) consecutive semesters;*
 - b) *failure and termination, i.e., obtaining a Grade Point Average (GPA) of less than 2.00 for three (3) consecutive semesters and a Cumulative Grade Point Average (CGPA) of less than 2.00; or*
 - c) *being expelled from the University by the Students Disciplinary Committee.*
- *Appeals for re-admission after termination, except in cases of disciplinary expulsion, are allowed only once.*
- *Re-admission appeals may be made to continue in the same study programme (continuing studies) or to transfer to a new programme (starting from the first year).*
- *Applications must be submitted within four (4) months from the date the termination takes effect, with a processing fee of RM200.00 for students continuing in the same programme and RM350.00 for students transferring to a new programme.*



PEMINDAHAN KREDIT

- Pemindahan kredit ditakrifkan sebagai pengiktirafan sejumlah kredit yang telah diperoleh oleh seseorang pelajar dalam sesuatu program terdahulu ke program yang sedang diikuti di UniMAP. Terdapat 2 pemindahan kredit yang dibenarkan iaitu:
 - 1) Pemindahan Kredit Dengan Gred;
Pemindahan kredit bersama gred bagi kursus yang diperoleh melalui sesuatu program lain lazimnya dalam tempoh pengajian semasa dan diambil kira dalam pengiraan Purata Nilai Gred dan Purata Nilai Gred Kumulatif pelajar
 - 2) Pemindahan Kredit Tanpa Gred.
Pemindahan kredit tanpa mengambil kira pencapaian gred kursus yang diperoleh melalui program terdahulu dan tidak diambil kira dalam pengiraan Purata Nilai Gred dan Purata Nilai Gred Kumulatif pelajar. Pemindahan Kredit Tanpa Gred juga dikenali sebagai Pengecualian Kredit.
- 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 Credit transfer is defined as the recognition of a number of credits obtained by a student in a previous programme towards the programme currently pursued at the University. Two types of credit transfer are permitted, as follows:*
 - 1) *Credit Transfer with Grade*
The transfer of credit along with the grade for a course obtained through another programme, usually within the current study duration, and is taken into account in the calculation of the student's Grade Point Average and Cumulative Grade Point Average.
 - 2) *Credit Transfer without Grade*
The transfer of credit without taking into account the grade achievement of the course obtained through a previous programme, and it is not taken into account in the calculation of the student's Grade Point Average and Cumulative Grade Point Average. Credit Transfer Without Grade is also known as Credit Exemption.
- *The general conditions for credit transfer are as follows:*
 - i. *minimum passing grade for a course eligible for credit transfer consideration is Grade C or a grade point value of 2.00;*
 - ii. *credit value must be equal to or higher than the credit value of the course applied for; and*
 - iii. *the equivalency of the course content involved in the credit transfer must be at least 80%.*



PELAKSANAAN SEMESTER TAMBAHAN

- Pelajar yang gagal dalam mana-mana kursus diberikan peluang menduduki semula peperiksaan akhir kursus berkenaan pada semester tambahan, tertakluk kepada syarat yang ditetapkan.
- Semester tambahan mempunyai lima (5) minggu termasuk minggu tutorial dan peperiksaan.
- Syarat-syarat kelayakan mengikuti Semester Tambahan adalah:
 1. Pelajar yang layak memohon semester tambahan adalah seperti berikut:
 - a) pelajar yang mendapat gred D dan ke bawah; dan
 - b) lulus pentaksiran berterusan dengan markah 40% bagi kursus-kursus yang berkaitan.
 2. Kebenaran untuk mengambil semester tambahan bagi tujuan menambahbaik gred (D+ atau C-) hanya akan diberikan kepada pelajar tahun akhir sahaja.
 3. Semester tambahan hanya boleh diduduki oleh pelajar yang telah mendaftar dan membayar yuran sahaja. Tiada rayuan pengecualian bayaran dibenarkan untuk membolehkan pelajar membuat permohonan.
 4. Pelajar yang mendapat gred F*, X dan TT tidak layak untuk mendaftar semester tambahan.
 5. Pelajar yang terlibat dengan latihan industri semasa semester tambahan berlangsung tidak dibenarkan untuk mengikuti semester tambahan.

IMPLEMENTATION OF ADDITIONAL SEMESTER

- *Students who fail a course shall be given the opportunity to re-sit the final examination for the respective course during the additional semester, subject to the stipulated conditions.*
- *The additional semester consists of five (5) weeks, including weeks for tutorials and examinations.*
- *The eligibility requirements for the Additional Semester are:*
 1. *Students eligible to apply for additional semester are as follows:*
 - a) *Students who obtained a grade of D and below; and*
 - b) *Students who passed a continuous assessment component with a minimum mark of 40% for the respective courses.*
 2. *Permission to enrol in the additional semester for the purpose of improving grades (D+ or C-) shall only be granted to final-year students.*
 3. *The additional semester may only be attended by students who have registered and paid the required fees. Only students without outstanding debts are eligible to apply for additional semester courses. Appeals for fee exemption shall not be considered for the purpose of applying for the additional semester.*
 4. *Students who have obtained grades F*, X, or TT are not eligible to register for the additional semester.*
 5. *Students who are involved with industrial training are not permitted to enrol in the additional semester.*



PENTAKSIRAN KURSUS DAN KEHADIRAN

- Pentaksiran pelajar biasanya ditentukan berdasarkan pentaksiran berterusan (PB) atau gabungan pentaksiran berterusan (PB) dan peperiksaan akhir (PA) atau kaedah lain yang dibuat dalam sesuatu semester tertakluk kepada kelulusan Senat.
- Setiap pelajar hendaklah memenuhi syarat kehadiran yang telah ditetapkan bagi kuliah, tutorial, amali dan lain-lain aktiviti pengajaran sebelum dibenarkan menduduki peperiksaan. Pelajar yang gagal mencapai kehadiran minimum 80% boleh dihalang daripada menduduki peperiksaan akhir.
- Kaedah pentaksiran bagi pentaksiran berterusan dan kursus-kursus yang melibatkan latihan industri, projek tahun akhir, dan pembelajaran berasaskan kerja ditentukan oleh Fakulti dan mesti dibuat dalam tempoh yang ditetapkan.

COURSE ASSESSMENT AND ATTENDANCE

- *Student assessment is normally determined based on continuous assessment (CA), or a combination of continuous assessment (CA) and a final examination (FE), or other methods conducted within a semester as determined by the Faculty, subject to the approval of the Senate.*
- *Each student is required to fulfill the stipulated attendance requirements for lectures, tutorials, practical sessions, and other instructional activities before being permitted to sit for the examination. Students who fail to achieve a minimum attendance of 80% may be barred from sitting for the final examination.*
- *The assessment methods for continuous assessment and for courses involving industrial training, final year projects, and work-based learning, shall be determined by the Faculty and must be conducted within the prescribed period.*



SISTEM GRED

- Prestasi pelajar dalam sesuatu kursus dinilai oleh gred yang diperoleh. Hubungan antara gred dan mata nilai adalah seperti dalam Jadual 4.
- 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 XII : Penganugerahan.

GRADING SYSTEM

- *Student performance in a course is presented by the grades obtained. The relationship between grade and point value is as shown in Table 4.*
- *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 XII : Conferment.*

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

| 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 |



- Pencapaian akademik pelajar dinilai menggunakan dua (2) ukuran iaitu Purata Nilai Gred dan Purata Nilai Gred Kumulatif. Purata Nilai Gred merujuk kepada purata nilai gred yang diperolehi dalam sesuatu semester dan Purata Nilai Gred Kumulatif ertinya purata himpunan nilai gred yang diperolehi bagi semua semester yang telah diikuti. Formula pengiraan PNG dan PNGK dipaparkan dalam Jadual 5.
- A student's academic performance shall be assessed using two (2) measures namely, the Grad Point Average and Cumulative Grade Point Average. The Grade Point Average (GPA) refers to the average grade point obtained in a particular semester and the Cumulative Grade Point Average (CGPA) refers to the cumulative average of grade points obtained over all semesters undertaken by the student. The formulas for calculating the GPA and CGPA are presented in Table 5.*

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

| 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] | = $\frac{\text{Jumlah NG Terkumpul [Total Accumulated Grade Value]}}{\text{Jumlah Bil. Kredit Terkumpul [Total Accumulated Credits]}}$ = $\frac{55.50 + 50.50}{18 + 16}$ = 3.12 | | | |



RAYUAN SEMAKAN SEMULA KEPUTUSAN KURSUS

- Pelajar boleh membuat rayuan semakan semula keputusan kursus dalam tempoh 10 hari bekerja bermula dari hari keputusan kursus tersebut diumumkan.
- Proses semakan keputusan kursus dikenakan bayaran sebanyak RM50.00 bagi setiap kursus yang terlibat.
- Ketua Kursus atau pensyarah kursus perlu membuat semakan semula keputusan kursus dan memberi maklumbalas kepada Unit Peperiksaan dan Pengijazahan dalam tempoh 10 hari bekerja daripada tarikh surat dikeluarkan.
- Pengumuman keputusan rayuan semakan semula keputusan kursus akan dilakukan dalam tempoh 30 hari dari tarikh permohonan semakan. Keputusan semakan kursus yang telah disahkan adalah muktamad.

MEDIUM INTERAKSI

- Bahasa Melayu merupakan bahasa rasmi universiti. Walau bagaimanapun, Bahasa Inggeris digunakan secara meluas dalam proses pengajaran dan pembelajaran bagi meningkatkan keupayaan serta kebolehpasaran graduan dalam kerjaya masing-masing.
- Bagi kursus yang ditawarkan dan diajar dalam Bahasa Inggeris, semua bentuk penilaian termasuk peperiksaan akan dilaksanakan dalam bahasa yang sama.

APPEAL FOR REVIEW OF COURSE RESULTS

- *Students may submit an appeal for a review of their course result within 10 working days from the date the result is announced.*
- *A fee of RM50.00 will be charged for each course involved in the review process.*
- *The Course Coordinator or course lecturer must review the course result and provide feedback to the Examination and Graduation Unit within 10 working days from the date the letter is issued.*
- *The announcement of the appeal result for the course review will be made within 30 days from the date of the review application. The reviewed course result, once verified and approved, is final.*

MEDIUM INTERACTION

- *Bahasa Melayu is the official language of the University. However, English is widely used in the teaching and learning process to enhance students' competence and employability in their respective careers.*
- *For courses conducted in English, all forms of assessment, including examinations, shall be carried out 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, pelajar perlu berjumpa dengan Rakan Pendamping Siswa (RPS) untuk mendapatkan nasihat semasa tempoh pendaftaran.
- RPS merupakan satu sistem di mana kesemua tenaga akademik UniMAP akan mengendalikan kumpulan pelajar mengikut Fakulti masing-masing selama tempoh pengajian kumpulan pelajar berkenaan di UniMAP. Sepanjang tempoh pengajian tersebut, para tenaga akademik akan menyalurkan segala kemahiran soft skill serta penasihat akademik kepada kumpulan berkenaan agar mereka memperolehi keputusan peperiksaan yang memberangsangkan di samping menzahirkan sahsiah yang cemerlang. Selain itu, sistem ini juga akan menerapkan nilai-nilai sayang dan cintakan universiti agar apabila mereka keluar dari UniMAP nanti mereka akan sentiasa kembali untuk memberikan sumbangan kepada universiti.

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'.*

Further 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 Timbalan Naib Canselor (Akademik & Antarabangsa) / <i>Office of Deputy Vice Chancellor (Academic & International)</i> | 04-941 4159 |
| Pusat Pengurusan Akademik / <i>Academic Management Centre (AMC)</i> | 04-941 4158 |
| <ul style="list-style-type: none">• Bahagian Pementapan Akademik / <i>Academic Enhancement Division (AED)</i>• Bahagian Pendidikan Fleksibel / <i>Flexible Education Division</i>• Bahagian Pengurusan Dasar TVET / <i>TVET Management Policy Division</i>• Bahagian Kerjasama Strategik Akademik / <i>Strategic Academic Collaboration Division</i>• Bahagian Pengurusan Akademik / <i>Academic Management Division (AMD)</i><ul style="list-style-type: none">▪ Unit Kemasukan dan Rekod Pelajar / <i>Student Admissions & Records Unit</i>▪ Unit Peperiksaan dan Pengijazahan / <i>Examination & Graduation Unit</i>▪ Unit Senat / <i>Senate Unit</i> | 04-941 4157 04-941 4321 04-941 4322 04-941 4414 04-941 4056/4065 04-941 4057/4058 04-941 4060 |
| Jabatan Bendahari / <i>Bursary</i> | 04-941 4020/4021/4022 |
| Jabatan Pendaftar / <i>Registrar Department</i> | 04-941 4081 |
| Jabatan Hal Ehwal Pelajar (JHEP) / Department of Student Affairs | 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

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

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UR4522001 Diploma in Electrical Engineering

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates who are competent in electrical engineering fields as demonstrated through career development.

PEO 2

Graduates who are involved in community or professional organization and make contribution towards society.

PEO 3

Graduates pursue continuing education opportunities

PEO 4

Graduates make contribution through innovation and entrepreneurship

PROGRAMME OUTCOMES (PO)

P01

Apply knowledge of applied mathematics, applied science, computing and engineering fundamentals and an engineering specialisation to wide practical procedures and practices

P02

Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity

P03

Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, as well as cultural, societal, and environmental considerations as required

P04

Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements

P05

Apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations

P06

Consider sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well-defined engineering problems

P07

Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion

P08

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

P09

Communicate effectively and inclusively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions

P010

Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments

P011

Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of specialised technical knowledge

P012

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



| CURRICULUM STRUCTURE | | | | | | |
|--|---|---|--|---|--|---|
| UR4522001 DIPLOMA IN ELECTRICAL ENGINEERING INTAKE 2026/2027 | | | | | | |
| YEAR | FIRST | | SECOND | | THIRD | |
| SEMESTER | 1 | 2 | 3 | 4 | 5 | 6 |
| DISCIPLINE CORE COURSES (73 CREDITS) | EDJ12803 Electrical Engineering Skills [Kemahiran Kejuruteraan Elektrik] | EDJ13003 Electric Circuit 1 [Litar Elektrik 1] | EDJ22903 Electric Circuit 2 [Litar Elektrik 2] | EDJ22303 Electrical Instrumentation and Measurement [Peralatan Elektrik dan Pengukuran] | EDJ32003 Power System 2 [Sistem Kuasa 2] | EDJ30108 Industrial Training [Latihan Industri] |
| | EDJ12102 Computer Programming [Pengaturcaraan Komputer] | EDJ12603 Electronic Devices [Peranti Elektronik] | EDJ22103 Programmable Logic Controller [Pengawal Logik Boleh Atur Cara] | EDJ22403 Power System 1 [Sistem Kuasa 1] | EDJ32103 Power Electronics [Elektronik Kuasa] | |
| | EDJ12302 Computer Aided Drawing [Lukisan Terbantukan Komputer] | EDJ12703 Microcontroller [Mikropengawal] | EDJ22203 Analogue Electronics [Elektronik Analog] | EDJ22503 Electrical Installation Design [Reka bentuk Pemasangan Elektrik] | EDJ32503 Power System Commissioning and Maintenance Practice [Amalan Pertauliah dan Penyelenggaraan Sistem Kuasa] | |
| | EDJ12902 Introduction to Electrical Engineering [Pengenalan kepada Kejuruteraan Elektrik] | EDJ12202 Engineering Science [Sains Kejuruteraan] | EDJ22802 Industrial Safety, Quality Management & Ethics [Keselamatan Industri, Pengurusan Kualiti & Etika] | EDJ22603 Control Principle [Prinsip Kawalan] | EDJ32304 Final Year Project [Projek Tahun Akhir] | |
| | EDJ12403 Digital System [Sistem Digit] | | | EDJ22703 Electrical Machine and Application [Mesin Elektrik dan Aplikasi] | EDJ32603 Renewable Energy System Maintenance [Penyelenggaraan Sistem Tenaga Boleh Diperbaharui] | |
| COMMON CORE COURSES (9 CREDITS) | | IDQ10103 Mathematics 1 [Matematik 1] | IDQ20203 Mathematics 2 [Matematik 2] | IDQ20303 Mathematics 3 [Matematik 3] | | |
| UNIVERSITY REQUIREMENT COURSES (12 CREDITS) | SDZ1XXX1 Co-Curriculum 1 [Ko-Kurikulum 1] | SDZ1XXX1 Co-Curriculum 2 [Ko-Kurikulum 2] | SDB11302 Communicative English 3 [Bahasa Inggeris Komunikasi 3] | | SDU33602 Introduction to Artificial Intelligence in Society [Pengenalan Kepada Kecerdasan Buatan dalam Masyarakat] | |
| | SDU22502 Basics of Entrepreneurship [Asas Keusahawanan] | SDB11202 Communicative English 2 [Bahasa Inggeris Komunikasi 2] | SDU13002 The Constitution and Integrity Society [Perlembagaan dan Masyarakat Berintegriti] | | | |
| TOTAL CREDITS (94 CREDITS) | 15 | 17 | 18 | 18 | 18 | 8 |
| AUDIT COURSES | SDB11102 ^[3] Communicative English 1 [Bahasa Inggeris Komunikasi 1] | SDB31002 ^[2] Malay Language [Bahasa Melayu] | | | | |
| | IDQ10002 ^[1] Preliminary Mathematics [Matematik Awalan] | | | | | |

[1] Compulsory to students without or with grade D and below for Additional Mathematics (Matematik Tambahan) in SPM. IDQ10002 -Preliminary Mathematic is an Audit course

[2] Compulsory to students with grade B+ and below in Malay Language (Bahasa Melayu) SPM. SDB31002 - Malay Language is an Audit course

[3] Compulsory to students with grade B+ and below in English Language (Bahasa Inggeris) SPM. SDB11102 - Communicative English 1 is an Audit course

UR4523001 Diploma in Mechatronic Engineering

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates who are competent in mechatronic engineering fields as demonstrated through career progression

PEO 2

Graduates who are involved in community or professional organization and make contribution towards society

PEO 3

Graduates pursue continuing education opportunities

PEO 4

Graduates make contribution through innovation and entrepreneurship

PROGRAMME OUTCOMES (PO)

P01

Apply knowledge of applied mathematics, applied science, computing and engineering fundamentals and an engineering specialisation to wide practical procedures and practices

P02

Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity

P03

Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, as well as cultural, societal, and environmental considerations as required

P04

Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements

P05

Apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations

P06

Consider sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well-defined engineering problems

P07

Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion

P08

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

P09

Communicate effectively and inclusively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions

P010

Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments

P011

Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of specialised technical knowledge

P012

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



| CURRICULUM STRUCTURE | | | | | | |
|---|--|---|--|--|--|---|
| UR4523001 DIPLOMA IN MECHATRONIC ENGINEERING INTAKE 2026/2027 | | | | | | |
| YEAR | FIRST | | SECOND | | THIRD | |
| SEMESTER | 1 | 2 | 3 | 4 | 5 | 6 |
| DISCIPLINE CORE COURSES (73 CREDITS) | EDJ16103 Mechatronic Engineering Skills 1 [Kemahiran Kejuruteraan Mekatronik 1] | EDJ16503 Mechatronic Engineering Skills 2 [Kemahiran Kejuruteraan Mekatronik 2] | EDJ27203 Instrumentation & Measurements [Instrumentasi & Pengukuran] | EDJ28503 Machine Mechanism Elements [Elemen-elemen Mekanisma Mesin] | EDJ30002 Industrial Safety, Quality Management & Ethics [Keselamatan Industri, Pengurusan Kualiti & Etika] | EDJ30108 Industrial Training [Latihan Industri] |
| | EDJ16203 Computer Programming [Pengaturcaraan Komputer] | EDJ17503 Electrical Technology [Teknologi Elektrik] | EDJ27303 Digital System [Sistem Digiit] | EDJ29803 Programmable Logic Controller [Pengawal Logik Boleh Aturcara] | EDJ39103 Industrial Automation & Robotics [Automasi Industri & Robotik] | |
| | EDJ16303 Computer Aided Drawing [Lukisan Terbantu Komputer] | EDJ17703 Analogue Electronics [Elektronik Analog] | EDJ27403 Data Communications [Komunikasi Data] | EDJ29403 Pneumatics & Hydraulics [Pneumatik & Hidraulik] | EDJ39203 Control Systems [Sistem Kawalan] | |
| | EDJ17303 Electric Circuits [Litar Elektrik] | EDJ18503 Applied Mechanics [Mekanik Gunaan] | EDJ28003 Thermo-Fluids [Thermo-Bendalir] | EDJ29703 Embedded Systems & Interfacing [Sistem Terbenam & Pengataramuka] | EDJ39302 Internet of Things (IoT) [Internet Benda (IoT)] | |
| | EDJ18103 Engineering Materials [Bahan Kejuruteraan] | | | | EDJ39404 Final Year Project [Projek Tahun Akhir] | |
| COMMON CORE COURSES (9 CREDITS) | | IDQ10103 Mathematics 1 [Matematik 1] | IDQ20203 Mathematics 2 [Matematik 2] | IDQ20303 Mathematics 3 [Matematik 3] | | |
| UNIVERSITY REQUIREMENT COURSES (12 CREDITS) | SDZ1XXX1 Co-Curriculum 1 [Ko-Kurikulum 1] | SDZ1XXX1 Co-Curriculum 2 [Ko-Kurikulum 2] | SDB11302 Communicative English 3 [Bahasa Inggeris Komunikasi 3] | SDU13002 The Constitution and Integrity Society [Perlembagaan dan Masyarakat Berintegriti] | SDU22502 Basics of Entrepreneurship [Asas Keusahawanan] | |
| | SDU33602 Introduction to Artificial Intelligence in Society [Pengenalan Kepada Kecerdasan Buatan dalam Masyarakat] | SDB11202 Communicative English 2 [Bahasa Inggeris Komunikasi 2] | | | | |
| TOTAL CREDITS (94 CREDITS) | 18 | 18 | 17 | 17 | 16 | 8 |
| AUDIT COURSES | SDB11102 ^[3] Communicative English 1 [Bahasa Inggeris Komunikasi 1] | SDB31002 ^[2] Malay Language [Bahasa Melayu] | | | | |
| | IDQ10002 ^[1] Preliminary Mathematics [Matematik Awalan] | | | | | |

[1] Compulsory to students without or with grade D and below for Additional Mathematics (Matematik Tambahan) in SPM. IDQ10002 -Preliminary Mathematic is an Audit course

[2] Compulsory to students with grade B+ and below in Malay Language (Bahasa Melayu) SPM. SDB31002 - Malay Language is an Audit course

[3] Compulsory to students with grade B+ and below in English Language (Bahasa Inggeris) SPM. SDB11102 - Communicative English 1 is an Audit course

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|--|-------------|
| EDJ12102 | Pengaturcaraan Komputer <i>[Computer Programming]</i> | Tiada |
| EDJ12202 | Sains Kejuruteraan <i>[Engineering Science]</i> | Tiada |
| EDJ12302 | Lukisan Terbantu Komputer <i>[Computer Aided Drafting]</i> | Tiada |
| EDJ12403 | Sistem Digit <i>[Digital System]</i> | Tiada |
| EDJ12603 | Peranti Elektronik <i>[Electronic Devices]</i> | Tiada |
| EDJ12703 | Mikropengawal <i>[Microcontroller]</i> | Tiada |
| EDJ12803 | Kemahiran Kejuruteraan Elektrik <i>[Electrical Engineering Skills]</i> | Tiada |
| EDJ12902 | Pengenalan kepada Kejuruteraan Elektrik <i>[Introduction to Electrical Engineering]</i> | SDG7, SDG11 |
| EDJ13003 | Litar Elektrik 1 <i>[Electric Circuit 1]</i> | Tiada |
| EDJ16103 | Kemahiran Kejuruteraan Mekanik 1 <i>[Mechatronic Engineering Skills 1]</i> | Tiada |
| EDJ16203 | Pengaturcaraan Komputer <i>[Computer Programming]</i> | Tiada |
| EDJ16303 | Lukisan Terbantu Komputer <i>[Computer Aided Drawing]</i> | Tiada |
| EDJ16503 | Kemahiran Kejuruteraan Mekanik 2 <i>[Mechatronic Engineering Skills 2]</i> | Tiada |

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|--|------------|
| EDJ17303 | Litar Elektrik <i>[Electric Circuits]</i> | Tiada |
| EDJ17503 | Teknologi Elektrik <i>[Electrical Technology]</i> | Tiada |
| EDJ17703 | Elektronik Analog <i>[Analogue Electronics]</i> | Tiada |
| EDJ18103 | Kejuruteraan Bahan <i>[Engineering Materials]</i> | Tiada |
| EDJ18503 | Mekanik Gunaan <i>[Applied Mechanics]</i> | Tiada |
| EDJ22103 | Pengawal Logik Boleh Atur Cara <i>[Programmable Logic Controller]</i> | Tiada |
| EDJ22203 | Elektronik Analog <i>[Analogue Electronics]</i> | Tiada |
| EDJ22303 | Peralatan Elektrik Dan Pengukuran <i>[Electrical Instrumentation And Measurement]</i> | Tiada |
| EDJ22403 | Sistem Kuasa 1 <i>[Power System 1]</i> | Tiada |
| EDJ22503 | Reka Bentuk Pemasangan Elektrik <i>[Electrical Installation Design]</i> | Tiada |
| EDJ22603 | Prinsip Kawalan <i>[Control Principle]</i> | Tiada |
| EDJ22703 | Mesin Elektrik Dan Aplikasi <i>[Electrical Machine And Application]</i> | Tiada |

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|---|-------------|
| EDJ22802 | Keselamatan Industri, Pengurusan Kualiti Dan Etika <i>[Industrial Safety, Quality Management And Ethics]</i> | SDG8, SDG11 |
| EDJ22903 | Litar Elektrik 2 <i>[Electric Circuits 2]</i> | Tiada |
| EDJ27203 | Instrumentasi & Pengukuran <i>[Instrumentation & Measurements]</i> | Tiada |
| EDJ27303 | Sistem Digit <i>[Digital System]</i> | Tiada |
| EDJ27403 | Komunikasi Data <i>[Data Communications]</i> | Tiada |
| EDJ28003 | Thermo-Bendalir <i>[Thermo-Fluids]</i> | Tiada |
| EDJ28503 | Elemen-Elemen Mekanisma Mesin <i>[Machine Mechanism Elements]</i> | Tiada |
| EDJ29403 | Pneumatik & Hidraulik <i>[Pneumatics & Hydraulics]</i> | Tiada |
| EDJ29703 | Sistem Terbenam & Pengantaramuka <i>[Embedded System & Interfacing]</i> | Tiada |
| EDJ29803 | Pengawal Logik Boleh Aturcara <i>[Programmable Logic Controller]</i> | Tiada |
| EDJ30002 | Keselamatan Industri, Pengurusan Kualiti Dan Etika <i>[Industrial Safety, Quality Management And Ethics]</i> | SDG8, SDG11 |
| EDJ30108 | Latihan Industri <i>[Industrial Training]</i> | Tiada |

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|--|-------------|
| EDJ32003 | Sistem Kuasa 2 <i>[Power System 2]</i> | Tiada |
| EDJ32103 | Elektronik Kuasa <i>[Power Electronic]</i> | Tiada |
| EDJ32304 | Projek Tahun Akhir <i>[Final Year Project]</i> | SDG4, SDG9 |
| EDJ32503 | Amalan Pentauliahan dan Penyelenggaraan Sistem Kuasa <i>[Power System Commissioning And Maintenance Practice]</i> | Tiada |
| EDJ32603 | Penyelenggaraan Sistem Tenaga Boleh Diperbaharui <i>[Renewable Energy System Maintenance]</i> | SDG8, SDG11 |
| EDJ39103 | Automasi Industri & Robotik <i>[Industrial Automation & Robotics]</i> | Tiada |
| EDJ39203 | Sistem Kawalan <i>[Control Systems]</i> | Tiada |
| EDJ39302 | Internet Kebendaan <i>[Internet of Things]</i> | Tiada |
| EDJ39404 | Projek Tahun Akhir <i>[Final Year Project]</i> | Tiada |

EDJ12102 PENGATURCARAAN KOMPUTER [COMPUTER PROGRAMMING]**No of Credits: 3****Course Synopsis:**

This course introduces students to basic computer programming, for problem solving analysis and programming concepts including variables, operator, control structure, function, array, file processing, structure and pointer. Students also learn how to write programming using C language and solve engineering related problems using computer programming techniques.

Course Outcomes:

1. Ability to design solution related problems using computer programming techniques.
2. Ability to apply simulation tools for compiling, debugging and executing computer programs.
3. Ability to function effectively in a group to design solutions using computer programming techniques.

EDJ12202 SAINS KEJURUTERAAN [ENGINEERING SCIENCE]**No of Credits: 2****Course Synopsis:**

Engineering Science refers to the combination disciplines of science, mathematics and engineering. It is related to electrical, electronic, materials or mechanical engineering fields. From the basic engineering science student able to apply, design, and develop solutions in engineering. To empower students in the STEM fields, this subject is compulsory to all engineering students.

Course Outcomes:

1. Ability to apply fundamental concepts of units, dimensions, electrostatics, material properties, and thermodynamics in solving engineering problems.
2. Ability to analyse the performance and behaviour of materials and thermodynamics for well-defined engineering problems.
3. Ability to communicate effectively on engineering principles of material properties and thermodynamics in engineering applications.
4. Ability to relate engineering principles of material properties and thermodynamics in engineering applications by applying independent learning and critical thinking.

EDJ12302 LUKISAN TERBANTU KOMPUTER [COMPUTER AIDED DRAFTING]**No of Credits: 2****Course Synopsis:**

The main objective of this course is to expose the Diploma Engineering students with skills of Computer Aided Drafting and its application. This course is an extension from manual hand drawing into the usage of AutoCAD software which focuses on product design in 2D, 3D and an electrical engineering drawing based on IEE Wiring Regulations, MS IEC Guidelines and JKR Standard Specification.

Course Outcomes:

1. Ability to apply knowledge on fundamental concepts of Computer Aided Drafting in engineering related problems.
2. Ability to apply suitable tools for Computer Aided Drafting based on industrial standards.
3. Ability to design solutions for basic electrical drawings.

EDJ12403 SISTEM DIGIT [DIGITAL SYSTEM]**No of Credits: 3****Course Synopsis:**

This course introduces students to the fundamentals of digital electronic circuit's familiarization through exposure of basic logic gates. The course then develops students to appreciate simple digital applications such as arithmetic combinational logic circuits. Flip-flops and its basic application are introduced in the later part of the course then followed by shift Register and counter. Students are expected to design a simple digital system and can demonstrate their understanding.

Course Outcomes:

1. Ability to apply the principle and theoretical concepts of digital systems.
2. Ability to design digital circuits for various digital applications.
3. Ability to investigate digital systems through experimental and simulation.

EDJ12603 PERANTI ELEKTRONIK [ELECTRONIC DEVICES]**No of Credits: 3****Course Synopsis:**

This course introduces basic semiconductor devices such as diode, Bipolar Junction Transistor (BJT) and Field-Effect Transistor (FET) theory. The syllabus consists of understanding the principles and operation of semiconductor devices; investigating the applications of these devices; and solving BJT and FET parameters using various types of biasing.

Course Outcomes:

1. Ability to apply principles, operation, and applications of electronic devices.
2. Ability to investigate electronic devices by examining characteristics through experiments
3. Ability to apply appropriate tools in testing electronic devices related problems.

EDJ12703 MIKROPENGAWAL [MICROCONTROLLER]**No of Credits: 3****Course Synopsis:**

The aim of this course is to study the Microcontroller architecture, programming using C language and basic interfacing with input and output devices. These knowledge are gathered and applied to design a simple microcontroller based system.

Course Outcomes:

1. Ability to design systems using microcontrollers to solve well-define engineering problems
2. Ability to construct microcontroller-based applications with appropriate tools and techniques.
3. Ability to demonstrate commitment in applying microcontroller knowledge and skills to develop practical solutions through entrepreneurial activities.

EDJ12803 KEMAHIRAN KEJURUTERAAN ELEKTRIK [ELECTRICAL ENGINEERING SKILLS]**No of Credits: 3****Course Synopsis:**

This course is 100% practical coursework. This course contains four modules which are Electrical Wiring, Technical Drawing, Basic Electronics Soldering & PCB Design and Basic Arduino Programming

Course Outcomes:

1. Ability to apply programming languages for engineering related problems.
2. Ability to apply appropriate tools for engineering related applications.

EDJ12902 PENGENALAN KEPADA KEJURUTERAAN ELEKTRIK [INTRODUCTION TO ELECTRICAL ENGINEERING]**No of Credits: 2****Course Synopsis:**

This course serves as a general introduction to the electrical engineering program offered by the Faculty of Electrical & Technology Engineering. Students will be exposed to attributes of an electrical technician from both academic and practical points of view. Some skills and knowledge that are necessary in the engineering world will be introduced here. Students will obtain a clearer overview of the benefits, excitements, and challenges of being an electrical engineering student and a certified electrical technician in the near future.

Course Outcomes:

1. Ability to apply knowledge related to electrical engineering education in accordance with the scope and career of certified technicians
2. Ability to apply appropriate tools for engineering related applications based on electrical schematic circuits.
3. Ability to propose a solution with consideration of public health and safety, cultural, societal, and environmental related to engineering applications.

EDJ13003 LITAR ELEKTRIK 1 [ELECTRIC CIRCUIT 1]**No of Credits: 3****Course Synopsis:**

This course introduces students to the fundamentals of DC circuit analysis. The course develops the understanding of electrical laws. Electrical laws are necessary to analyse any electrical circuit effectively and efficiently by determining different circuit parameters such as current, voltage, power and resistance. Additional analytical methods of circuit analysis also have been developed to analyze more complex circuits.

Course Outcomes:

1. Ability to apply fundamental electrical principles, circuit elements, and basic laws to solve circuit problems.
2. Ability to analyze DC circuits using analysis methods and circuit theorems.
3. Ability to investigate electrical concepts through practical examination of DC circuits.

EDJ16103 KEMAHIRAN KEJURUTERAAN MEKATRONIK 1 [MECHATRONIC ENGINEERING SKILLS 1]**No of Credits: 3****Course Synopsis:**

This course is entirely practical and includes four modules: Basic Programming, Electrical Industrial Machine Wiring & Installation, Basic Electronics, and Mechanical Machining. These modules were specifically designed for the Diploma in Mechatronics Engineering program. Students will learn the fundamentals of mechatronics engineering, from programming to operating machinery for fabrication.

Course Outcomes:

1. Ability to apply basic programming techniques for Mechatronics Applications.
2. Ability to apply basic skills and standard practices in single phase wiring.
3. Ability to apply basic skills of electronic prototyping.
4. Ability to apply appropriate basic skills and standard practices in manufacturing.
5. Ability to value laboratory safety and associated responsibilities in engineering technician practice.

EDJ16203 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. It introduces the principles of procedural programming, datatypes, control structures, data structures and functions, data representation on the machine level. The main objective of this course is to provide students with the skills necessary to solve problems using programming. Specifically, students will get familiar with organization charts, flowcharts, and pseudocode, which they will then use to construct a program code that solve engineering problems.

Course Outcomes:

1. Ability to apply appropriate techniques and tools for computer programming.
2. Ability to analyze solutions for engineering problems by using computer programming techniques.
3. Ability to communicate effectively in presenting group projects.
4. Ability to collaborate effectively in a team to conduct group projects.

EDJ16303 LUKISAN TERBANTU KOMPUTER [COMPUTER AIDED DRAWING]**No of Credits: 3****Course Synopsis:**

The main objective of this course is to expose students to computer-aided drawing, focusing on drafting using CAD software such as AutoCAD, OrCAD and other open-source software. Students will learn basic CAD functions as well as skills like creating dimensions, cross sections, and cut views that are easily performed in CAD. Additionally, CAD offers advantages such as creating highly accurate designs and the ability to create drawings in 2D or 3D, easily viewed from any angle, providing students with a better understanding. The second part of the course focuses on Electronic Drawing, including designing schematic drawings and PCBs. Using Computer-Aided Design software will enhance students' understanding of the design process and allow them to practice their knowledge for future projects.

Course Outcomes:

1. Ability to apply 2D Computer-Aided Design (CAD) techniques for engineering drawings.
2. Ability to utilize engineering drawing techniques for 3D modeling, schematic design and printed circuit board (PCB) layout using design software.
3. Ability to design a mechatronic product using Computer Aided Drawing related software.
4. Ability to collaborate effectively in a team to accomplish a mechatronic product design.

EDJ16503 KEMAHIRAN KEJURUTERAAN MEKATRONIK 2 [MECHATRONIC ENGINEERING SKILLS 2]**No of Credits: 3****Course Synopsis:**

This course is designed to strengthen student's practical competencies in the field of mechatronic engineering at the diploma level, continuing from the previous course, Mechatronic Engineering Skills 1. It focuses on the integration of mechanical components, electronic circuits, sensors, actuators, and microcontrollers to develop functional mechatronic systems. Students will learn the basics of microcontroller programming, circuit design, interfacing techniques, and control strategies for automation tasks. Including hands-on laboratory activities and mini- projects to develop skills in wiring, testing, troubleshooting, and system integration.

Course Outcomes:

1. Ability to demonstrate mechanical, electrical, electronics and programming skills through the completion of projects.
2. Ability to value the development of engineering projects that respond to societal and environmental needs.
3. Ability to commit to professional ethics and responsibility in completing the project.
4. Ability to apply engineering management principles in completing the project.
5. Ability to identify market opportunities in dynamic entrepreneurial environments.

EDJ17303 LITAR ELEKTRIK [ELECTRIC CIRCUITS]**No of Credits: 3****Course Synopsis:**

This course is designed to provide students with fundamentals of electrical circuit focusing on DC circuit analysis, both in theory and practice. Students are expected to acquire knowledge and able to apply and analyze basic concept and law of electric elements, apply and construct electrical circuit theorem, and apply basic concept of DC circuit analysis. Knowledge on theory acquired in lecture is also enhanced with practical works applying appropriate modern tools to construct and demonstrate the knowledge in electrical circuit application.

Course Outcomes:

1. Ability to apply basic concept and basic law for electrical circuit.
2. Ability to analyse electrical circuits using variety of circuit analysis method or circuit theorem.
3. Ability to construct various types of electrical DC circuits using appropriate tools and instruments.

EDJ17503 TEKNOLOGI ELEKTRIK [ELECTRICAL TECHNOLOGY]**No of Credits: 3****Course Synopsis:**

In this course, students will study and apply the fundamental theories and principles which underpin electrical engineering field. Students are expected to be able to identify and analyse problems related to AC circuits specifically for RLC circuit configuration, three phase systems, magnetic and electromagnetism, transformers and DC/AC electrical machines. In addition, students will develop and practice appropriate techniques and methods for solving electrical circuit and electrical machine technical problems.

Course Outcomes:

1. Ability to apply basic concepts and laws of AC circuits and electromagnetic.
2. Ability to analyse circuits related to AC circuits and three phase systems.
3. Ability to evaluate engineering problems in transformers and DC/AC machines.
4. Ability to analyse AC circuits and DC/AC electrical machines through simulations and practical works.

EDJ17703 ELEKTRONIK ANALOG [ANALOGUE ELECTRONICS]**No of Credits: 3****Course Synopsis:**

This course is an introduction to the fundamentals of electronic devices circuit and applications. It covers an introduction of semiconductor, diode and application, bipolar junction transistor (BJT) and its biasing, field effect transistor (FET) and its biasing, frequency response and the applications of these devices. This requires an in-depth understanding of semiconductor devices and amplifier. The emphasis will be on the theoretical basis as well as practical implementations. Key components studied in detail are atomic structure, diode analysis, amplifier direct current (dc) analysis, Bipolar junction transistor bias analysis, field effect transistor (FET), frequency response analysis and operational amplifier.

Course Outcomes:

1. Ability to apply knowledge of semiconductor materials and selected electronic devices.
2. Ability to analyse diode application, transistor circuit and applications as amplifier.
3. Ability to apply appropriate tools to construct analogue electronic circuit application.

EDJ18103 KEJURUTERAAN BAHAN [ENGINEERING MATERIALS]**No of Credits: 3****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 explores the structural properties of metal alloys, ceramics, polymers and composites. At the end of this course, the student will be able to analyse the structural and physical characteristic of the engineering materials as well as evaluate the properties and mechanism that affects the behaviour of materials for various engineering applications.

Course Outcomes:

1. Ability to categorize types of materials, bonding and crystal structure.
2. Ability to evaluate the mechanism of engineering materials that affecting the behaviour of materials and its microstructure.
3. Ability to conduct investigations on engineering problems through a standard tests and measurements related to material characteristics and properties

EDJ18503 MEKANIK GUNAAN [APPLIED MECHANICS]**No of Credits: 3****Course Synopsis:**

This course introduces the basic concept of force, moments, moments of Couple and resultant force. As for application to statics system, students will study on structure's equilibrium and stability such as truss, frame and machine. Students will also acquire an

in-depth understanding of friction and distributed forces in statics systems. In dynamics, students will be exposed to kinematics and kinetics for particles solution which involves forces and acceleration by using resolutions of force into components, impulse and momentum, and also work and energy. At the end of the course, the students are expected to be able to solve engineering problems related to equilibrium and motions.

Course Outcomes:

1. Ability to analyse the equilibrium in particle and rigid body problems.
2. Ability to analyse the kinematics and kinetics study for particles problems
3. Ability to apply appropriate tools to demonstrate the knowledge in applied mechanics application.

EDJ22103 PENGAWAL LOGIK BOLEH ATUR CARA [PROGRAMMABLE LOGIC CONTROLLER]**No of Credits: 3****Course Synopsis:**

This course describes the basic operation and characteristics of PLC, PLC information and communication techniques, programming methods and programming techniques. The course covers historical background, uses of PLCs, product ranges, benefits numbering system codes and logic concepts pertaining to PLCs. The student will develop an understanding of the PLC central processing unit, input-output systems, programming and peripheral devices, and programming languages and will develop skills in programming and documenting on a cross section of industrial PLCs. The knowledge is used to design a simple PLC control system especially by using ladder diagram methods.

Course Outcomes:

1. Ability to design solutions for well-defined technical problems, assist with basic timer/counter functions, special instruction programming, editing and program observation.
2. Ability to construct the program in PLC using Ladder diagram and appropriate software that related to the basic concept of PLC applications.
3. Ability to communicate effectively on PLC concepts with industrial control application through technical report and presentation.
4. Ability to demonstrate entrepreneurial initiative by applying PLC knowledge and skills to develop practical and marketable engineering solutions.

EDJ22203 ELEKTRONIK ANALOG [ANALOGUE ELECTRONICS]**No of Credits: 3****Course Synopsis:**

This course develops a basic understanding of the fundamentals and principles of analog circuits and electronic devices in electrical engineering. It introduces the application and analysis of Bipolar Junction Transistor (BJT) and Field Effect Transistor (FET) and the usage in amplifier as well as multistage and power amplifier circuit.

Course Outcomes:

1. Ability to analyze the BJTs and FETs circuit configurations as an amplifier circuit
2. Ability to design solutions for technical problems related to multistage and power amplifiers.
3. Ability to investigate the characteristics of transistors and amplifiers.

EDJ22303 PERALATAN ELEKTRIK DAN PENGUKURAN [ELECTRICAL INSTRUMENTATION AND MEASUREMENT]**No of Credits: 3****Course Synopsis:**

This course objective is to introduce the student to the basic concepts of instrumentation and measurement methods, designs of measuring devices, bridge methods and transducers. Application instrumentation for the instrument is a device that transforms a physical variable of interest (measurand) into a form that is suitable for recording (measurement).

Course Outcomes:

1. Ability to apply the basic principles of instrumentation and measurement.
2. Ability to analyse elements of instrumentation and measurement systems.
3. Ability to apply appropriate tools for measuring and testing parameters related to electrical measurement

EDJ22403 SISTEM KUASA 1 [POWER SYSTEM 1]**No of Credits: 3****Course Synopsis:**

This course covers topics of introduction and basic analysis to power generation, load flow studies, faults studies and transmission line studies. This course intends to give the students fair knowledge about electrical power systems which focuses on fundamental theory lectures and lab-intensive works in order to strengthen student's understanding and knowledge.

Course Outcomes:

1. Ability to analyze power system performance in power generation, transmission parameters and faults scenarios.
2. Ability to analyse power system operation and fault response through investigation
3. Ability work effectively as an individual and team member to solve problems in power system
4. Ability to apply the principles of typical electrical generation plants and their operational concepts in the electrical power system through independent learning and critical thinking.

EDJ22503 REKA BENTUK PEMASANGAN ELEKTRIK [ELECTRICAL INSTALLATION DESIGN]**No of Credits: 3****Course Synopsis:**

This course is designed and structured to provide electrical assistant engineers /technical assistants with the application skills needed in modern electrical engineering practice. This course uses a combination of theory and practical 'hands on' case studies to demonstrate and reinforce the principles. Students in this course are expected to work through the case studies. The case studies are based on actual installations and projects.

Course Outcomes:

1. Ability to design Low Voltage electrical installation for a building based on IEE,IEC and JKR guidelines
2. Ability to demonstrate consideration of societal, economic, sustainability, health, safety, legal framework and environmental factors in the energy management aspects of electrical installation design.
3. Ability to work effectively as an individual, and as a member in technical teams
4. Ability to apply engineering management principles in a technical team for project design.

EDJ22603 PRINSIP KAWALAN [CONTROL PRINCIPLE]**No of Credits: 3****Course Synopsis:**

This course provides students with background of control principles in various engineering applications. Throughout this course, students will learn the basic mathematical tools such as Laplace transform, transfer function, block diagram, signal flow graph, mathematical modelling of dynamic systems, time response analysis, stability of linear system, root locus and frequency domain analysis. The laboratory will be used to aid the students' understanding of the concept introduced.

Course Outcomes:

1. Ability to evaluate the theoretical, system models and analysis methods in control systems
2. Ability to analyse time-domain response, system stability, and frequency response for well-defined problems through investigation.
3. Ability to demonstrate independent and lifelong learning in the theory and evaluation of control system stability across various applications.

EDJ22703 MESIN ELEKTRIK DAN APLIKASI [ELECTRICAL MACHINE AND APPLICATION]**No of Credits: 3**

Course Synopsis:

The course can be divided into five main topics which are single and three phase transformers, DC machine fundamentals, direct current motors, DC generator, Single phase induction motor and Three phase induction motor. All these topics cover the basic construction, equivalent circuits, phasor diagram, per unit system, efficiency and voltage regulation.

Course Outcomes:

1. Ability to analyze the principles, operation, and performance characteristics of transformers, DC machines and induction motors in both single-phase and three-phase systems.
2. Ability to investigate the parameters, characteristics, and configurations of electrical machines and transformers through experiments.
3. Ability to apply appropriate tools for testing electrical machines and transformers performance.

EDJ22802 KESELAMATAN INDUSTRI, PENGURUSAN KUALITI DAN ETIKA [INDUSTRIAL SAFETY, QUALITY MANAGEMENT AND ETHICS]**No of Credits: 2****Course Synopsis:**

This course provides electrical engineering students with essential knowledge of industrial safety practices, relevant acts and regulations, ISO standards, and quality management system (QMS) concepts, along with the application of safety and quality tools used in industries. Emphasis is placed on understanding and applying professional ethical principles through the code of ethics relevant to engineering technicians. By the end of the course, students are expected to demonstrate responsible professional conduct and contribute effectively to safe, high-quality practices within engineering environments and the broader community.

Course Outcomes:

1. Ability to apply and explain the societal, health, safety, legal and cultural issues of Industrial Safety and QMS based on Act, Regulation, Standard, or Requirements.
2. Ability to explain and evaluate the sustainability and impact of engineering technician work related to safety and quality issues using techniques and tools of Industrial Safety and QMS.
3. Ability to analyse and explain ethical principles and analyse issues and challenges related to engineering ethics and the Code of Ethics.
4. Ability to evaluate and engage in independent and life-long learning on the case studies in the context of Industrial Safety, QMS or Ethical issues.

EDJ22903 LITAR ELEKTRIK 2 [ELECTRIC CIRCUITS 2]**No of Credits: 2****Course Synopsis:**

This course aims to equip students with a fundamental understanding of working with AC electric circuits, encompassing topics such as sinusoidal waveforms, vectors, and phasors. Subsequently, the course will guide students in analyzing AC circuits using various methods of circuit analysis and circuit theorems.

Course Outcomes:

1. Ability to apply knowledge of electrical rules in AC circuit.
2. Ability to analyse AC steady-state electrical circuit.
3. Ability to analyse various types of AC circuits and associated theorems by conducting investigations using standard tests and measurements.
4. Ability to apply appropriate techniques to calibrate and measure basic electrical values using digital oscilloscope.

EDJ27203 INSTRUMENTASI & PENGUKURAN [INSTRUMENTATION & MEASUREMENTS]**No of Credits: 2****Course Synopsis:**

This course is designed to provide students with fundamentals of instrumentation and measurement systems; in theory and practice. Throughout this course, students will learn the basic knowledge of measurement systems, error calculation, calibration process, important of resistance based transducers, magnetic-based transducers, capacitance-based transducers, mechanical transducers, flow measurement, pressure and force.

Course Outcomes:

1. Ability to apply error analysis and signal conditioning in instrumentation and measurement concepts
2. Ability to analyse the fundamentals of combinational and sequential logic circuits.
3. Ability to design a circuit and system of digital electronics.
4. Ability to construct digital logic circuits for digital systems using appropriate tools and techniques

EDJ27403 KOMUNIKASI DATA [DATA COMMUNICATIONS]**No of Credits: 2****Course Synopsis:**

Introduction to the principles of data communication and networking in industrial applications. Learning about data communications, networks security and the field of industrial data communications. It includes the fundamentals of wired and wireless technology, data encryption, network firewall and secure network design to provide understanding and relate the principles to various applications in the industry.

Course Outcomes:

1. Ability to apply networking scenarios to identify, troubleshoot, and resolve issues related to data communication protocols and network performance.
2. Ability to analyze various transmission methods and error correction techniques in communication systems and their related apparatus.
3. Ability to design solutions for industrial communication and network technology by selecting suitable equipment, protocols, and security measures.
4. Ability to analyze data communications using relevant networking systems.

EDJ28003 THERMO-BENDALIR [THERMO-FLUIDS]**No of Credits: 3****Course Synopsis:**

This course is designed to provide a background of the fundamental principles and engineering applications of thermodynamics, heat transfer and fluid mechanics. These three areas collectively make up the field of thermal sciences but are traditionally taught as separate courses. However, in this course sequence, the three areas are presented together. Topics covered include but not limited to: fundamental of thermodynamics; application of laws of thermodynamics to various systems; various modes of heat transfer under steady state conditions; fluid static and dynamics; law of conservation of mass Bernoulli's equation; and, flow in pipes. Knowledge on theory acquired in lecture is also enhanced with practical work conducted in laboratory.

Course Outcomes:

1. Ability to apply basic concepts of fluid mechanics, thermodynamics and heat transfer.
2. Ability to analyse engineering problems related to various laws of fluid mechanics, thermodynamics and heat transfer.
3. Ability to analyse engineering problems through standard tests and measurements related to the principles of fluid mechanics, thermodynamics and heat transfer.

EDJ28503 ELEMEN-ELEMEN MEKANISMA MESIN [MACHINE MECHANISM ELEMENTS]**No of Credits: 3****Course Synopsis:**

This course is designed to provide students with the skills and knowledge in machine mechanism disciplines. The practical syllabus includes power transmission elements, shaft and bearing, drive gear, flexible element drive, camshaft and follower and also linkages system. The whole subjects will combine with other important technical elements such as mechanical design and international standard that need to be followed in design. With the help of practical laboratory, the students will obtain a better perspective on the subjects of their studies because they will confront the problems of implementation of what they have learnt in their mechatronics courses.

Course Outcomes:

1. Ability to apply the principles of mechanical drive elements.
2. Ability to evaluate the mechanism of mechanical elements and the mobility of mechanical system
3. Ability to analyze on engineering problems through a standard tests and measurements related to mechanism of mechanical elements.

EDJ29403 PNEUMATIK & HIDRAULIK [PNEUMATICS & HYDRAULICS]**No of Credits: 3****Course Synopsis:**

This course is designed to provide students with fundamentals of pneumatic and hydraulic control systems, both in theory and practice. Students are expected to acquire knowledge of physical behaviors of pneumatic and hydraulic control system, the pneumatics and hydraulics components and applications. Topics covered include but not limited to introduction to pneumatic; components of pneumatic system; pneumatic actuators; development of single and multiple actuator pneumatic circuits; designing electro- pneumatic system; introduction to hydraulic; components of hydraulic system; hydraulic actuators; and development of single and multiple actuator hydraulic circuits. Knowledge on theory acquired in lecture is also enhanced with a practical work conducted in laboratory. The students also will learn to design and simulate the pneumatic and hydraulic system using simulation software, as well as industrial visit, talk or case studies.

Course Outcomes:

1. Ability to apply the concepts of Pneumatic and Hydraulic Systems.
2. Ability to design solutions for the Pneumatic and Hydraulic Systems related to industrial applications
3. Ability to implement Pneumatic and Hydraulic solutions using both simulation software and practical hardware setups
4. Ability to apply relevant knowledge and skills to support personal and professional development through lifelong learning.

EDJ29703 SISTEM TERBENAM & PENGANTARAMUKA [EMBEDDED SYSTEM & INTERFACING]**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 lecture is also enhanced with a practical work conducted in laboratory

Course Outcomes:

1. Ability to design solution in embedded system applications using programming language, interfacing between microcontroller and other I/O.
2. Ability to construct microcontroller-based circuits with programming for embedded system applications
3. Ability to communicate effectively on the project work through presentation.
4. Ability to apply engineering management and financial principles to complete engineering projects.

EDJ29803 PENGAWAL LOGIK BOLEH ATURCARA [PROGRAMMABLE LOGIC CONTROLLER]**No of Credits: 3****Course Synopsis:**

This course deals with the basic operation, application, and programming of the integrate industrial control system, concentrating on the industrial microprocessor programmable logic controller (PLC). The course covers historical background, uses of PLCs, product ranges, and benefits numbering systems and codes and logic concepts pertaining to PLCs. The student will develop an understanding of the PLC central processing unit, input-output systems, programming and peripheral devices, and programming languages and will develop skills in programming and documenting on a cross section of industrial PLCs. Much time will be spent in the lab working on different kinds of PLCs programming. Knowledge on theory acquired in lecture is also enhanced with a practical work conducted in laboratory.

Course Outcomes:

1. Ability to apply knowledge of the basics of Programmable Logic Controllers (PLC).
2. Ability to construct PLC programs using appropriate software.
3. Ability to design solution in PLC programming, editing and program observation.
4. Ability to function effectively in group to solve the problems and demonstrate the solution
5. Ability to collaborate effectively in group projects with professionalism and responsibility.

EDJ30002 KESELAMATAN INDUSTRI, PENGURUSAN KUALITI DAN ETIKA [INDUSTRIAL SAFETY, QUALITY MANAGEMENT AND ETHICS]**No of Credits: 3****Course Synopsis:**

This course gives an exposure to students to understand industrial safety Acts, Regulations, ISO Standards, Requirements, QMS concept and various safety and quality tools that allow students to understand the general picture of both areas which are being practiced by industries. Students can apply moral and ethical values as professional technicians based on an understanding of the code of ethics of practice learned. At the end of this course, students are expected to be the best professionals in an industrial

environment and community

Course Outcomes:

1. Ability to analyse well-defined engineering problem related to Industrial Safety and Quality Management Systems with appropriate tools and techniques.
2. Ability to justify on Act, Regulation, Standard, or Requirement related to Industrial Safety or Quality Management Systems issues.
3. Ability to justify engineering issues based on engineering Code of Ethics practise.
4. Ability to analyse the case studies of Industrial Safety, Quality Management Systems or Ethical issues with engagement of life-long learning.

EDJ30108 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]**No of Credits: 8****Course Synopsis:**

The course will expose students to technical and application aspect as well as other aspect such as company's operation, work culture, safety procedure, project management, communication, technical skills and presentation. The students are required to submit their logbook and final report at the end of the industrial training. Overall, the course is practical-based.

Course Outcomes:

1. Ability to demonstrate technical knowledge and practical skills.
2. Ability to adapt to health, safety, legal, cultural and sustainability 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 well-defined engineering activities involved

EDJ32003 SISTEM KUASA 2 [POWER SYSTEM 2]**No of Credits: 3****Course Synopsis:**

This course covers topics of introduction and basic analysis to economics of generations, transmission line modeling study, power system protection study and introduction to components of transmission & distribution system in Malaysia. This course intends to give the students fair knowledge about electrical power systems.

Course Outcomes:

1. Ability to evaluate the theoretical of transmission line parameters and models, power transfer and protection to the well-define engineering problem.
2. Ability to investigate electrical power system performance through analysis of load profile, transmission line characteristics, protection and relay coordination.
3. Ability to communicate effectively to demonstrate components of transmission and distribution system.

EDJ32103 ELEKTRONIK KUASA [POWER ELECTRONIC]**No of Credits: 3****Course Synopsis:**

This course will introduce the students to the power electronics converters, power electronics concept and power semiconductor devices. Types of converters and their circuit implementation such as AC-DC, AC-AC, DC-DC and DC-AC will be introduced to the students. Students also will be exposed to the circuit and waveforms analysis for each converter and application of power electronics converters as motor drives.

Course Outcomes:

1. Ability to apply knowledge of power electronics system, devices and its applications
2. Ability to evaluate power electronics converter topologies and operation.
3. Ability to conduct investigation on converters and their performances.

EDJ32304 PROJEK TAHUN AKHIR [FINAL YEAR PROJECT]**No of Credits: 4****Course Synopsis:**

This course is a small-scale research project for final year students and expected to be completed within one semester. The projects are based on solving the engineering problem by understanding the problems, troubleshooting, identifying, solving and finally report writing for the documentation purposes. The projects are related to electrical power, power electronics, renewable energy, control, instrumentation and internet of things.

Course Outcomes:

1. Ability to design solutions for well-defined technical problems with consideration of safety, society, culture, and the environment.
2. Ability to conduct investigations to solve well-defined problems using standard tests and relevant codes
3. Ability to apply ethical principles to professional responsibilities in completing technical projects.
4. Ability to engage in independent and life-long learning with critical thinking in conducting literature on the relevant engineering principles and theories.
5. Ability to demonstrate entrepreneurial skills in developing innovative solutions with potential for commercialization.

EDJ32503 AMALAN PENTAULIAHAN DAN PENYELENGGARAAN SISTEM KUASA [POWER SYSTEM COMMISSIONING AND MAINTENANCE PRACTICE]**Course Synopsis:**

This course is to provide students with clear understanding on maintenance and commissioning practice of electrical power system equipment. It will cover both practical and theoretical information on the maintenance and testing of transformers, circuit breakers, protective relay and other electrical equipment. In the practical session

students will be divided into several groups to carry out laboratory experiments. Students will also gain knowledge regarding standard documentation, policy, investigation technique and data analysis prior to the commissioning. In addition, students will be exposed to standard apparatus and equipment used by utilities for commencing maintenance and commissioning work.

Course Outcomes:

1. Ability to analyze the specifications and performances of substation components
2. Ability to perform electrical testing on substation components.
3. Ability to identify the regulations regarding safety issues on power system components

EDJ32603 PENYELENGGARAAN SISTEM TENAGA BOLEH DIPERBAHARUI [RENEWABLE ENERGY SYSTEM MAINTENANCE]**No of Credits: 3****Course Synopsis:**

This course introduces students to the latest developments in sustainable electrical energy resources. Students will learn about various types of renewable energy sources and their integration with electrical systems. The course covers different types of photovoltaic (PV) materials, their characteristics, and the basic procedures for designing and setting up a PV system. Students will also be introduced to the principles of operation and maintenance of PV systems to ensure efficient performance. In addition, the course provides an overview of other renewable energy technologies, including wind, hydro, and biomass energy systems.

Course Outcomes:

1. Ability to perform renewable energy maintenance procedures using a problem-solving approach
2. Ability to relate ethical principles in renewable energy maintenance.
3. Ability to evaluate project management techniques and financial principles specific to renewable energy maintenance.

EDJ39103 AUTOMASI INDUSTRI & ROBOTIK [INDUSTRIAL AUTOMATION & ROBOTICS]**No of Credits: 3****Course Synopsis:**

This course covers basic mathematics related to industrial robots for control, design and application. Learn the basic principles of robotics, robot classification and robot mechanisms, robot components, basics of control systems, robot programming and industrial automation systems. In addition, it also covers safety standards and procedures related to industrial automation and robotics.

Course Outcomes:

1. Ability to analyse robot components and kinematics of robot manipulator
2. Ability to design solution of an automated manufacturing system for industrial applications.
3. Ability to evaluate robot programming, including forward and inverse kinematics for industrial automation applications.
4. Ability to comply with safety standard and procedures in industrial robotics.

EDJ39203 SISTEM KAWALAN [CONTROL SYSTEMS]**No of Credits: 3****Course Synopsis:**

This course introduces the basic of control systems in various engineering applications. Throughout this course, students will learn the fundamental of control systems such as Laplace transform, transfer function, block diagram, signal flow graph, mathematical modelling of dynamic systems, time response analysis, stability of linear system, root locus and frequency domain analysis. The laboratory will be used to aid the students understanding of the concept introduced.

Course Outcomes:

1. Ability to apply physical systems into mathematical models by applying suitable techniques.
2. Ability to evaluate the time domain and frequency domain for specific systems
3. Ability to conduct investigation regarding characteristics for control systems problems

EDJ39302 INTERNET BENDA (IoT) [INTERNET OF THINGS (IoT)]**No of Credits: 2****Course Synopsis:**

This course is designed to provide students with understanding of IoT applications and microcontrollers with hand-on practice. Students are expected to acquire knowledge of programming techniques, IoT application protocols, software and tools, explore coding and method using AI generative, and cloud application. Knowledge of practical laboratory practices fully enhances student skill development in the era of the modern industrial revolution (IR4.0) and beyond, also empowering TVET.

Course Outcomes:

1. Ability to design a solution of IOT application using programming language, interfacing between microcontroller and other I/O devices
2. Ability to construct microcontroller hardware and software programming based on IOT application
3. Ability to collaborate effectively in groups to demonstrate project work
4. Ability to demonstrate awareness of entrepreneurship in completing engineering project

EDJ39404 PROJEK TAHUN AKHIR [FINAL YEAR PROJECT]**No of Credits: 4****Course Synopsis:**

This course is a one semester research project for final year Diploma student. The projects serve to demonstrate the skills and engineering knowledge acquired by the students throughout their studies. The projects will be based on solving engineering problems which include understanding and identify the problem concerned, troubleshooting, fabrication work, and come out with possible solutions. This course offers soft skills building in communication skills via oral presentation and ability to transfer knowledge in form of report writing at the end of the semester. The projects are related to electronics based, internet of things, control, sensors, instrumentation, robotics, automation, image & signal processing and renewable energy.

Course Outcomes:

1. Ability to analyse the engineering problems through literature review and technical knowledge
2. Ability to design solutions of well-defined engineering problems with analysis and investigation
3. Ability to utilise appropriate technology or tools in solving well-defined engineering problems
4. Ability to justify the impact of the project solution which relates to sustainability, societal and environmental
5. Ability to communicate effectively on the project work through presentation
6. Ability to organise project planning, scheduling and finance through project management practices
7. Ability to demonstrate entrepreneurial skills by doing market research and managing project resources.

FACULTY OF ELECTRONIC ENGINEERING & TECHNOLOGY

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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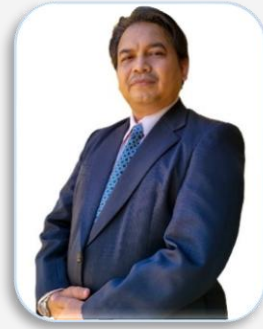
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UR4523003 Diploma in Electronic Engineering

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

PEO 4

Graduates who have contributed through innovation and entrepreneurship activity.

PROGRAMME OUTCOMES (PO)

P01

Knowledge: Apply knowledge of applied mathematics, applied science, computing and engineering fundamentals and an engineering specialisation to wide practical procedures and practices

P02

Problem Analysis: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity.

P03

Design/Development of Solutions: Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, as well as cultural, societal, and environmental considerations as required.

P04

Investigation: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements.

P05

Tool Usage: Apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations

P06

The Engineering Technician and the World: Consider sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well-defined engineering problems.

P07

Ethics: Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

P08

Individual and Collaborative Teamwork: Function effectively as an individual, and as a member in diverse and inclusive teams in multidisciplinary, face-to-face, remote and distributed settings

P09

Communications: Communicate effectively and inclusively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.

P010

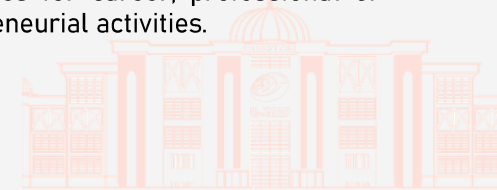
Project Management and Finance: Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments.

P011

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 specialised technical knowledge.

P012

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 | | | | | | |
|--|--|--|--|---|--|---|
| UR4523003 DIPLOMA IN ELECTRONIC ENGINEERING INTAKE 2026/2027 | | | | | | |
| YEAR | FIRST | | SECOND | | THIRD | |
| SEMESTER | 1 | 2 | 3 | 4 | 5 | 6 |
| DISCIPLINE CORE COURSES (73 CREDITS) | NDJ10003 Electronic Engineering Skill [Kemahiran Kejuruteraan Elektronik] | NDJ20303 Semiconductor Physics And Devices [Fizik dan Peranti Semikonduktor] | NDJ30203 Programmable Logic Controller [Pengawal Logik Boleh Atur Cara] | NDJ20403 Microcontroller System [Sistem Mikropengawal] | NDJ30003 Electronic Instrumentation [Instrumentasi Elektronik] | NDJ30508 Industrial Training [Latihan Industri] |
| | NDJ10102 Engineering Physics [Fizik Kejuruteraan] | NDJ10503 Electronic Devices [Peranti Elektronik] | NDJ20002 Quality Management, Industrial Safety And Ethics [Keselamatan Industri, Pengurusan Kualiti dan Etika] | NDJ21103 Electronic Packaging [Pembungkusan Elektronik] | NDJ30703 Communication System [Sistem Komunikasi] | |
| | NDJ10203 Electric Circuits [Litar Elektrik] | NDJ10603 Electrical Technology [Teknologi Elektrik] | NDJ20503 Integrated Circuit Layout [Bentangan Litar Bersepadu] | NDJ21403 Wafer Fabrication [Fabrikasi Wafer] | NDJ30103 Control Systems [Sistem Kawalan] | |
| | NDJ10303 Digital System I [Sistem Digit 1] | NDJ20103 Digital System II [Sistem Digit 2] | NDJ20603 Analogue Electronics [Elektronik Analog] | NDJ21803 Signal & System [Isyarat & Sistem] | NDJ30304 Final Year Project [Projek Tahun Akhir] | |
| | NDJ10403 Computer Programming [Pengaturcaraan Komputer] | | | | NDJXXXXX Elective [Elektif] | |
| COMMON CORE COURSES (9 CREDITS) | | IDQ10103 Mathematics 1 [Matematik 1] | IDQ20203 Mathematics 2 [Matematik 2] | IDQ20303 Mathematics 3 [Matematik 3] | | |
| UNIVERSITY REQUIREMENT COURSES (12 CREDITS) | SDZ1XXXX Co-Curriculum 1 [Ko-Kurikulum 1] | SDZ1XXXX Co-Curriculum 2 [Ko-Kurikulum 2] | SDB11302 Communicative English 3 [Bahasa Inggeris Komunikasi 3] | SDU22502 Basics of Entrepreneurship [Asas Keusahawanan] | SDU13002 Perlembagaan dan Masyarakat Berintegriti [The Constitution and Integrity Society] | |
| | | SDB11202 Communicative English 2 [Bahasa Inggeris Komunikasi 2] | SDU33602 Pengenalan kepada Kecerdasan Buatan dalam Masyarakat Introduction to Artificial Intelligence in Society | | | |
| TOTAL CREDITS (94 CREDITS) | 15 | 18 | 18 | 17 | 18 | 8 |
| AUDIT COURSES | IDQ10002 ^[1] Preliminary Mathematics [Matematik Awalan] | | | SDB31002 ^[2] Malay Language [Bahasa Melayu] | | |
| | SDB11102 ^[3] Communicative English 1 [Bahasa Inggeris Komunikasi 1] | | | | | |

Elective : NDJ21303 Failure Analysis [Analisa Kegagalan] or NDJ21903 Digital Integrated Circuit [Litar Bersepadu Digital]

[1] Compulsory for students with grade D and without Additional Mathematics (Matematik Tambahan) in SPM. QDQ10002 - Preliminary Mathematics is an Audit course.

[2] Compulsory for students with grades B+ and below in Malay Language (Bahasa Melayu) SPM. SDB31002 - Malay Language is an Audit course.

[3] Compulsory for students with grades B+ and below in English Language (Bahasa Inggeris) SPM. SDB11102 - Communicative English 1 is an Audit course.

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|---|--------------|
| NDJ10003 | Kemahiran Kejuruteraan Elektronik [Electronic Engineering Skills] | Tiada |
| NDJ10102 | Fizik Kejuruteraan [Engineering Physics] | Tiada |
| NDJ10203 | Litar Elektrik [Electric Circuits] | Tiada |
| NDJ10303 | Sistem Digit I [Digital System I] | Tiada |
| NDJ10403 | Pengaturcaraan Komputer [Computer Programming] | Tiada |
| NDJ10503 | Peranti Elektronik [Electronic Devices] | Tiada |
| NDJ10603 | Teknologi Elektrik [Electrical Technology] | Tiada |
| NDJ20002 | Keselamatan Industri, Pengurusan Kualiti Dan Etika [Quality Management, Industrial Safety And Ethics] | SDG 3, 9, 11 |
| NDJ20103 | Sistem Digit II [Digital System II] | Tiada |
| NDJ20303 | Fizik & Peranti Semikonduktor [Semiconductor Physic & Devices] | Tiada |
| NDJ20403 | Sistem Mikropengawal [Microcontroller System] | Tiada |
| NDJ20503 | Bentangan Litar Bersepadu [Integrated Circuit Layout] | Tiada |

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|---|-------------|
| NDJ20603 | Elektronik Analog [Analogue Electronics] | Tiada |
| NDJ21103 | Pembungkusan Elektronik [Electronic Packaging] | SDG 9 |
| NDJ21303 | Analisis Kegagalan [Failure Analysis] | SDG 7 |
| NDJ21403 | Fabrikasi Wafer [Wafer Fabrication] | Tiada |
| NDJ21803 | Isyarat & Sistem [Signal & System] | Tiada |
| NDJ21903 | Litar Bersepadu Digital [Digital Integrated Circuit] | Tiada |
| NDJ30003 | Instrumentasi Elektronik [Electronic Instrumentation] | Tiada |
| NDJ30103 | Sistem Kawalan [Control Systems] | Tiada |
| NDJ30203 | Pengawal Logik Boleh Aturcara [Programmable Logic Controller] | Tiada |
| NDJ30304 | Projek Tahun Akhir [Final Year Project] | SDG 4, 7, 9 |
| NDJ30508 | Latihan Industri [Industrial Training] | SDG 4, 8, 9 |
| NDJ30703 | Sistem Komunikasi [Communication System] | Tiada |

NDJ10003 KEMAHIRAN KEJURUTERAAN ELEKTRONIK [ELECTRONIC ENGINEERING SKILLS]**No of Credits: 3****Course Synopsis:**

This course is a 100% practical coursework subject carrying 3 credit hours, designed to equip students with fundamental electronic engineering skills through hands-on learning. It comprises three (3) modules: (i) Basic Electronic Circuits, including PCB layout design, PCB fabrication, and soldering; (ii) AutoCAD, and (iii) Technical Drawing. Upon completing this course, students will develop essential technical competencies that strengthen their understanding and application of electronic concepts in other subjects throughout their studies.

Course Outcomes:

1. Ability to perform basic circuit and component assembly according to given instructions
2. Ability to fabricate a PCB, including transferring the design, drilling, etching, and developer stage.
3. Ability to design an electronic schematic diagram and PCB layout using KiCAD software.
4. Ability to perform related technical drawing and CAD software techniques in solving engineering drawing problems.

NDJ10102 FIZIK KEJURUTERAAN [ENGINEERING PHYSICS]**No of Credits: 2****Course Synopsis:**

The purpose of this course is to give the knowledge for student about physics and engineering that involve physicals and sciences phenomena, which is the basic for engineering. Theories, principles and standard units have been focused for every syllabus so that the student could understand fully about this course.

Course Outcomes:

1. Ability to explain the basic concepts of physics.
2. Ability to analyze the principle concepts of physics in engineering applications.
3. Ability to communicate effectively to address engineering issues by relating them to fundamental principles of physics.

NDJ10203 LITAR ELEKTRIK [ELECTRIC CIRCUITS]**No of Credits: 3****Course Synopsis:**

This course covers introduction to the basics of electrical measurements, Ohm's Law, Series and Parallel Circuits, Circuit Theorems and Conversions, and RLC circuits. This

course will expose the students to the elements and principles of electrical circuit theory appropriate to any RLC circuit applications.

Course Outcomes:

1. Ability to apply knowledge of fundamentals for an electric circuit.
2. Ability to analyze problems related to an electrical circuit.
3. Ability to apply appropriate techniques and tools to demonstrate fundamental skills in electric circuit.

NDJ10303 SISTEM DIGIT I [DIGITAL SYSTEM I]**No of Credits: 3****Course Synopsis:**

This course provides students an exposure to logic design, particularly combinational logic functions. The students are expected to demonstrate the fundamentals of digital electronic circuits design through exposure of basic logic IC's and parallels digital simulation software. The course then develops students to understand and analyse combinational logic applications such as basic decoder and encoder, multiplexer and demultiplexer, adders, comparators and parity circuits. Finally, students are expected to design combinational logic applications and demonstrate their understanding throughout the laboratory and presentation.

Course Outcomes:

1. Ability to apply knowledge and concept of the fundamental digital logic design.
2. Ability to analyze well defined combinational logic functions.
3. Ability to demonstrate practical design for well-defined combinational logic functions.

NDJ10403 PENGATURCARAAN KOMPUTER [COMPUTER PROGRAMMING]**No of Credits: 3****Course Synopsis:**

It delivers the competency to students in applying the fundamental programming concepts and is able to analyse problems and produce the solution using algorithm development tools. The course will be delivered using the basic programming language that is trending at the current market.

Course Outcomes:

1. Ability to use appropriate tools for coding, compiling, executing, and debugging computer program.
2. Ability to apply programming techniques with precision to develop, test, and debug functional software solutions and prototypes that address defined engineering problems.

NDJ10503 PERANTI ELEKTRONIK [ELECTRONIC DEVICES]**No of Credits: 3****Course Synopsis:**

This course is designed to provide and expose students with fundamentals and application of basic semiconductor devices such as diode, Bipolar Junction Transistor (BJT) and Field Effect Transistor (FET). The syllabus consists of understanding the principles and operation of semiconductor devices, investigating the applications of these devices and solving BJT and FET parameters using various types of biasing. Knowledge on theory acquired in lecture is also enhanced with practical work conducted in the laboratory.

Course Outcomes:

1. Ability to apply basic theories and operations of semiconductor materials and devices.
2. Ability to analyse characteristics and applications related to semiconductor devices.
3. Ability to assemble circuits using semiconductor devices in the laboratory.

NDJ10603 TEKNOLOGI ELEKTRIK [ELECTRICAL TECHNOLOGY]**No of Credits: 3****Course Synopsis:**

This course will expose the students to the AC circuits, electromagnetic, basic transformer and electrical machines. The topics covered include the AC circuits analysis, electromagnetism, electrical transformers, DC machines and AC machines. General concepts and basic principles of operation for each electrical machine are covered including the characteristics and performance analysis.

Course Outcomes:

1. Ability to apply fundamental theorems, laws, and principles of electrical engineering in solving engineering problems.
2. Ability to analyse the fundamentals, operation, and applications of electrical systems and machines based on their equivalent circuits and performance characteristics.
3. Ability to construct appropriate techniques and engineering tools for the simulation and execution of electrical works.

NDJ20002 KESELAMATAN INDUSTRI, PENGURUSAN KUALITI DAN ETIKA [QUALITY MANAGEMENT, INDUSTRIAL SAFETY AND ETHICS]**No of Credits: 2****Course Synopsis:**

This course provides students with a comprehensive understanding of industrial safety operations and guidelines, quality management standards and principles, a range of quality tools, and ethical practices commonly applied in industries. It equips students with the knowledge required to grasp the broader framework of safety, quality management and ethical principles in various industries. By the end of the course, students will be able to apply industrial safety standards, as well as implement suitable quality techniques and tools for production management and ethical principles effectively in real-world industrial environments.

Course Outcomes:

1. Ability to analyze the impact of industrial safety and quality management systems (QMS) on health, safety and sustainability using relevant laws and standards.
2. Ability to analyze ethical principles and issues related to engineering ethics and the Code of Ethics.
3. Ability to communicate effectively by structuring presentations on engineering activities, with a focus on Industrial Safety, Quality Management Systems, or Ethical Issues.
4. Ability to evaluate for life-long learning on the case studies in the context of Industrial Safety, QMS or Ethical issues.

NDJ20103 SISTEM DIGIT II [DIGITAL SYSTEM II]**No of Credits: 3****Course Synopsis:**

This course exposed the students to the applications of Combinational and Sequential Logic System particularly in shift register and counter design. The course also includes Introduction to Sequencing and Control which will guide the students for subjects that will be taken in later semesters.

Course Outcomes:

1. Ability to relate the theories of basic storage devices and fundamental operations of sequential circuit application.
2. Ability to develop counters using transition tables and counter application using finite state machine and register transfer language.
3. Ability to construct sequential circuit using CAD tools and program onto hardware.
4. Ability to contribute effectively in teamwork for completing tasks and group projects in digital systems.

NDJ20303 FIZIK & PERANTI SEMIKONDUKTOR [SEMICONDUCTOR PHYSIC & DEVICES]**No of Credits: 3****Course Synopsis:**

The aim of this course is to give the knowledge for students about physics in terms of semiconductor and engineering that involve physical phenomena, which is the basis for engineering. Theories and principles have been focused for every syllabus so that the student could understand fully about this course.

Course Outcomes:

1. Ability to apply the fundamental concepts of semiconductor physics and devices.
2. Ability to analyse problems related to semiconductor physics and devices by using appropriate solutions.
3. Ability to communicate effectively to overcome issues in semiconductor physics and devices.

NDJ20403 SISTEM MIKROPENGAWAL [MICROCONTROLLER SYSTEM]**No of Credits: 3****Course Synopsis:**

The aim of this course is to study the Intel 8051 microcontroller architecture and relate that knowledge to the design of microcontroller based systems. This includes the design technique using internal I/O interfacing, internal memory and application of the 8051 special feature configuration for the systems. The study of 8051 instruction set and assembly language programming through various software development tools are also emphasized as the knowledge are needed in the designing of controller-based systems.

Course Outcomes:

1. Ability to analyse the concept of microcontroller system.
2. Ability to design appropriate microcontroller-based solutions for given problems.
3. Ability to demonstrate proficiency in fundamental microcontroller system applications.
4. Ability to communicate effectively in presenting microcontroller-based project.

NDJ20503 BENTANGAN LITAR BERSEPADU [INTEGRATED CIRCUIT LAYOUT]**No of Credits: 3****Course Synopsis:**

Layout design is a process of creating an accurate physical of an engineering drawing that conforms to constraints imposed by the manufacturing process. Hence, this course introduces the transistor theory, CMOS logic, and alternative CMOS logic families. Stick diagrams, design rules, and design verification are also addressed

throughout the course. This course also examines on the alternative CMOS logic families in understanding the design techniques.

Course Outcomes:

1. Ability to apply microelectronic technologies, IC design flow, and VLSI design principles to create fundamental circuit designs.
2. Ability to develop CMOS transistor level, logic circuits design and layout of a circuit.
3. Ability to construct an IC layout for a circuit using industry-standard software.
4. Ability to collaborate effectively with team members and work individually to complete tasks and group projects.

NDJ20603 ELEKTRONIK ANALOG [ANALOGUE ELECTRONICS]**No of Credits: 3****Course Synopsis:**

This course introduces characteristics, analysis on fundamental circuits and basic application of Bipolar Junction Transistor (BJT) and Field Effect Transistor (FET). The analysis provided a basic understanding of circuit operation and characteristics involving direct current (DC) and alternate current (AC) until a multistage amplifier. The concept of power amplifiers in various classes continues with the usage in amplifiers as well as power amplifier circuits..

Course Outcomes:

1. Ability to explain basic theories of analogue electronics.
2. Ability to analyze and evaluate operation of Bipolar Junction Transistors (BJTs), Field Effect Transistors (FETs, BJTs multistage and Power amplifier circuits.
3. Ability to construct circuit of BJT, FET, Multistage Amplifier and Power amplifier circuits experiment.

NDJ21103 PEMBUNGKUSAN ELEKTRONIK [ELECTRONIC PACKAGING]**No of Credits: 3****Course Synopsis**

The aim of this course is to expose students about the electronics packaging process flow and the quantitative analysis method to control the semiconductor packaging processes. Theories and principles have been focused for every syllabus so that the student could understand fully about this course. Topics covered in this course are, Introduction to Microsystems Packaging, The Role of Packaging in Microelectronics, General Semiconductor Packaging Process Flow, Interconnection in IC Assembly, Fundamental Design For Reliability and Quantitative Analysis.

Course Outcomes:

1. Ability to apply fundamental concepts of electronic packaging principles and materials to solve well-defined practical procedures and practices.
2. Ability to analyse the relationship between material properties and process parameters in electronic packaging based on experimental data.
3. Ability to analyse investigation results from standard tests and measurements using modern engineering tools for electronic packaging processes.
4. Ability to operate efficiently and accurately with laboratory equipment and modern tools for electronic packaging processes.
5. Ability to work individually and in teams to complete tasks related to electronic packaging.

NDJ21303 ANALISA KEGAGALAN [FAILURE ANALYSIS]**No of Credits: 3****Course Synopsis:**

The purpose of this course is to give the knowledge for students about the process flow of failure analysis in general and also the techniques used in failure analysis engineering as well. Destructive and NDT is the main focus in the subject and also the inspection technique as devices use for observation and analysis. Topic covered in this course are, Intro to FA, Electrical Characterization, Package Analysis, Fault Localization, Die Exposure and Die Deprocessing and also Metallographic Cross Sectioning.

Course Outcomes:

1. Ability to apply knowledge of failure analysis concepts, techniques and process flow in microelectronic devices.
2. Ability to evaluate appropriate FA techniques for specific failure conditions in microelectronic devices.
3. Ability to demonstrate practical skills using different tools and techniques for conducting failure analysis.

NDJ21403 FABRIKASI WAFER [WAFER FABRICATION]**No of Credits: 3****Course Synopsis:**

This course introduces the processes involved in ICs fabrication. Both theories and practicals are combined to assure that students are able to perform the wafer fabrication processes independently. Four topics related to wafer fabrication processes are covered in this course are; thermal process, photolithography, etching and metallization.

Course Outcomes:

1. Ability to analyse the fundamental concept of wafer fabrication process.
2. Ability to evaluate the problems related to semiconductor device fabrication and overcome by using appropriate solutions.

3. Ability to apply appropriate techniques in handling equipment related to the wafer fabrication process.
4. Ability to communicate effectively to overcome issues involve in semiconductor device fabrication.

NDJ21903 LITAR BERSEPADU DIGITAL [DIGITAL INTEGRATED CIRCUIT]**No of Credits: 3****Course Synopsis:**

This course provides a comprehensive introduction to Digital Integrated Circuit design using Verilog HDL. Students will model combinational and sequential logic, explore modular design, and develop Finite State Machines (FSM). Using Altera Quartus, students will synthesize, simulate, and verify functional digital systems on FPGA hardware to solve well-defined engineering problem.

Course Outcomes:

1. Ability to apply the fundamental concepts and operating principles of digital integrated circuits to determine the functionality of logic gates, combinational circuits and sequential circuits.
2. Ability to design a digital integrated circuit systems using Verilog HDL.
3. Ability to perform simulation and verification of digital integrated circuits using appropriate engineering tools.

NDJ30003 INSTRUMENTASI ELEKTRONIK [ELECTRONIC INSTRUMENTATION]**No of Credits: 3****Course Synopsis:**

Introduction to the basics of electronic instrumentation, transducers and the internet of things (IoT) system that is used in modern instrumentation systems and embedded system design. Expose students to the elements and principles of data acquisition system and sensor integration with appropriate applications. Practical involves the interfacing of transducer circuits and signal conditioning circuits to internet of things (IoT) systems.

Course Outcomes:

1. Ability to analyze problems related to electronic instrumentation and internet of things.
2. Ability to operate efficiently and accurately with laboratory equipment and modern tools for electronic instrumentation.
3. Ability to develop a comprehensive project strategy applying engineering management principles to manage electronic instrumentation and IoT projects in a multidisciplinary environment.
4. Ability to identify entrepreneurial opportunities and formulate self-improvement initiatives for career development within the field of electronic instrumentation

NDJ30103 SISTEM KAWALAN [CONTROL SYSTEMS]**No of Credits: 3****Course Synopsis:**

The course covers mathematical modelling of electrical and mechanical systems using Laplace transform. They will also learn the basics of transfer function, block diagram, signal flow graph and time response analysis. Afterwards, they will learn how to improve system stability in time and frequency domains. Lab experiments help understand further

Course Outcomes:

1. Ability to analyze mathematical models using Laplace transform for the interpretation of control system response characteristics.
2. Ability to evaluate the stability of a system's response in time and frequency domain using appropriate stability criteria.
3. Ability to execute analysis and evaluation of open and closed loop system responses using computer-aided software tools.

NDJ30203 PENGAWAL LOGIK BOLEH ATURCARA [PROGRAMMABLE LOGIC CONTROLLER]**No of Credits: 3****Course Synopsis:**

Programmable Logic Controllers (PLCs) are the predominant tool for controlling industrial and specialty systems. These computer based controllers provide a variety of programming options and easily configurable inputs and outputs. This course deals with the basic operation, application and programming of the integrated industrial control system, concentrating on the industrial PLC. The course covers introduction to PLC, basic PLC operations and instructions, product ranges, benefits numbering systems and codes and combinational logic concepts pertaining to PLCs. The student will develop an understanding of the PLC central processing unit, input-output systems, programming and peripheral devices, and programming languages and will develop skills in programming and documenting on a cross section of industrial PLCs.

Course Outcomes:

1. Ability to explain the fundamental concepts of Programmable Logic Control, principles of digital design using PLCs and electronic input-output components in the engineering field.
2. Ability to apply PLC programming techniques.
3. Ability to configure and troubleshoot PLC hardware and software effectively.

NDJ30703 SISTEM KOMUNIKASI [COMMUNICATION SYSTEM]**Course Synopsis:**

This course introduces the students with basic communications systems including parameters, basic elements, modems and noise. The knowledge gained will contribute to understanding the operation of the related circuit. The exposures in amplitude modulations and frequency modulations will help the most in understanding the real

applications. The introduction of digital communications will enhance the students' understanding about the revolution of communications and latest technology.

Course Outcomes:

1. Ability to explain the fundamental of electronic communication systems, including signal transmission, modulation techniques, multiplexing, and filtering.
2. Ability to analyze the outputs signals of amplitude modulation (AM) and frequency modulation (FM) circuits.
3. Ability to perform basic modulation techniques in communication systems using standard procedures.

NDJ30304 PROJEK TAHUN AKHIR [FINAL YEAR PROJECT]**No of Credits: 4****Course Synopsis:**

This course is a one semester research project for final year Diploma student. The projects serve to demonstrate the skills and engineering knowledge acquired by the students throughout their studies. The projects will be based on solving engineering problems which include understanding and identify the problem concerned, troubleshooting, fabrication work, and come out with possible solutions. This course offers soft skills building in communication skills via oral presentation and ability to transfer knowledge in form of report writing at the end of the semester. The projects are related to electronics based, internet of things, control, sensors, instrumentation, robotics, automation, image & signal processing and renewable energy.

Course Outcomes:

1. Ability to analyse engineering problems on the proposed project.
2. Ability to develop appropriate technique and analyse data to solve engineering problem.
3. Ability to organise research activities systematically to ensure effective and timely project execution.
4. Ability to apply appropriate engineering techniques and tools to well-defined engineering problems.
5. Ability to demonstrate the element of environment and sustainability in project implementation.
6. Ability to demonstrate responsibilities and ethical related to the project implementation in accordance with establish guidelines.
7. Ability to communicate effectively in delivering concepts, ideas and project operation based on technical justification.
8. Ability to manage the project and finance according to Gantt Chart (milestone) and effective costing.
9. Ability to demonstrate continuous learning of new knowledge and skill to support the development of the project.
10. Ability to demonstrate personal skill in entrepreneurial activities.

NDJ30508 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]**No of Credits: 8****Course Synopsis:**

The course will expose students to aspects such as technical, application, company organization structure, company operation, department function, work procedure, safety procedure, management, communication, skills, project management and presentation. The students are also required to submit their log book and final report at the end of the industrial training. Overall, the course is practical-based.

Course Outcomes:

1. Ability to perform industrial applications by integrating theoretical concepts and practical skills with proficiency.
2. Ability to embody safety, health, and legal practices as integral values in the working environment.
3. Ability to commit to professional ethics of technician practices.
4. Ability to work effectively as an individual, and as a member in diverse technical teams to complete the given task by the host company.
5. Ability to communicate effectively and comprehend the work of others to complete the given task.
6. Ability to apply independent learning skills by identifying and documenting new knowledge and skills gained during industrial training.

FACULTY OF MECHANICAL ENGINEERING & TECHNOLOGY

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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UR4540001 Diploma in Manufacturing Engineering

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates are competence in manufacturing engineering field as demonstrated through career progression.

PEO 2

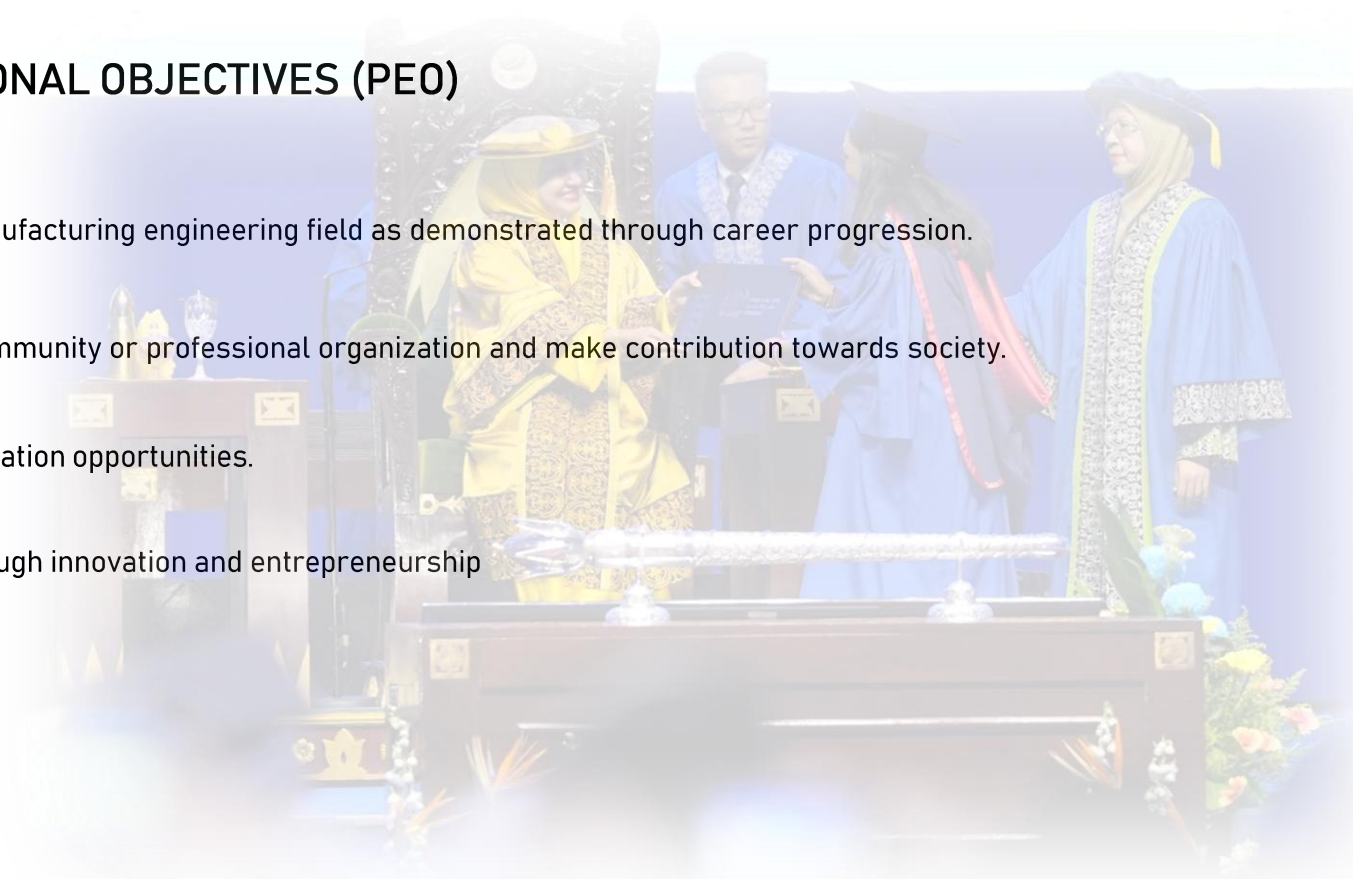
Graduates who are involved in community or professional organization and make contribution towards society.

PEO 3

Graduates pursue continuing education opportunities.

PEO 4

Graduates make contribution through innovation and entrepreneurship



PROGRAMME OUTCOMES (PO)

P01

Knowledge: Apply knowledge of applied mathematics, applied science, computing and engineering fundamentals and an engineering specialisation to wide practical procedures and practices.

P02

Problem analysis: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity.

P03

Design/development of solutions: Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, as well as cultural, societal, and environmental considerations as required.

P04

Investigation: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements.

P05

Tool Usage: Apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations.

P06

The Engineering Technician and the World: Consider sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well-defined engineering problem.

P07

Ethics: Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

P08

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

P09

Communications: Communicate effectively and inclusively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.

P010

Project Management and Finance: Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments.

P011

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 specialised technical knowledge.

P012

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 UR4540001 DIPLOMA IN MANUFACTURING ENGINEERING INTAKE 2026/2027 | | | | | | |
|---|---|---|---|---|---|---|
| YEAR | FIRST | | SECOND | | THIRD | |
| SEMESTER | 1 | 2 | 3 | 4 | 5 | 6 |
| DISCIPLINE CORE COURSES (74 CREDITS) | MDJ12103 Materials [Bahan] | MDJ10103 Statics and Dynamics [Statik dan Dinamik] | MDJ20103 Mechanics of Materials [Mekanik Bahan] | MDJ20203 Thermo-Fluid [Termo-Bendalir] | MDJ34104 Final Year Project [Projek Tahun Akhir] | MDJ39908 Industrial Training [Latihan Industri] |
| | MDJ11103 Computer Programming [Pengaturcaraan Komputer] | MDJ12503 Computer-Aided Design [Reka Bentuk Terbantu Komputer] | MDJ21103 Electrical Technology [Teknologi Elektrik] | MDJ20303 Pneumatic and Hydraulic Systems [Sistem Pneumatik dan Hidraulik] | MDJ35102 Safety and Ethics [Keselamatan dan Etika] | |
| | MDJ12403 Engineering Drawing [Lukisan Kejuruteraan] | MDJ13303 Manufacturing Process 1 [Proses Pembuatan 1] | MDJ22302 Engineering Design [Reka Bentuk Kejuruteraan] | MDJ21203 Electronics [Elektronik] | MDJ31103 Manufacturing Automation and Internet of Things [Automasi Pembuatan dan Internet Pelbagai Benda] | |
| | MDJ13103 Technology and Handwork Practice [Teknologi dan Amalan Kerja Tangan] | MDJ13203 Technology and Machining Practice [Teknologi dan Amalan Pemesinan] | MDJ23103 Manufacturing Process 2 [Proses Pembuatan 2] | MDJ22403 Machine Components Design [Reka Bentuk Komponen Mesin] | MDJ32102 Injection Mould Design [Reka Bentuk Acuan Suntikan] | |
| | | | | MDJ23203 Computer-Aided Manufacturing [Pembuatan Terbantu Komputer] | MDJ33102 Production Planning and Control [Perancangan dan Kawalan Pengeluaran] | |
| | | | | | MDJ33303 Quality Engineering [Kejuruteraan Kualiti] | |
| COMMON CORE COURSES (9 CREDITS) | | IDQ10103 Mathematics 1 [Matematik 1] | IDQ20203 Mathematics 2 [Matematik 2] | IDQ20303 Mathematics 3 [Matematik 3] | | |
| UNIVERSITY REQUIREMENT COURSES (12 CREDITS) | SDZXXX01 Co-Curriculum 1 [Ko-Kurikulum 1] | SDB11202 Communicative English 2 [Bahasa Inggeris Komunikasi 2] | SDB11302 Communicative English 3 [Bahasa Inggeris Komunikasi 3] | | | |
| | SDU33602 Introduction to Artificial Intelligence in Society [Pengenalan Kepada Kecerdasan Buatan dalam Masyarakat] | SDZXXX01 Co-Curriculum 2 [Ko-Kurikulum 2] | SDU13002 The Constitution and Integrity Society [Perlembagaan dan Masyarakat Berintegriti] | | SDU22502 Basic of Entrepreneurship [Asas Keusahawanan] | |
| TOTAL CREDITS (95 CREDITS) | 15 | 18 | 18 | 18 | 18 | 8 |
| AUDIT COURSES | IDQ10002 ^[1] Preliminary Mathematics [Matematik Awalan] | SDB31002 ^[2] Malay Language [Bahasa Melayu] | | | | |
| | SDB11102 ^[3] Communicative English 1 [Bahasa Inggeris Komunikasi 1] | | | | | |

[1] Compulsory for students with grade D and without Additional Mathematics (Matematik Tambahan) in SPM. QDQ10002 - Preliminary Mathematics is an Audit course.

[2] Compulsory for students with grades B+ and below in Malay Language (Bahasa Melayu) SPM. SDB31002 - Malay Language is an Audit course.

[3] Compulsory for students with grades B+ and below in English Language (Bahasa Inggeris) SPM. SDB11102 - Communicative English 1 is an Audit course.

UR4521003 Diploma in Mechanical Engineering Technology

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates who are competent in their respective engineering technology fields as exhibited through career development.

PEO 2

Graduates who involved and contribute to the society.

PEO 3

Graduates who pursue education opportunity continually

PEO 4

Graduates who contribute through innovation and entrepreneurship



PROGRAMME OUTCOMES (PO)

P01

Knowledge: Apply knowledge of applied mathematics, applied science, computing and engineering fundamentals and an engineering specialisation to wide practical procedures and practices.

P02

Problem Analysis: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity.

P03

Design/ Development of Solutions: Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, as well as cultural, societal, and environmental considerations as required.

P04

Investigation: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements.

P05

Tool Usage: Apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations.

P06

The Engineering Technician and the World: Consider sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well-defined engineering problems

P07

Ethics: Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

P08

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

P09

Communications: Communicate effectively and inclusively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.

P10

Project Management and Finance: Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments.

P011

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 specialised technical knowledge.

P012

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 | | | | | | |
|---|--|--|--|--|--|---|
| UR4521003 DIPLOMA IN MECHANICAL ENGINEERING TECHNOLOGY INTAKE 2026/2027 | | | | | | |
| YEAR | FIRST | | SECOND | | THIRD | |
| SEMESTER | 1 | 2 | 3 | 4 | 5 | 6 |
| DISCIPLINE CORE COURSES (73 CREDITS) | MDK10103 Statics and Dynamics [Statik dan Dinamik] | MDK10502 Manufacturing Technology [Teknologi Pembuatan] | MDK20103 Strength of Materials [Kekuatan Bahan] | MDK20502 Computer Programming [Pengaturcaraan Komputer] | MDK30104 Final Year Project [Projek Tahun Akhir] | MDK30608 Industrial Training [Latihan Industri] |
| | MDK10203 Engineering Graphics [Grafik Kejuruteraan] | MDK10603 Computer Aided Design [Reka Bentuk Berbantu Komputer] | MDK20203 Computer Aided Design 2 [Reka Bentuk Berbantu Komputer 2] | MDK20603 Project Management [Pengurusan Projek] | MDK30203 Heat Transfer [Pemindahan Haba] | |
| | MDK10303 Workshop Technology [Teknologi Bengkel] | MDK10703 Quality Control [Kawalan Kualiti] | MDK20303 Thermodynamics [Termodinamik] | MDK20703 Instrumentation and Control [Instrumentasi dan Kawalan] | MDK30303 Computer Aided Engineering [Kejuruteraan Berbantu Komputer] | |
| | MDK10403 Materials Science [Sains Bahan] | MDK10803 Basic Electrical and Electronics [Asas Elektrik dan Elektronik] | MDK20403 Material Testing [Pengujian Bahan] | MDK20803 Fluid Mechanics [Mekanik Bendalir] | MDK30403 Industrial Ergonomics [Ergonomik Industri] | |
| | | | | MDK20903 CNC Technology [Teknologi CNC] | MDK30503 Ethics and Safety [Etika dan Keselamatan] | |
| COMMON CORE (9 CREDITS) | | IDQ10103 Mathematics 1 [Matematik 1] | IDQ20203 Mathematics 2 [Matematik 2] | IDQ20303 Mathematics 3 [Matematik 3] | | |
| UNIVERSITY REQUIREMENT COURSES (12 CREDITS) | SDU33602 Introduction to Artificial Intelligence in Society [Pengenalan Kepada Kecerdasan Buatan dalam Masyarakat] | SDB11202 Communicative English 2 [Bahasa Inggeris Komunikasi 2] | SDB11302 Communicative English 3 [Bahasa Inggeris Komunikasi 3] | | SDU22502 Basics of Entrepreneurship [Asas Keusahawanan] | |
| | SDU13002 The Constitution and Integrity Society [Perlembagaan dan Masyarakat Berintegriti] | | | | | |
| | SDZXX01 Co-curriculum 1 [Ko-Kurikulum 1] | SDZXX01 Co-curriculum 2 [Ko-Kurikulum 2] | | | | |
| TOTAL CREDITS (94 CREDITS) | 17 | 17 | 17 | 17 | 18 | 8 |
| AUDIT COURSES | QDQ10002 ^[1] Preliminary Mathematics [Matematik Awalan] | SDB31002 ^[2] Malay Language [Bahasa Melayu] | | | | |
| | SDB11102 ^[3] Communicative English 1 [Bahasa Inggeris Komunikasi 1] | | | | | |

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[3] Compulsory for students with grades B+ and below in English Language (Bahasa Inggeris) SPM. SDB11102 - Communicative English 1 is an Audit course.

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|--|------------|
| MDJ10103 | Statik dan Dinamik [Statics and Dynamics] | Tiada |
| MDJ11103 | Pengatucaraan Komputer [Computer Programming] | Tiada |
| MDJ12103 | Bahan [Materials] | SDG 11 |
| MDJ12403 | Lukisan Kejuruteraan [Engineering Drawing] | Tiada |
| MDJ12503 | Reka Bentuk Terbantu Komputer [Computer-Aided Design] | Tiada |
| MDJ13103 | Teknologi dan Amalan Kerja Tangan [Technology and Handwork Practice] | Tiada |
| MDJ13203 | Teknologi dan Amalan Pemesinan [Technology and Machining Practice] | Tiada |
| MDJ13303 | Proses Pembuatan 1 [Manufacturing Process 1] | SDG 9 |
| MDJ20103 | Mekanik Bahan [Machanics of Material] | Tiada |
| MDJ20203 | Themo-Bendalir [Thermo-Fluid] | SDG 7 |
| MDJ20303 | Sistem Pneumatik dan Hidraulik [Pneumatic and Hydraulic System] | Tiada |
| MDJ21103 | Teknologi Elektrik [Electrical Technology] | Tiada |
| MDJ21203 | Elektronik [Electronics] | Tiada |
| MDJ22302 | Reka Bentuk Kejuruteraan [Engineering Design] | Tiada |
| MDJ22403 | Reka Bentuk Komponen Mesin [Machine Components Design] | Tiada |
| MDJ23103 | Proses Pembuatan 2 [Manufacturing Process 2] | SDG 9 |
| MDJ23203 | Pembuatan Terbantu Komputer [Computer-Aided Manufacturing] | Tiada |
| MDJ31103 | Automasi Pembuatan dan Internet Pelbagai Benda [Manufacturing Automation and Internet of Things] | SDG 9 |

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|---|----------------|
| MDJ32102 | Reka Bentuk Acuan Suntikan [Injection Mould Design] | Tiada |
| MDJ33102 | Perancangan dan Kawalan Pengeluaran [Production Planning and Control] | Tiada |
| MDJ33303 | Kejuruteraan Kualiti [Quality Engineering] | Tiada |
| MDJ34104 | Projek Tahun Akhir [Final Year Project] | Tiada |
| MDJ35102 | Keselamatan dan Etika [Safety and Ethics] | SDG 8 |
| MDJ39908 | Latihan Industri [Industrial Training] | Tiada |
| MDK10103 | Statik & Dinamik [Statics & Dynamics] | Tiada |
| MDK10203 | Grafik Kejuruteraan [Engineering Graphics] | Tiada |
| MDK10303 | Teknologi Bengkel [Workshop Technology] | Tiada |
| MDK10403 | Sains Bahan [Materials Science] | SDG 12, SDG 13 |
| MDK10502 | Teknologi Pembuatan [Manufacturing Technology] | SDG 9 |
| MDK10603 | Reka Bentuk Berbantu Komputer [Computer Aided Design] | SDG 9 |
| MDK10703 | Kawalan Kualiti [Quality Control] | SDG 9, SDG 12 |
| MDK10803 | Asas Elektrik dan Elektronik [Basic Electrical and Electronics] | Tiada |
| MDK20103 | Kekuatan Bahan [Strength of Materials] | Tiada |
| MDK20203 | Reka Bentuk Berbantu Komputer 2 [Computer Aided Design 2] | SDG 9 |
| MDK20303 | Termodinamik [Thermodynamics] | SDG 7, SDG 13 |
| MDK20403 | Pengujian Bahan [Material Testing] | Tiada |

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|---|---------------|
| MDK20502 | Pengaturcaraan Komputer [Computer Programming] | Tiada |
| MDK20603 | Pengurusan Projek [Project Management] | SDG 17 |
| MDK20703 | Instrumentasi dan Kawalan [Instrumentation and Control] | Tiada |
| MDK20803 | Mekanik Bendalir [Fluid Mechanics] | Tiada |
| MDK20903 | Teknologi CNC [CNC Technology] | SDG 9 |
| MDK30104 | Projek Tahun Akhir [Final Year Project] | Tiada |
| MDK30203 | Pemindahan Haba [Heat Transfer] | SDG 7, SDG 13 |
| MDK30303 | Kejuruteraan Berbantu Komputer [Computer Aided Engineering] | SDG 9 |
| MDK30403 | Ergonomik Industri [Industrial Ergonomics] | SDG 3 |
| MDK30503 | Etika dan Keselamatan [Ethics and Safety] | SDG 3 |
| MDK30608 | Latihan Industri [Industrial Training] | Tiada |

MDJ10103 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 Outcomes:

1. Ability to explain the fundamental of statics and dynamics.
2. Ability to analyze problems related to statics and dynamics.
3. Ability to analyze the experimental finding related to statics and dynamics principle.

MDJ11103 PENGATURCARAAN KOMPUTER [COMPUTER PROGRAMMING]**No of Credits: 3****Course Synopsis:**

This course introduces computer system introduction, Problem Solving Analysis and Programming Concept including Variables, Arithmetic Operations, Control Structure, Looping Function, Numeric Array, User Friendly Interface and their application to solve engineering problems. C programming language is utilized in this course.

Course Outcomes:

1. Ability to construct C programs with the most suitable variables, arithmetic operations and math functions.
2. Ability to construct C programs with control flow, functions, pointers and arrays.
3. Ability to react to the process of writing, compiling and executing using appropriate predefined functions in C programs.

MDJ12103 BAHAN [MATERIALS]**No of Credits: 3****Course Synopsis:**

Materials science and engineering drives innovation in both research and industry. It is fundamental to all other science and engineering disciplines. Concerning the importance of the knowledge in materials this course is designed to complete the student's knowledge on materials science and engineering materials fundamentals.

Materials focus on knowledge of engineering materials application, atomic bonding, crystal structure, mechanical and physical properties, corrosion mechanism, microstructural analysis, phase diagram, ferrous and non-ferrous alloys, polymer and advanced materials.

Course Outcomes:

1. Ability to analyse transformation, microstructure and behaviors of engineering materials - ferrous, non ferrous and polymer.
2. Ability to analyze mechanical and corrosion properties of engineering materials.
3. Ability to demonstrate sustainability by solving material-related challenges.
4. Ability to comply with testing standards in material testing and characterisation.

MDJ12403 LUKISAN KEJURUTERAAN [ENGINEERING DRAWING AND COMPUTER AIDED]**No of Credits: 3****Course Synopsis:**

The course aims to provide exposure and skills to Engineering Diploma students in basic Engineering Drawing, Computer-aided Drafting (CAD) and its engineering applications. The course covers Engineering Drawing for beginners followed by projection systems, oblique and isometric sketches, before going on to Computer Aided Drafting using AutoCAD software, focusing on product design in 2D and 3D. Knowledge in dimensioning and geometrical tolerance (GDT) will enhance student's ability in interpreting and assessing information from primary raw data of an engineering drawing.

Course Outcomes:

1. Ability to construct technical drawing and drafting using proper technique.
2. Ability to construct technical drawing and drafting using CAD software.
3. Ability to apply Geometric Dimensioning and Tolerance (GD&T) in engineering drawing as a life long learning.

MDJ12503 REKA BENTUK TERBANTU KOMPUTER [COMPUTER-AIDED DESIGN]**No of Credits: 3****Course Synopsis:**

This course focus on giving exposure and skill to students about basis of 3D modeling and its application in engineering field by using 3D Modeling software. This course include details on 3D modeling followed by producing 2D drawing, assembly drawing, exploded drawing, surface modeling, rendering and animation. All this skills will help student to apply its in engineering field to fulfill industry demand.

Course Outcomes:

1. Ability to construct 3D model of components and technical drafting by using 3D Modelling software.
2. Ability to construct assembly and exploded drawing using 3D Modelling software.
3. Ability to reproduce 3D animation and rendering for the components using 3D Modelling software.
4. Ability to demonstrate technical drawing documents for drawing projects.

MDJ13103 TEKNOLOGI DAN AMALAN KERJA TANGAN [TECHNOLOGY AND HANDWORK PRACTICE]**No of Credits: 3****Course Synopsis:**

The course will cover safety precautions in the workshop, the basics measuring equipment such as vernier calipers, micrometers, etc., followed by theory and practice of various basic cutting processes, e.g. filing, chiselling, sawing, etc. Students also will be exposed to sheet metalworking and various joining and assembly processes such as welding.

Course Outcomes:

1. Ability to apply the principles of craftsmanship in engineering practice.
2. Ability to construct a product using various hand tools and machines in workshop.
3. Ability to demonstrate the knowledge of safety in engineering activities.
4. Ability to complete the project through effective project management.
5. Ability to apply business model development in workshop project.

MDJ13203 TEKNOLOGI DAN AMALAN PEMESINAN [TECHNOLOGY AND MACHINING PRACTICE]**No of Credits: 3****Course Synopsis:**

This course introduce about safety aspects in workshop and fundamental of measurement technique followed by milling, lathe and grinding operation which consists of introduction to basic knowledge of various cutting tools, parts of machine and its functions, machine operations, and numerous calculations involving the operations.

Course Outcomes:

1. Ability to apply knowledge on conventional machining processes.
2. Ability to produce products using conventional machining.
3. Ability to work independently and teamwork.
4. Ability to apply knowledge on safety in machining.

MDJ13303 PROSES PEMBUATAN 1 [MANUFACTURING PROCESS 1]**No of Credits: 3****Course Synopsis:**

This course explore the manufacturing process which used in industry to convert raw material into finished product. In the beginning, introduction to manufacturing technology will be given, followed by material selection in manufacturing and heat treatment process. Various metal casting processes will be introduced including sand casting, investment casting, vacuum casting and other casting processes. Overview of forming and shaping process will be given on rolling, forging, extrusion, drawing, sheet metal, powder metallurgy, injection moulding and rapid prototyping process. Besides that, this course also include various joining process such as brazing, soldering, adhesive bonding, and mechanical fastening processes.

Course Outcomes:

1. Ability to apply the manufacturing process: Plastic Shaping, Metal Casting, Metal forming and Joining.
2. Ability to propose suitable manufacturing processing technique to produce various product.
3. Ability to produce manufacturing products using appropriate manufacturing processes.

MDJ20103 MEKANIK BAHAN [MECHANICS OF MATERIAL]**No of Credits: 3****Course Synopsis:**

This course is designed to provide students with a clear presentation of both; the theory and application of mechanics of materials principles. Students are introduced to acquire the knowledge of the physical behavior of materials under load and material behavior requirement. At the end of the course, students are expected to be able to solve engineering problems related to mechanisms and rigid bodies.

Course Outcomes:

1. Ability to apply the fundamental theory of mechanics of materials.
2. Ability to analyse the mechanics of materials principles related to various engineering problems.
3. Ability to demonstrate the experimental works related to mechanics of materials principle.

MDJ20203 THERMO-BENDALIR [THERMO-FLUID]**No of Credits: 3****Course Synopsis:**

This course designed to provide a background on the fundamental principles and engineering applications of thermodynamics, heat transfer and fluid mechanics. These three areas collectively make up the field of thermal sciences but are traditionally taught as separate courses. However, in this course sequence, the three areas are presented in a more integrated manner, emphasizing the connectivity between these areas through the use of 'realworld' examples of thermal systems. The course begins with discussion on Basic concepts of thermodynamics, first law of thermodynamics. Then students will be discussing on topic Thermodynamics properties of liquids and solids. Course sequence of Heat Transfer and Fluid mechanics, topic is covered on mod of heat transfer (Conduction, Convection and Radiation) and then cover-up for fluid properties and fluid at rest. The fundamental laws, governing the motion of fluids are discussed next.

Course Outcomes:

1. Ability to analyze the principle of thermodynamic in selected area of study.
2. Ability to analyze the principle of heat transfer in selected area of study.
3. Ability to analyze the principle of fluid mechanic in selected area of study.

MDJ20303 SISTEM PNEUMATIK DAN HIDRAULIK [PNEUMATIC AND HYDRAULIC SYSTEM]**No of Credits: 3****Course Synopsis:**

This course will be exposing students about the fundamental of basic Pneumatic & 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 & 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 & Hydraulic equipments aided by computer software to construct the related circuits in Manufacturing Automation Lab. 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 move the components and actuator in Pneumatic System.

Course Outcomes:

1. Ability to discuss concepts of Pneumatic & Hydraulic Systems.
2. Ability to illustrate components and symbols of Pneumatic & Hydraulic Systems.
3. Ability to design circuits of Pneumatic Systems that related to industrial applications.
4. Ability to interpret the Electro-Pneumatic Systems applications.

MDJ21103 TEKNOLOGI ELEKTRIK [ELECTRICAL TECHNOLOGY]**No of Credits: 3****Course Synopsis:**

This course is offered to non-electrical engineering background students. This course is intended to provide students with clear understanding the concepts and principles of the DC and 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 chapter, the students will understand the principles of DC Machines and three phase induction motors and do some basic calculation of losses and efficiency of DC Machines

Course Outcomes:

1. Ability to apply the terms, units, laws and theorems of basic electrical system.
2. Ability to apply the concept and principle of single phase and three phase AC circuits parameters.
3. Ability to analyze the concept and principle of magnetic fields and the operation of transformer.
4. Ability to analyze the concept and principles used in DC machines and three phase induction motor.
5. Ability to apply appropriate techniques and tools to demonstrate fundamental skills in electrical system.

MDJ21203 ELEKTRONIK [ELETRONICS]**No of Credits: 3****Course Synopsis:**

The course aims to introduce and expose students to electronic devices which, includes analogue and digital devices. The analogue device topic includes introducing basic electronic components, semiconductor, PN junction, diodes, zener diodes, bipolar junction transistor (BJT) and operational amplifier. The digital device topic includes the introduction to digital electronic 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 and analysis method including the electronic devices used in industry. Lab tests will also be done to clarify the topics learned in the class.

Course Outcomes:

1. Ability to apply the concepts, principles and applications of electronic analogue components.
2. Ability to analyze electronic circuits.
3. Ability to apply the concepts, principles and applications of electronic digital components.

MDJ22302 REKA BENTUK KEJURUTERAAN [ENGINEERING DESIGN]**No of Credits: 2****Course Synopsis:**

The course introduces the concepts and principles of engineering design approach in product development. 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. Engineering design is commonly related to product function and performance aspects built in during detail and parametric design stages. However, it is very important to understand that a successful design solution is the result of the integration of engineering knowledge and non-engineering as well. While engineers provide a technical solution, engineering design implies a solution that is aesthetic as well. In other words, designers too are involved to ensure that the end product is economical, eco-friendly and appeals to users. Topics such as project planning, understanding customer needs, engineering economics and prototype making are included as they are essential albeit supplementary inclusions in the design process. The knowledge of these topics helps the students produce better designs of products. From the concepts and principles learned, students are required to run a project in designing a simple product. This project will focus on the design development of the product from the mechanical and material aspects. At the same time, this activity will expose the students to the concepts of working in a group, effective communication skills and design project management. Besides this project activity, students will do a project report, and project presentation and use CAD softwares.

Course Outcomes:

1. Ability to analyse engineering design process as a step to create product design specifications.
2. Ability to generate design solution to produce prototype by following methodology of engineering design process.
3. Ability to communicate effectively design ideas and information.

MDJ22403 REKA BENTUK KOMPONEN MESIN [MACHINE COMPONENTS DESIGN]**No of Credits: 3****Course Synopsis:**

This course provides concept and understanding to allow students to find suitable designs for components in designing machine system, jig and fixtures. It focuses on basics of power transmission system, motors, fasteners and fundamental principles of jig and fixtures. Students will be exposed with simple design problems before being assigned to compute design parameters. At the end of this course, students will be analyzed simple designs of machine components by using CAD Aided Engineering (CAE) software.

Course Outcomes:

1. Ability to design mechanical components and machine elements.
2. Ability to integrate engineering management principles in design project.
3. Ability to apply specialised technical knowledge for design solution.

MDJ23103 PROSES PEMBUATAN 2 [MANUFACTURING PROCESS 2]**No of Credits: 3****Course Synopsis:**

This course exposes students to the utilization of advanced machining processes. The course begins with an overview of advanced machining processes, followed by CNC 5-axis, EDM wire cut, super drill, die sinker, abrasive water jet, electrochemical and laser cut machines operation. Next, the Programming Operation which includes G and M codes will be taught and students will also be exposed to the principles of operation and applications of other advanced manufacturing processes. Students also attend industrial visit to expose what the advanced machining used by the industrial based on current technology.

Course Outcomes:

1. Ability to explain advanced machining processes, tools related and control systems.
2. Ability to distinguish the advanced machining processes and applications.
3. Ability to operate the machine: CNC, EDM Wire Cut Machine, EDM Die Sinker Machine.

MDJ23203 PEMBUATAN TERBANTU KOMPUTER [COMPUTER-AIDED MANUFACTURING]**No of Credits: 3****Course Synopsis:**

This course introduces principles and application of CAD/CAM system which integrates with the application of CNC machine. This course enables student to understand the theory, concept, and application of CAD/CAM and CNC machine in an industry. Student will be exposed to CAD software to illustrate parts and then using CAM software to convert CAD file into numerical control (NC) codes. Then transfer the NC code to the CNC machine and perform the actual machining process. This course also enable students to understand the NC code to review the program.

Course Outcomes:

1. Ability to explain CAD/CAM system as part of product development process.
2. Ability to generate part programming for machining process based on CAD file.
3. Ability to create Numerical Control (NC) codes manually or using CAD/CAM software and transfer the NC program to operate CNC machine.

MDJ30102 REKA BENTUK ACUAN SUNTIKAN [INJECTION MOULD DESIGN.**No of Credits : 2****Course Synopsis:**

This course introduces students to basic knowledge of plastic injection mold. This course is focuses on basic step in designing mould start with procedure in designing plastic products, procedure in deisgning plastic injection mould, analyses of material flow in plastic injection mould, translation of 3D data to CAM and continuing producing the assembly drawing of plastic injection mould to produce a plastic product.

Course Outcomes:

1. Ability to describe the basic terminology process in plastic injection molding and mould design.
2. Ability to describe the procedure of designing plastic product for injection moulding process.
3. Ability to apply Mould Flow Plastic Insight (MPI) software for plastic parts design.
4. Ability to design the mould for plastic injection moulding using design software.

MDJ31103 AUTOMASI PEMBUATAN DAN INTERNET PELBAGAI BENDA [MANUFACTURING AUTOMATION AND INTERNET OF THINGS]**No of Credits: 3****Course Synopsis:**

This course is an introduction to the Manufacturing and Robotics Automation system used in the Industry today. It covers topics related to automation systems such as pneumatic, hydraulic, variable logic control (PLC), material management, Automated Storage and Retrieval System (ASRS), Automated Directional Vehicle (AGV), customizable manufacturing system (FMS) , integrated computer manufacturing (CIM) and security automation. Students will also be trained in designing pneumatic and hydraulic circuits manually before using variable logic control (PLC) and FluidSIM software. The application of automation systems today is increasingly complex and complex to develop. Internet of Things (IoT) was introduced in this course to enable different devices and systems to be connected to the internet chain and subsequently the automation system will function more optimally.

Course Outcomes:

1. Ability to explain the concepts of Automation and Programmable Logic Controller (PLC) in manufacturing technologies applications.
2. Ability to apply the concept of material handling and storage system in automated system.
3. Ability to design the Automated System with application of Programmable Logic Controller (PLC).
4. Ability to design the Automated System with integration of Internet of Things (IoT) for industrial applications.

MDJ33102 PERANCANGAN DAN KAWALAN PENGELUARAN [PRODUCTION PLANNING AND CONTROL]**No of Credits: 2****Course Synopsis:**

This course addresses the production planning and control in manufacturing and service firms. The course introduces students to the fundamental concepts of modern production management and discusses its importance to the overall strategy and competitiveness. The students learn about the main approaches supporting the decision process in designing and operating the production and logistics system of an enterprise. Long-term, medium-term and short-term planning which includes forecasting, aggregate planning, materials requirement planning (MRP), lot sizing scheduling, project scheduling, supply chain management, inventory management, production planning, materials handling, JIT, Lean production system and human resources and job design are covered.

Course Outcomes:

1. Ability to analyse problems in Production Planning & Control and management.
2. Ability to analyse project problems related to project management.
3. Ability to function effectively as a team member.

MDJ33303 KEJURUTERAAN KUALITI [QUALITY ENGINEERING]**No of Credits: 3****Course Synopsis:**

This course emphasizes the knowledge on quality control either by basic principles or concepts in controlling and supervising the quality control of products and services. Students will be exposed to quality control tools such as basic statistic, 7 quality control tools, acceptance sampling, control chart and quality cost. Students will also be exposed to the importance of International Standard of Quality Assurance, ISO 9000 series for organization.

Course Outcomes:

1. Ability to apply the basic principle statistic and quality management system in the principle Quality Control.
2. Ability to analyze the quality products and services by using control chart, Statistical Process Control and Acceptance Sampling.
3. Ability to evaluate the quality cost and quality improvement technique based on Quality System ISO series.
4. Ability to apply the Statistical Process Control and seven (7) basic tools and technique of quality as a long life learning.

MDJ34104 PROJEK TAHUN AKHIR [FINAL YEAR PROJECT]**No of Credits: 4****Course Synopsis:**

This course is a small scale research project for final year students and expected to be completed within the same semester. The projects are based of solving the engineering problem by understand the problems, troubleshooting, identify, solves and finally report writing for the documentation purposes. Students are required to manage the project individually with the guidance of the project supervisor.

Course Outcomes:

1. Ability to identify problem statement and sustainable solution for society.
2. Ability to design engineering solution utilizing an engineering practice.
3. Ability to complete the project through effective project management.
4. Ability to write technical report and communicate in oral presentation.
5. Ability to construct a functional prototype.
6. Ability to establish the need to engage in independent and lifelong learning in engineering to complete the project.
7. Ability to analyze potential commercialization of the project.

MDJ35102 KESELAMATAN DAN ETIKA [SAFETY AND ETHICS]**No of Credits: 2****Course Synopsis:**

This course aims to explain the main concepts in engineering ethics, sustainability, risk management and occupational safety and health as well as to expose the student to the basic law in the engineering context. The materials will be introductory nature to enable engineering technician to appreciate factors that have to be considered in decision-making. At the end of the course, students will be able to identify and discuss issues and challenges faced by engineering technician relating to engineering ethics, environmental & sustainability, 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.
2. Ability to appraise issues related to sustainability and its impact to societal and environment context.
3. Ability to evaluate hazards, risk management, occupational safety & health (OSHA) and legal procedures on engineering issues.

MDJ39908 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]**No of Credits: 8****Course Synopsis:**

This course will expose students to technical, application, company organization

structure, company operation, department function, work procedure, safety procedure, management, communication, skills, project management and presentation. The industrial training is clearly desirable for students to be properly trained for the skills involved, the central aim is to acquire craft skills. The students are also required to submit their log-book and written report at the end of the industrial training.

Course Outcomes:

1. Ability to apply theoretical knowledge and practical skills gained in the related industry
2. Ability to practice safety, health, legal and cultural issues in a working environment
3. Ability to commit to professional ethics of technician practices.
4. Ability to work effectively as individual and as a member in diverse technical teams to complete the given task by the host company.

MDK10103 STATIK DAN DINAMIK [STATICS AND DYNAMICS]**No of Credits: 3****Course Synopsis:**

This course provides a fundamental understanding of statics and dynamics, essential for analysing mechanical systems. In statics, students will learn key concepts such as forces, moments, and free-body diagrams, applying them to analyse and solve engineering statics problems involving equilibrium and support reactions in mechanical structures and components. The dynamics part of the course will cover kinematics, which focuses on the geometric aspects of motion, and kinetics, which examines the forces causing motion. By the end of this course, students will develop analytical skills to solve engineering problems related to statics and dynamics.

Course Outcomes:

1. Ability to apply the basic concepts and principles of statics and dynamics.
2. Ability to analyse engineering problems related to statics and dynamics.
3. Ability to analyse the experimental findings related to the principles of statics and dynamics

MDK10203 GRAFIK KEJURUTERAAN [ENGINEERING GRAPHICS]**No of Credits: 3****Course Synopsis:**

This course introduces students to the principles and techniques of engineering graphics. It covers basic geometrical constructions, dimensioning, multiview projections, isometric and oblique drawings, and sectional views using manual drawing techniques. Students will also be introduced to Computer-Aided Drafting (CAD), including 2D drawing construction, editing, and dimensioning, as well as basic 3D solid modelling. By the end of the course, students will be able to produce detail and assembly drawings in accordance with engineering standards.

Course Outcomes:

1. Ability to construct engineering drawing and drafting using manual drawing techniques.
2. Ability to construct engineering drawing and drafting using CAD software.
3. Ability to produce detail and assembly drawing using CAD software.

MDK10303 TEKNOLOGI BENGKEL [WORKSHOP TECHNOLOGY]**No of Credits: 3****Course Synopsis:**

This course introduces students to fundamental workshop practices in mechanical engineering technology. It covers key processes including measurement techniques, cutting, fitting, joining, metal forming, and the operation of turning and milling machines. Emphasis is placed on proper tool handling, safety procedures, and the application of standard engineering practices. Through hands-on sessions, students will gain practical experience and a solid understanding of workshop operations.

Course Outcomes:

1. Ability to demonstrate the proper use of various measurement equipment and hand tools to produce work specimens.
2. Ability to operate milling and turning machines to produce work specimens.

MDK10403 SAINS BAHAN [MATERIALS SCIENCE]**No of Credits: 3****Course Synopsis:**

This course provides a foundational understanding of materials science, focusing on atomic structures, atomic bonding in solids, and crystal structures. Students will explore the mechanical properties of materials, phase diagrams, phase transformations, heat treatment processes for ferrous and non-ferrous alloys. Additionally, the course covers polymers, ceramics and composites. By applying this knowledge, students will develop the ability to analyse material properties and make informed material selections while considering sustainability and environmental impact in engineering applications.

Course Outcomes:

1. Ability to analyse atomic structure, interatomic bonding, crystalline structures, and solid imperfections and their influence on engineering material properties.
2. Ability to analyse the mechanical properties of engineering materials, as well as phase diagrams, phase transformations and thermal processing of metals.
3. Ability to analyse material properties through standard material testing procedures.
4. Ability to demonstrate awareness of sustainable and environmental considerations in the selection of engineering materials.

MDK10502 TEKNOLOGI PEMBUATAN [MANUFACTURING TECHNOLOGY]**No of Credits: 2****Course Synopsis:**

This course introduces students to the fundamental concepts and methods of manufacturing technology. It covers solidification and shaping processes such as casting and molding; metal forming and sheet metalworking methods including forging, extrusion, cutting, and bending; and joining and assembly techniques such as welding, soldering, brazing, adhesive bonding, and mechanical fastening. The course also highlights advanced manufacturing technologies, including rapid prototyping, microfabrication, and nanofabrication. Through these topics, students gain a comprehensive understanding of modern manufacturing processes and their applications in industrial practice.

Course Outcomes:

1. Ability to explain the principles and applications of various manufacturing processes.
2. Ability to perform basic manufacturing processes using appropriate tools and techniques.
3. Ability to discuss new manufacturing technologies through independent and continuous learning.

MDK10603 REKA BENTUK BERBANTU KOMPUTER [COMPUTER AIDED DESIGN]**No of Credits: 3****Course Synopsis:**

This course aims to provide students with foundational knowledge and practical skills in 3D and geometric modelling, specifically applied within the engineering discipline using 3D modelling software. It covers topics including creating 3D models, generating 2D drawings from 3D models, converting 2D drawings into 3D models, as well as preparing assembly and exploded views, and rendering techniques. These skills enable students to develop technical drawings and virtual prototypes that align with manufacturing requirements.

Course Outcomes:

1. Ability to construct 2D and 3D models, assemblies, drawings, and renderings using CAD software.
2. Ability to produce product designs using CAD tools.
3. Ability to communicate technical information effectively through CAD drawings, models, and presentations.

MDK10703 KAWALAN KUALITI [QUALITY CONTROL]**No of Credits: 3**

Course Synopsis:

This course provides students with the fundamental concepts, principles, and practices of quality control in manufacturing and service industries. It emphasizes the application of statistical and analytical tools to monitor, control, and improve processes, ensuring products and services meet established standards and customer expectations. Topics include the fundamentals of statistics, Total Quality Management (TQM), Seven Basic Quality Tools (7QC), Statistical Process Control (SPC), Acceptance Sampling, Process Capability Analysis (PCA), and the use of quality management systems.

Course Outcomes:

1. Ability to apply the fundamental principles of statistics and quality management systems in quality control.
2. Ability to analyze product and service quality using appropriate quality tools and practices.
3. Ability to construct quality control tools using appropriate software for product and service quality evaluation.

MDK10803 ASAS ELEKTRIK DAN ELEKTRONIK [BASIC ELECTRICAL AND ELECTRONICS]**No of Credits: 3****Course Synopsis:**

This course provides students with fundamental knowledge in analysing electrical circuits and introduces the basic principles of electrical machines. It also covers key concepts in electronics, including semiconductor devices such as diodes and transistors, along with an introduction to digital systems. Emphasis is placed on understanding, analysing, and applying core electrical and electronics principles relevant to engineering practice. By the end of the course, students will be able to demonstrate a solid foundation in electrical and electronic concepts for further study and practical application in the field.

Course Outcomes:

1. Ability to analyse electrical circuits by applying Ohm's law, Kirchhoff's Laws and circuit theorems for determining electrical quantities.
2. Ability to discuss the principles, characteristics and applications of electronic components.
3. Ability to perform practical electrical and electronics laboratory work.

MDK20103 KEKUATAN BAHAN [STRENGTH OF MATERIALS]**No of Credits: 3****Course Synopsis:**

This course is designed to provide students with a clear understanding of the fundamental theories and practical applications of mechanics of materials. It covers essential concepts such as statics, stress, strain, and deformation in solid bodies subjected to external loads. Students will develop the ability to analyse and solve problems involving axial, torsional, bending, and buckling load conditions. The course also introduces the analysis of combined loading and the resulting state of stress in

materials. At the end of the course, students are expected to be able to solve engineering problems related to the structural integrity of structures and components.

Course Outcomes:

1. Ability to apply the fundamental theories of strength of materials.
2. Ability to analyse structures in various engineering problems related to strength of materials.
3. Ability to analyse material failure limits via standard mechanical testing for strategic prediction of engineering component performance with consideration of strength and sustainability.

MDK20203 REKA BENTUK BERBANTU KOMPUTER 2 [COMPUTER AIDED DESIGN 2]**No of Credits: 3****Course Synopsis:**

This course introduces computer aided surfacing, focusing on the development of high-quality 3D models. Moving beyond basic solid modelling, students learn to create and modify complex shapes using wireframe and surface techniques. The course also introduces basic reverse engineering, where 3D scan data is converted into usable models through mesh optimisation and cross-sectional analysis. Emphasis is placed on surface continuity and design intent to ensure suitability for manufacturing. By the end of the course, students are able to apply surface modelling together with solid modelling to produce functional components relevant to industry practice.

Course Outcomes:

1. Ability to construct 3D wireframe and surface models using CAD software to meet technical design specifications.
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 demonstrate collaboration competency through effective teamwork, integrating diverse perspectives to achieve shared project goals.

MDK20303 TERMODINAMIK [THERMODYNAMICS]**No of Credits: 3****Course Synopsis:**

This course covers the fundamental concepts of thermodynamic laws, including the properties of substances, energy principles, and the first and second laws of thermodynamics, which are applicable in various engineering applications. Topics include the study of substance properties such as saturated liquid, saturated vapour, and superheated vapour. Students will also explore energy analysis of both closed and open systems. The course introduces the concept of entropy and its significance in analysing the performance and limitations of thermodynamic systems such as heat engines and refrigeration cycles.

Course Outcomes:

1. Ability to examine the properties of pure substances using property tables
2. Ability to analyse energy balance in a system using the first and second laws of thermodynamics
3. Ability to analyse thermodynamic principles through experiments.

MDK20403 PENGUJIAN BAHAN [MATERIAL TESTING]**No of Credits: 3****Course Synopsis:**

This course introduces the fundamental principles of material testing, covering both destructive and non-destructive methods. Students will learn key destructive techniques such as tensile, compression, flexural, hardness, impact, and fatigue testing, alongside non-destructive methods including ultrasonic, magnetic particle, and liquid penetrant inspection. The course also develops practical skills in testing procedures, data analysis, and the interpretation of test results to assess material properties and detect defects for engineering applications.

Course Outcomes:

1. Ability to explain the principles, characteristics and applications of destructive and non-destructive testing methods.
2. Ability to analyse material properties and defects related to engineering applications.
3. Ability to examine material properties using destructive testing and material defects using non-destructive testing methods.

MDK20503 PENGATURCARAAN KOMPUTER [COMPUTER PROGRAMMING]**No of Credits: 3****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 Outcomes:

1. Ability to 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

MDK20603 PENGURUSAN PROJEK [PROJECT MANAGEMENT]**No of Credits: 3****Course Synopsis:**

This course aims to equip students with the ability to apply project management skills and economic evaluation techniques in the context of engineering design. It emphasises the role of engineering economics in assessing the feasibility of projects, estimating their value, and providing justification from an engineering technology perspective. By the end of the course, students will be able to identify and discuss the issues and challenges faced by engineering practitioners in managing projects within current economic conditions.

Course Outcomes:

1. Ability to design a basic project management plan that incorporates scope, schedule, cost, and resource considerations based on project requirements.
2. Ability to recognise and apply ethical considerations and professional responsibilities in project planning and decision-making.
3. Ability to demonstrate teamwork in planning, executing, and presenting engineering project proposals within given constraints and timelines.
4. Ability to communicate project plans, progress, and economic justifications clearly through written reports and oral presentations.
5. Ability to apply project management tools and basic financial analysis to evaluate project feasibility and manage resources effectively.
6. Ability to demonstrate self-management, adaptability, and entrepreneurial thinking in identifying and proposing engineering project opportunities.

MDK20703 INSTRUMENTASI DAN KAWALAN [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 Outcomes:

1. Ability to analyse concepts of instrumentation systems 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 or simulations.

MDK20803 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 fluids, pressure and fluid statics, as well as the application of mass, Bernoulli, and energy equations. It also covers momentum analysis of flow systems and examines both internal flows and external flows. Students will learn to apply fundamental fluid mechanics principles to analyse and solve practical engineering problems related to fluid behaviour in various systems and components.

Course Outcomes:

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 analyse fluid mechanics principles through experiments, modelling or simulations.

MDK20903 TEKNOLOGI CNC [CNC TECHNOLOGY]**No of Credits: 3****Course Synopsis:**

This course covers the principles and concepts of Computer Numerical Control (CNC) as applied in modern manufacturing environments. Students will develop a solid understanding of CNC machine set-up, operation, tooling, and programming fundamentals. Emphasis is placed on the use of G and M code programming to write part programs, focusing on standardised codes that are common across various CNC machines and controllers. In addition, students will be introduced to the basics of Programmable Logic Controllers (PLC), providing a broader perspective on automation in manufacturing systems.

Course Outcomes:

1. Ability to perform basic NC machining operations such as workpiece zero setting and tool setting.
2. Ability to construct G and M code programs and documentation for machining operation on CNC machine tools.
3. Ability to demonstrate ability to use CNC milling and turning machines.

MDK30104 PROJEK TAHUN AKHIR [FINAL YEAR PROJECT]**No of Credits: 4****Course Synopsis:**

This course provides students with the opportunity to apply the knowledge and skills acquired throughout the programme to an individual engineering project. Under the

guidance of a supervisor, each student is required to independently plan, execute, and present a project related to mechanical engineering technology. The course emphasises problem-solving, technical analysis, investigation, design, and fabrication. It also supports personal development through self-directed learning, critical thinking, and effective time management—laying the foundation for lifelong learning. In addition, students will cultivate entrepreneurial skills such as innovation, creativity, and professional communication, equipping them for future career challenges or business ventures. By the end of the course, students are expected to submit a comprehensive technical report and deliver a presentation of their project outcomes.

Course Outcomes:

1. Ability to apply knowledge of mathematics, science, and engineering fundamentals to solve problems related to the project. – PO1
2. Ability to analyse engineering problems related to the project and develop effective and practical solutions.
3. Ability to conduct investigations using appropriate methods to obtain data and information relevant to the project.
4. Ability to design engineering solutions by utilising appropriate engineering practices and techniques.
5. Ability to manage project activities effectively to achieve defined objectives.
6. Ability to communicate project findings effectively through written reports and oral presentations.
7. Ability to construct a functional prototype.
8. Ability to engage in independent learning to acquire new knowledge and skills relevant to the project.
9. Ability to analyse potential commercialization of the project.

MDK30203 PEMINDAHAN HABA [HEAT TRANSFER]**No of Credits: 3****Course Synopsis:**

This course introduces the fundamental principles of heat transfer, focusing on the three primary modes: conduction, convection, and radiation. The course also covers the application of heat transfer principles in engineering systems such as heat exchangers, cooling and heating systems, and thermal insulation. Emphasis is placed on problem-solving skills and real-world applications relevant to mechanical engineering technology. By the end of the course, students will be able to analyse and evaluate heat transfer processes in various engineering contexts.

Course Outcomes:

1. Ability to apply fundamental knowledge of heat transfer mechanisms.
2. Ability to evaluate thermal engineering problems in conduction, convection, radiation and heat exchanger systems.
3. Ability to analyse heat transfer principles through experiments, modelling or simulations.

MDK30303 KEJURUTERAAN BERBANTU KOMPUTER [COMPUTER AIDED ENGINEERING]**No of Credits: 3****Course Synopsis:**

This course provides students with a fundamental understanding of structural analysis using Finite Element Analysis (FEA). It offers a solid foundation for the intelligent and effective use of commercial FEA software. The course begins with an introduction to FEA, matrix algebra, and the solution of linear equations. It then progresses to the analysis of one-, two-, and three-dimensional problems, both from a theoretical perspective and through practical applications using FEA software. By the end of the course, students are expected to be able to analyse and solve real-world engineering problems related to structural domains using computer-aided engineering tools.

Course Outcomes:

1. Ability to analyse engineering problems using basic concepts and knowledge in finite element analysis.
2. Ability to design appropriate solutions for structural engineering problems using FEA.
3. Ability to use commercial FEA software to model, simulate, and interpret structural engineering problems effectively

MDK30403 ERGONOMIK INDUSTRI [INDUSTRIAL ERGONOMICS]**No of Credits: 3****Course Synopsis:**

This course introduces students to the principles of industrial ergonomics, focusing on human capabilities, body mechanics, and workplace design in industrial settings. It emphasises the application of ergonomics assessment tools to identify and address issues related to worker performance, health, safety, and productivity. Key topics include ergonomics in industrial design, biomechanics, task and workplace evaluation, user-centred design, occupational safety and health, equipment and tool design, and considerations for diverse worker populations. Delivered through lectures, lab sessions, and problem-based learning, the course prepares students to apply ergonomic principles, analyse workplace issues, and propose effective solutions to improve overall industrial work environments.

Course Outcomes:

1. Ability to demonstrate knowledge of fundamental principles of ergonomics, human capabilities, and body mechanics in industrial settings.

2. Ability to propose effective ergonomics-based design solutions to enhance product intervention, usability, and user well-being in industrial applications.
3. Ability to demonstrate considerations of the impacts of ergonomic design solutions on sustainable development, including societal, economic, health, safety, legal, and environmental aspects.
4. Ability to work effectively as a team member in solving ergonomics-related engineering problems.
5. Ability to communicate ergonomics findings, analysis, and design solutions clearly and effectively in both written and oral forms.

MDK30503 ETIKA DAN KESELAMATAN [ETHICS AND SAFETY]**No of Credits: 3****Course Synopsis:**

This course provides engineering practitioners to the fundamental principles of professional ethics and workplace safety, with a focus on legal and regulatory frameworks such as the Occupational Safety and Health Act (OSHA). Students will explore the roles and responsibilities of engineering practitioners in upholding ethical standards and ensuring safe working environments. The course covers ethical theories, codes of conduct, ethical decision-making, and the societal impact of engineering practices. It also includes key topics in occupational safety, such as hazard identification, risk assessment, accident prevention, and compliance with OSHA regulations. Through case studies and practical applications, students will develop the ability to recognise ethical and safety issues, make responsible decisions, and contribute to a safe and ethical engineering culture.

Course Outcomes:

1. Ability to discuss the impact of engineering practices on society, the economy, sustainability, health and safety, legal frameworks, and the environment.
2. Ability to integrate ethical principles and professional codes of conduct in addressing issues related to engineering practice.
3. Ability to work effectively in a team to analyse and discuss ethical and safety issues in engineering contexts.
4. Ability to communicate ethical and safety-related information clearly and effectively in both written and oral forms.

MDK30608 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]**No of Credits: 8****Course Synopsis:**

This course provides students with real-world industrial exposure by placing them in relevant engineering environments. Through industrial training, students will have the opportunity to observe, experience, and participate in actual engineering practices, operations, and problem-solving processes. The course aims to enhance students' technical skills, work discipline, communication abilities, and understanding of workplace safety, ethics, and professional conduct. It also helps develop personal and interpersonal skills, including teamwork, responsibility, and adaptability. By the end of the training, students are expected to reflect on their learning, demonstrate improved practical competence, and better understand the expectations of the engineering industry.

Course Outcomes:

1. Ability to use appropriate tools, equipment, and technology relevant to the industrial workplace effectively and safely.
2. Ability to practise safety, health, legal, and cultural awareness in a professional working environment.
3. Ability to demonstrate ethical behaviour and professional responsibility in accordance with industry norms and practices.
4. Ability to work effectively as a member of a team and contribute to shared tasks and goals in a workplace setting.
5. Ability to communicate effectively with supervisors, colleagues, and others through appropriate oral, written, and digital means.
6. Ability to manage tasks and responsibilities assigned during the industrial training in a timely and organised manner.
7. Ability to seek and acquire new knowledge and skills independently in response to industrial challenges and opportunities.
8. Ability to adapt to the professional working environment by demonstrating flexibility, resilience, and a willingness to improve for future career development.

FACULTY OF CHEMICAL ENGINEERING & TECHNOLOGY

Programmes Offered:

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- Bachelor of Chemical Engineering with Honours
- Bachelor of Polymer Engineering with Honours
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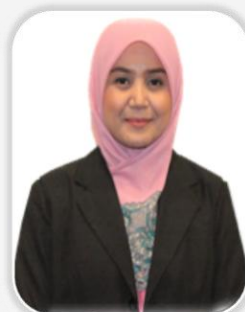
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UR4521002 Diploma in Materials Engineering

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates are competence in materials engineering field as demonstrated through career progression..

PEO 2

Graduates who are involved in community or professional organization and make contribution towards society.

PEO 3

Graduates pursue continuing education opportunities

PEO 4

Graduates make contribution through innovation and entrepreneurship

PROGRAMME OUTCOMES (PO)

P01

Knowledge: Apply knowledge of applied mathematics, applied science, computing and engineering fundamentals and an engineering specialisation to wide practical procedures and practices.

P02

Problem analysis: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity

P03

Design/development of solutions: Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, as well as cultural, societal, and environmental considerations as required.

P04

Investigation: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements.

P05

Tool Usage: Apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations.

P06

The Engineering Technician and the World: Consider sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well-defined engineering problems.

P07

Ethics: Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

P08

Individual and Collaborative Team Work: Function effectively as an individual, and as a member in diverse and inclusive teams in multidisciplinary, face-to-face, remote and distributed settings.

P09

Communications: Communicate effectively and inclusively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions

P010

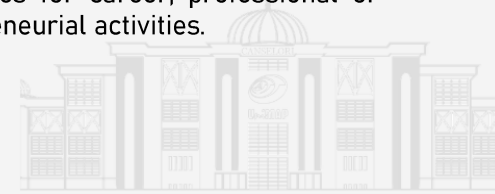
Project Management and Finance: Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments

P011

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 specialised technical knowledge.

P012

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 | | | | | | |
|---|---|--|---|---|---|---|
| UR4521002 DIPLOMA IN MATERIALS ENGINEERING INTAKE 2026/2027 | | | | | | |
| YEAR | FIRST | | SECOND | | THIRD | |
| SEMESTER | 1 | 2 | 3 | 4 | 5 | 6 |
| DISCIPLINE CORE COURSES (73 CREDITS) | KDJ10103 Engineering Science [Sains Kejuruteraan] | KDJ10603 Ferrous and Non-Ferrous Metals [Logam Ferus dan Bukan Ferus] | KDJ20103 Metal Extractive Technology [Teknologi Pengekstrakan Logam] | KDJ20603 Strength of Materials [Kekuatan Bahan] | KDJ30303 Metal Protections [Perlindungan Logam] | KDJ39908 Latihan Industri [Industrial Training] |
| | KDJ10203 Introduction to Engineering Materials [Pengenalan Kepada Bahan Kejuruteraan] | KDJ10703 Basic Static and Dynamic [Asas Statik dan Dinamik] | KDJ20203 Technology of Metal Welding [Teknologi Kimpalan Logam] | KDJ21103 Ceramic Properties and Processing [Sifat dan Pemprosesan Seramik] | KDJ30403 Keselamatan Pekerjaan dan Pengurusan Kualiti [Occupational Safety and Quality Management] | |
| | KDJ10403 Engineering Drawing and Computer Aided Drafting [Lukisan Kejuruteraan dan Lukisan Terbantu Komputer] | KDJ10903 Thermodynamics [Termodinamik] | KDJ20303 Basic Electrical Technology [Asas Teknologi Elektrik] | KDJ21203 Materials Testing [Pengujian Bahan] | KDJ30604 Final Year Project [Projek Tahun Akhir] | |
| | KDJ10503 Basic Computer Programming [Asas Pengaturcaraan Komputer] | | KDJ30703 Polymer Properties and Processing [Sifat dan Pemprosesan Polimer] | KDJ21402 Sustainable Materials [Bahan Mampan] | KDJ30803 Fluid Mechanics [Mekanik Bendalir] | |
| | KDJ11003 Workshop Practice [Amalan Bengkel] | | | KDJ21503 Metals Processing [Pemprosesan Logam] | KDJ30902 Advanced Materials [Bahan Termaju] | |
| COMMON CORE COURSES (9 CREDITS) | | IDQ10103 Mathematics 1 [Matematik 1] | IDQ20203 Mathematics 2 [Matematik 2] | IDQ20303 Mathematics 3 [Matematik 3] | | |
| UNIVERSITY REQUIREMENT COURSES (12 CREDITS) | SDZXX01 Co-Curriculum 1 [Ko-Kurikulum 1] | SDZXX01 Co-Curriculum 2 [Ko-Kurikulum 2] | SDB11302 Communicative English 3 [Bahasa Inggeris Komunikasi 3] | | SDU22502 Basics of Entrepreneurship [Asas Keusahawanan] | |
| | | SDB11202 Communicative English 2 [Bahasa Inggeris Komunikasi 2] | SDU13002 The Contitution and Integrity Society [Perlembagaan dan Masyarakat Berintegriti] | | | |
| | | SDU33602 Introduction to Artificial Intelligence in Society [Pengenalan Kepada Kecerdasan Buatan Dalam Masyarakat] | | | | |
| TOTAL CREDITS (94 CREDITS) | 15 | 17 | 19 | 18 | 17 | 8 |
| AUDIT COURSES | SDB11102 ^[3] Communicative English 1 [Bahasa Inggeris Komunikasi 1] | | | SDB31002 ^[2] Malay Language [Bahasa Melayu] | | |
| | IDQ10002 ^[1] Preliminary Mathematics [Matematik Awalan] | | | | | |

[1] Compulsory to students without or with grade D and below for Additional mathematics (matematik tambahan) in SPM. IDQ10002 – Preliminary Mathematics is an Audit Course

[2] Compulsory to students with grade B+ and below in Malay Language (Bahasa Melayu) SPM. SDB31002 – Malay Language is an Audit course

[3] Compulsory to students with grade B+ and below in English Language (Bahasa Inggeris) SPM. SDB11102 – Communicative English 1 is an Audit course

UR4543001 Diploma in Polymer Engineering Technology

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates are competence in materials engineering field as demonstrated through career progression..

PEO 2

Graduates who are involved in community or professional organization and make contribution towards society.

PEO 3

Graduates pursue continuing education opportunities

PEO 4

Graduates make contribution through innovation and entrepreneurship

PROGRAMME OUTCOMES (PO)

P01

Knowledge: Apply knowledge of applied mathematics, applied science, computing and engineering fundamentals and an engineering specialisation to wide practical procedures and practices.

P02

Problem analysis: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity

P03

Design/development of solutions: Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, as well as cultural, societal, and environmental considerations as required.

P04

Investigation: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements.

P05

Tool Usage: Apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations.

P06

The Engineering Technician and the World: Consider sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well-defined engineering problems.

P07

Ethics: Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

P08

Individual and Collaborative Team Work: Function effectively as an individual, and as a member in diverse and inclusive teams in multidisciplinary, face-to-face, remote and distributed settings.

P09

Communications: Communicate effectively and inclusively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions

P010

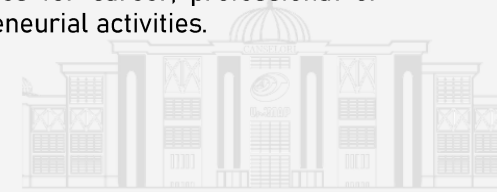
Project Management and Finance: Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments

P011

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 specialised technical knowledge.

P012

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 | | | | | | | |
|--|---|--|--|---|---|--|---|
| UR4543001 DIPLOMA IN POLYMER ENGINEERING TECHNOLOGY INTAKE 2026/2027 | | | | | | | |
| YEAR | FIRST | | | SECOND | | | THIRD |
| SEMESTER | 1 | 2 | Short Semester 1 [3] | 3 | 4 | Short Semester 1 [3] | 5 |
| DISCIPLINE CORE COURSES (73 CREDITS) | KDK12603 Engineering Science [Sains Kejuruteraan] | KDK13103 Static and Dynamic [Statik dan Dinamik] | KDK13503 Engineering Drawing and Computer Aided Drafting [Lukisan Kejuruteraan dan Lukisan Terbantukan Komputer] | KDK22601 Final Year Project I [Projek Tahun Akhir I] | KDK22603 Final Year Project II [Projek Tahun Akhir II] | KDK23103 Occupational Safety and Quality Management [Keselamatan Pekerjaan dan Pengurusan Kualiti] | KDK39908 Industrial Training [Latihan Industri] |
| | KDK12703 Introduction to Polymer [Pengenalan kepada Polimer] | KDK13203 Thermodynamics [Termodinamik] | KDK13603 Engineering Skills [Kemahiran Kejuruteraan] | KDK22703 Structure and Polymer Properties [Struktur dan Sifat-Sifat Polimer] | KDK22903 Industrial Revolution in Polymer Engineering [Revolusi Perindustrian dalam Kejuruteraan Polimer] | KDK23203 Polymer and Sustainability [Polimer dan Kelestarian] | |
| | KDK12803 General Chemistry [Kimia Am] | KDK13303 Polymer Chemistry [Kimia Polimer] | KDK12602 Chemistry Engineering Laboratory [Makmal Kejuruteraan Kimia] | KDK22803 Fluid Mechanics [Mekanik Bendalir] | KDK23003 Mould and Die Technology [Teknologi Acuan dan Dai] | | |
| | KDK12903 Electrical Technology [Teknologi Elektrik] | KDK13403 Polymer Technology [Teknologi Polimer] | | KDK22602 Plastic Processing Technology Laboratory [Makmal Teknologi Pemrosesan Plastik] | KDK22802 Structure and Polymer Properties Laboratory [Makmal Struktur dan Sifat- Sifat Polimer] | | |
| | KDK13003 Introduction to Computer Programming [Pengenalan kepada Pengaturcaraan Komputer] | | | KDK22702 Elastomer Processing Technology Laboratory [Makmal Teknologi Pemrosesan Elastomer] | KDK22902 Engineering Technician and Management [Juruteknik Kejuruteraan dan Pengurusan] | | |
| COMMON CORE COURSES (9 CREDITS) | | IDQ10103 Mathematics 1 [Matematik 1] | | IDQ20203 Mathematics 2 [Matematik 2] | IDQ20303 Mathematics 3 [Matematik 3] | | |
| UNIVERSITY REQUIREMENT COURSES (12 CREDITS) | SDU13002 Constitution and a Society of Integrity [Perlembagaan dan Masyarakat Berintegriti] | SDB11202 Communicative English 2 [Bahasa Inggeris Komunikasi 2] | | SDU33602 Introduction to Artificial Intelligence in Society [Pengenalan Kepada Kecerdasan Buatan Dalam Masyarakat] | SDU22502 Basics of Entrepreneurship [Asas Keusahawanan] | | |
| | SDZXX01 2Co-Curriculum 1 [Ko-Kurikulum 1] | SDZXX01 Co-Curriculum 2 [Ko-Kurikulum 2] | | SDB11302 Communicative English 3 [Bahasa Inggeris Komunikasi 3] | | | |
| TOTAL CREDITS (94 CREDITS) | 18 | 18 | 8 | 18 | 18 | 6 | 8 |
| AUDIT COURSES | IDQ10002[1] Preliminary Mathematics [Matematik Awalan] | | | | SDB31002[2] Malay Language [Bahasa Melayu] | | |
| | SDB11102[2] Communicative English 1 [Bahasa Inggeris Komunikasi 1] | | | | | | |

[1] Compulsory for students with grade D and without Additional Mathematics (Matematik Tambahan) in SPM. QDQ10002 - Preliminary Mathematics is an Audit course.

[2] Compulsory for students with grades B+ and below in Malay Language (Bahasa Melayu) SPM. SDB31002 - Malay Language is an Audit course.

[3] Courses suggested for the short semester PnP process (full-time studies) are courses that involve 100% coursework (no exams).

UR4524001 Diploma of Chemical Engineering Technology

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates are competence in materials engineering field as demonstrated through career progression..

PEO 2

Graduates who are involved in community or professional organization and make contribution towards society.

PEO 3

Graduates pursue continuing education opportunities

PEO 4

Graduates make contribution through innovation and entrepreneurship

PROGRAMME OUTCOMES (PO)

P01

Knowledge: Apply knowledge of applied mathematics, applied science, computing and engineering fundamentals and an engineering specialisation to wide practical procedures and practices.

P02

Problem analysis: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity

P03

Design/development of solutions: Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, as well as cultural, societal, and environmental considerations as required.

P04

Investigation: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements.

P05

Tool Usage: Apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations.

P06

The Engineering Technician and the World: Consider sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well-defined engineering problems.

P07

Ethics: Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

P08

Individual and Collaborative Team Work: Function effectively as an individual, and as a member in diverse and inclusive teams in multidisciplinary, face-to-face, remote and distributed settings.

P09

Communications: Communicate effectively and inclusively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions

P010

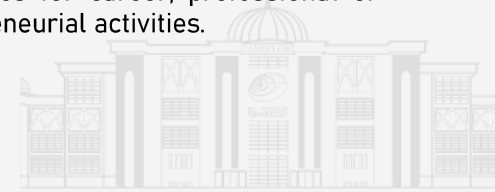
Project Management and Finance: Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments

P011

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 specialised technical knowledge.

P012

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 | | | | | | | |
|---|--|---|---|--|--|---|---|
| UR4524001 DIPLOMA IN CHEMICAL ENGINEERING TECHNOLOGY INTAKE 2026/2027 | | | | | | | |
| YEAR | FIRST | | | SECOND | | | THIRD |
| SEMESTER | 1 | 2 | Short Semester** | 3 | 4 | Short Semester** | 5 |
| DISCIPLINE CORE COURSES (73 CREDITS) | KDK10103 Basic Electrical Technology [Asas Teknologi Elektrik] | KDK10603 Thermodynamics [Termodinamik] | KDK11002 Graphic Engineering [Grafik Kejuruteraan] | KDK20103 Mass Transfer [Pemindahan Jirism] | KDK20503 Reaction Engineering [Kejuruteraan Tindakbalas] | KDK20903 Plant Operations & Maintenance [Operasi Loji & Penyelenggaraan] | KDK30108 Industrial Training [Latihan Industri] |
| | KDK10203 Materials Science [Sains Bahan] | KDK10703 Energy Balance [Imbangan Tenaga] | KDK11003 Engineering Skills [Kemahiran Kejuruteraan] | KDK20203 Heat Transfer [Pemindahan Haba] | KDK20603 Separation Technologies [Teknologi Pemisahan] | KDK21002 Supervisory Skills & Ethics [Kemahiran & Etika Penyelidikan] | |
| | KDK10303 Mass Balance [Imbangan Jisim] | KDK10803 Fluid Mechanics [Mekanik Bendalir] | KDK11202 Instrumentation Process [Proses Instrumentasi] | KDK20303 Safety & Loss Prevention [Keselamatan & Pencegahan Kehilangan] | KDK20703 Environmental Engineering [Kejuruteraan Alam Sekitar] | KDK21102 Industrial Revolution in Chemical Engineering [Revolusi Industri Dalam Kejuruteraan Kimia] | |
| | KDK10403 Organic Chemistry [Kimia Organik] | KDK10903 Analytical Chemistry [Kimia Analisis] | | KDK20403 Renewable Energy [Tenaga Boleh Baharu] | KDK20804 Research Project [Projek Penyelidikan] | | |
| | KDK10503 Physical Chemistry [Kimia Fizikal] | | | | | | |
| COMMON CORE COURSES (9 CREDITS) | IDQ10002* Preliminary Mathematics [Matematik Awalan] | IDQ10103 Mathematics 1 [Matematik 1] | | IDQ20203 Mathematics 2 [Matematik 2] | IDQ20303 Mathematics 3 [Matematik 3] | | |
| UNIVERSITY REQUIREMENT COURSES (12 CREDITS) | SDB11102* Communicative English 1 [Bahasa Inggeris Komunikasi 1] | SDB11202 Communicative English 2 [Bahasa Inggeris Komunikasi 2] | | SDB11302 Communicative English 3 [Bahasa Inggeris Komunikasi 3] | SDU22502 Basics of Entrepreneurship [Asas Keusahawanan] | | |
| | SDU33602 Introduction to Artificial Intelligence in Society [Kecerdasan Buatan Dalam Masyarakat] | | | SDU13002 The Constitution and Integrity Society [Perlembagaan dan Masyarakat Berintegriti] | | | |
| | SDB31002* Malay Language [Bahasa Melayu] | | | | | | |
| | SDZXXX01 2Co-Curriculum 1 [Ko-Kurikulum 1] | SDZXXX01 Co-Curriculum 2 [Ko-Kurikulum 2] | | | | | |
| TOTAL CREDITS (94 CREDITS) | 18 | 18 | 7 | 18 | 18 | 7 | 8 |

*Students who obtained grades A- and above in the GPM examination are exempted from this course.

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|--|--------------|
| KDJ10203 | Pengenalan kepada Bahan Kejuruteraan [Introduction to Engineering Materials] | SDG 4 |
| KDJ10403 | Lukisan Kejuruteraan dan Lukisan Terbantu Komputer [Engineering Drawing and Computer Aided Drafting] | SDG 4 |
| KDJ10503 | Asas Pengaturcaraan Komputer [Basic Computer Programming] | SDG 9 |
| KDJ10603 | Logam Ferus dan Bukan Ferus [Ferrous and Non-Ferrous Metals] | SDG 9 |
| KDJ10703 | Asas Statik dan Dinamik [Basic Static and Dynamic] | SDG 9 |
| KDJ10903 | Termodinamik [Thermodynamics] | SDG 4, 7, 12 |
| KDJ11003 | Amalan Bengkel [Workshop Practice] | SDG 4 |
| KDJ20103 | Teknologi Pengekstrakan Logam [Metal Extractive Technology] | SDG 12 |
| KDJ20203 | Teknologi Kimpalan Logam [Technology of Metal Welding] | SDG 9 |
| KDJ20303 | Asas Teknologi Elektrik [Basic Electrical Technology] | SDG 9 |
| KDJ20603 | Kekuatan Bahan [Strength of Materials] | SDG 9 |
| KDJ21103 | Sifat dan Pemprosesan Seramik [Ceramic Properties and Processing] | SDG 15 |
| KDJ21203 | Pengujian Bahan [Materials Testing] | SDG 9, 12 |
| KDJ21402 | Bahan Lestari [Sustainable Materials] | SDG 12 |
| KDJ21503 | Pemprosesan Logam [Metal Processing] | SDG 12 |
| KDJ30303 | Perlindungan Logam [Metal Protections] | SDG 9, 12 |
| KDJ30403 | Keselamatan Pekerjaan dan Pengurusan Kualiti [Occupational Safety and Quality Management] | SDG 8 |
| KDJ30604 | Projek Tahun Akhir [Final Year Project] | SDG 12 |

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|-------------|--|-----------------|
| KDK22803 | Fluid Mechanics [Mekanik Bendalir] | SDG 12 |
| KDK22602 | Plastic Processing Technology Laboratory [Makmal Teknologi Pemprosesan Plastik] | SDG 12 |
| KDK22702 | Elastomer Processing Technology Laboratory [Makmal Teknologi Pemprosesan Elastomer] | SDG 12 |
| KDK22603 | Final Year Project II [Projek Tahun Akhir II] | SDG 12 |
| KDK22903 | Industrial Revolution in Polymer Engineering [Revolusi Perindustrian dalam Kejuruteraan Polimer] | SDG 13 |
| KDK23003 | Mould and Die Technology [Teknologi Acuan dan Dai] | SDG 9 |
| KDK22802 | Structure and Polymer Properties Laboratory [Makmal Struktur dan Sifat-Sifat Polimer] | SDG 9 |
| KDK22902 | Engineering Technician and Management [Juruteknik Kejuruteraan dan Pengurusan] | SDG 8 |
| KDK23103 | Occupational Safety and Quality Management [Keselamatan Pekerjaan dan Pengurusan Kualiti] | SDG 12 |
| KDK23203 | Polymer and Sustainability [Polimer dan Kelestarian] | SDG 12 |
| KDK39908 | Industrial Training [Latihan Industri] | SDG 4, 8, 9, 17 |
| KDK10103 | Basic Electrical Technology [Asas Teknologi Elektrik] | SDG 7 |
| KDK10203 | Materials Science [Sains Bahan] | SDG 9 |
| KDK10303 | Mass Balance [Imbangan Jisim] | SDG 12 |
| KDK10403 | Organic Chemistry [Kimia Organik] | SDG 7 |
| KDK10503 | Physical Chemistry [Kimia Fizikal] | SDG 7 |
| KDK10603 | Thermodynamics [Termodinamik] | SDG 9 |

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|--|------------|
| KDK10703 | Energy Balance [Imbangan Tenaga] | SDG 9 |
| KDK10903 | Analytical Chemistry [Kimia Analisis] | SDG 7 |
| KDK11002 | Engineering Graphic [Grafik Kejuruteraan] | SDG 9 |
| KDK11003 | Engineering Skills [Kemahiran Kejuruteraan] | SDG 9 |
| KDK11202 | Instrumentation Process [Proses Instrumentasi] | SDG 9 |
| KDK20103 | Mass Transfer [Pemindahan Jisim] | SDG 9 |
| KDK20203 | Heat Transfer [Pemindahan Haba] | SDG 9 |
| KDK20303 | Safety & Loss Prevention [Keselamatan & Pencegahan Kehilangan] | SDG 12 |
| KDK20403 | Renewable Energy [Tenaga Boleh Baharu] | SDG 7 |
| KDK20503 | Reaction Engineering [Kejuruteraan Tindakbalas] | SDG 9 |
| KDK20603 | Separation Technologies [Teknologi Pemisahan] | SDG 12 |
| KDK20703 | Environmental Engineering [Kejuruteraan Alam Sekitar] | SDG 6 |
| KDK20804 | Research Project [Projek Penyelidikan] | SDG 12 |
| KDK20903 | Plant Operations & Maintenance [Operasi Loji & Penyelenggaraan] | SDG 12 |
| KDK21002 | Supervisory Skills & Ethics [Kemahiran & Etika Penyeliaan] | SDG 8 |
| KDK21102 | Industrial Revolution in Chemical Engineering [Revolusi Industri dalam Kejuruteraan Kimia] | SDG 9 |
| KDK30108 | Industrial Training [Latihan Industri] | SDG 9 |

KDJ10103 SAINS KEJURUTERAAN [ENGINEERING SCIENCE]**No of Credits: 3****Course Synopsis:**

This course is to familiarize the student about basic engineering that involve physics and chemistry of materials. Students could understand the theories, principles and standard units that have been focused in the syllabus. Students are exposed to force and motion. Students are also introduced to the basics of electrostatic, electromagnetism and simple DC circuit.

Course Outcomes:

1. Ability to apply theory of physic, chemistry and basic electrical in various materials.
2. Ability to solve problems related to chemistry, physics and basic electrical principle.
3. Ability to contribute effectively as an individual and team in engineering science through group assignment.

KDJ10203 PENGENALAN KEPADA BAHAN KEJURUTERAAN [INTRODUCTION TO ENGINEERING MATERIALS]**No of Credits: 3****Course Synopsis:**

To introduce basic concepts in the field of engineering materials: Introduction to engineering materials such as metal, ceramic, polymer, and composite. Students will be exposed to the structure, properties and application of each material group.

Course Outcomes:

Ability to describe classes, properties and applications of basic and advanced materials in engineering materials.

1. Ability to solve problems related to chemistry, physics and basic electrical principle.
2. Ability to solve problems related to crystal structures and its applications in materials engineering.
3. Ability to identify solutions for well-defined technical problem in materials selection and application.

KDJ10403 LUKISAN KEJURUTERAAN DAN LUKISAN TERBANTU KOMPUTER [ENGINEERING DRAWING AND COMPUTER AIDED DRAFTING]**No of Credits: 3****Course Synopsis:**

The course will cover the details of Engineering Drawing for beginners before going in depth on projection systems followed by oblique and isometric sketches. Knowledge in dimensioning and geometrical tolerance will enhance student's ability in interpreting and assessing information from basic raw data of an engineering drawing. Students will also have the advantage to experience practical engineering drawing projects for familiarity from conceptual exposures and classroom theories taught by the experienced lecturers and teaching engineers. Then, from manual hand drawing, students are taught into the usage of AutoCAD software, which focus on producing drawing in 2D and 3D.

Course Outcomes:

Ability to describe classes, properties and applications of basic and advanced materials in engineering materials.

1. Ability to apply the basic skills and knowledge of engineering drawing.
2. Ability to analyze various technical problems related to orthographic and isometric views in engineering drawing.
3. Ability to apply the AutoCAD programming in engineering drawing.

KDJ10503 ASAS PENGATURCARAAN KOMPUTER [BASIC COMPUTER PROGRAMMING]**No of Credits: 3****Course Synopsis:**

In this course, students will be introduced to the computer system, and then will learn problem solving analysis and programming concept including variables, operator, control structure, repetition structure, function, array, structure and pointer. Students will also learn how to write programming using C language and solve engineering related problem using computer programming technique.

Course Outcomes:

Ability to describe classes, properties and applications of basic and advanced materials in engineering materials.

1. Ability to apply concept and principle in computer programming.
2. Ability to analyze programming problems in developing structured solution for technical applications.
3. Ability to use appropriate tools for coding, compiling, executing, and debugging computer programming.

KDJ10603 LOGAM FERUS DAN BUKAN FERUS [FERROUS AND NON-FERROUS METALS]**No of Credits: 3****Course Synopsis:**

In this subject, students will learn about the fundamental and types of ferrous and non-ferrous metals. Students will also study the classification of ferrous and non-ferrous metals, identification techniques as well as their properties. Students will be exposed to the basic of phase diagram such as iron-carbon system which characterise the steel and iron properties, as well as the binary phase diagram for non-ferrous metals. A metallographic analysis technique is introduced to enhance the subject understanding and students will be able to experience the laboratory activities to obtain a microstructure and compare with the properties involved. At the end of the subject, students will learn the metal fabrication processes.

Course Outcomes:

1. Ability to describe ferrous and non ferrous metals, their properties and applications.
2. Ability to conduct experiment and analyze the result obtained associated with ferrous and non ferrous metals.

KDJ10703 ASAS STATIK DAN DINAMIK [BASIC STATIC AND DYNAMIC]**No of Credits: 3****Course Synopsis:**

This course is to expose students to basic knowledge of statics and dynamics. In statics, the students will be exposed to basic concepts of engineering mechanics such as forces, moments and friction. They will apply this basic knowledge to analyse the equilibrium of particle, rigid bodies and stability of a structure. In dynamics, students will be exposed to kinematics of a particle, which treats only the geometric aspects of the motion. In kinetics for particles, problems will be solved using acceleration method, principle of work and energy, and principle of impulse and momentum.

Course Outcomes:

1. Ability to analyze basic problems of forces and moments in two- and three dimension, resultant of force from a system of force, and equilibrium of a particle and rigid body.
2. Ability to conduct experiment and analyze the result obtained associated with ferrous and non ferrous metals.
3. Ability to conduct the experiments and analyze the results obtained associated with static and dynamic.

KDJ10903 TERMODINAMIK [THERMODYNAMICS]**No of Credits: 3****Course Synopsis:**

Thermodynamics is the study of the interrelation of heat and work with chemical reactions or with physical changes of state within the confines of the laws of thermodynamics. Thermodynamics involves not only laboratory measurements of various thermodynamic properties, but also the application of mathematical methods to the study of chemical questions and the spontaneity of processes.

Course Outcomes:

1. Ability to explain knowledge and fundamentals of the first and second laws of thermodynamics.
2. Ability to analyze equations in solving chemical equilibrium and kinetic problems
3. Ability to apply the correct techniques in handling laboratory apparatus in chemical experiments
4. Ability to analyse the results from the conducted experiments.

KDJ11003 AMALAN BENGKEL [WORKSHOP PRACTICE]**No of Credits: 3****Course Synopsis:**

This subject is 100% practical coursework and carried out 3 units credit hours. This course contains basic practical works for students which are Mechanical Workshop Practice and Domestic Electrical Wiring.

Course Outcomes:

1. Ability to perform standard mechanical operations and domestic electrical wiring technique using appropriate tools and equipment.
2. Ability to value teamwork through effective communication and clear instruction in laboratory and workshop activities.

KDJ20103 TEKNOLOGI PENGEKSTRAKAN LOGAM [METAL EXTRACTIVE TECHNOLOGY]**No of Credits: 3****Course Synopsis:**

This course is proposed to provide students with fundamentals of metal extraction from ores using pyrometallurgy process, hydrometallurgy process and electrometallurgy process. Knowledge on theory acquired in lecture is also enhanced with a practical work conducted in laboratory.

Course Outcomes:

1. Ability to analyse the principles of mineral processing, hydrometallurgy, electrometallurgy and pyrometallurgy in the process of extractive metallurgy.
2. Ability to investigate the metallurgical process in extractive metallurgy through experiment.
3. Ability to propose metal processing method in extractive metallurgy based on fundamental principle.

KDJ20203 TEKNOLOGI KIMPALAN LOGAM [TECHNOLOGY OF METAL WELDING]**No of Credits: 3****Course Synopsis:**

The course covers the basic theories and practical knowledge of shielded metal arc welding (SMAW), gas metal arc welding (GMAW), and gas tungsten arc welding (GTAW). The students are also introduced to the general welding considerations of carbon and alloy steels, tool steels and cast irons, stainless steels, and nonferrous metals.

Course Outcomes:

1. Ability to correlate the concepts, functions of equipments and applications of welding involved in welding process.
2. Ability to comply with safety and ethic practices in welding process.
3. Ability to perform arc welding techniques using tools and equipments based on welding procedure.

KDJ20303 ASAS TEKNOLOGI ELEKTRIK [BASIC ELECTRICAL TECHNOLOGY]**No of Credits: 3**

Course Synopsis:

The course will cover the details of the DC/AC circuits and three phase system which covers star-delta connection, delta-star connections and three phase power measurement. Students also will gain more knowledge on single-phase transformer and electrical generator which related to single phase AC/DC generator. In addition, students will be introduced on industrial application motors and special application motor which include DC Motor, Single Phase Induction Motor, Stepper Motor and DC/AC Servo Motor.

Course Outcomes:

1. Ability to explain fundamental knowledge of physics, electric and engineering principles to DC and AC circuits.
2. Ability to analyze engineering problems based on properties of magnetic materials and DC & AC machines.
3. Ability to analyze experimental results related to electrical principles.

KDJ20603 KEKUATAN BAHAN [STRENGTH OF MATERIALS]**No of Credits: 3****Course Synopsis:**

The main objective of this course is to expose the student on basic concept of strength of materials which dealing with relationships between the external loads applied to an elastic body and the intensity forces acting within the body, axial load, mechanical properties of materials, torsion, shear forces and bending moments in beams and combined stresses.

Course Outcomes:

1. Ability to apply knowledge of the stress, strain, and mechanical properties of materials under different types of loading.
2. Ability to evaluate and solve problems related to stress, strain, and mechanical properties of materials under different types of loading.
3. Ability to conduct and analyse the mechanical properties of materials

KDJ21103 SIFAT DAN PEMROSESAN SERAMIK [CERAMIC PROPERTIES AND PROCESSING]**No of Credits: 3****Course Synopsis:**

This topic explores the properties and processing of ceramics, focusing on their mechanical, thermal, electrical, optical, and chemical characteristics. Students learn about crystal structure, phase transformations, and the influence of composition and microstructure on properties. They also study various processing techniques like powder mixing, shaping, firing and glazing, as well as the characterization methods.

Course Outcome (CO)

1. Ability to describe the basic properties of ceramics and explain their common applications.
2. Ability to apply various ceramic processing techniques such as mixing, shaping, and firing to create ceramic products.

3. Ability to apply characterization methods to evaluate ceramic materials.

KDJ21203 PENGUJIAN BAHAN [MATERIALS TESTING]**No of Credits: 3****Course Synopsis:**

This course introduces the students to the theory and practical aspects of conducting destructive and non-destructive tests on different types of materials.

Course Outcome (CO)

1. Ability to assess destructive methods for materials testing.
2. Ability to assess non-destructive methods for materials testing.
3. Ability to describe test procedures, prepare specimens, perform data acquisition, process data, and compare results with relevant theory.

KDJ21402 SUSTAINABLE MATERIALS**No of Credits: 2****Course Synopsis:**

Provides students with a comprehensive understanding of sustainability in materials engineering (in environmental responsibility). Topics covered include fundamental environmental science principles, material selection and design for sustainability, green manufacturing processes, life cycle assessment, renewable resources, waste management, and environmental regulations. Through theoretical learning, practical exercises, and case studies, students develop the knowledge and skills to evaluate materials based on environmental criteria, optimize manufacturing processes for sustainability, and comply with environmental regulations. Additionally, the program integrates Industry 4.0 concepts and technologies, such as smart manufacturing, to enhance sustainability practices and environmental performance in material production.

Course Outcome (CO)

1. Ability to apply the principles of sustainability in materials science and engineering.
2. Ability to analyse the mechanical, thermal and chemical properties of sustainable materials for engineering application.
3. Ability to identify the environmental and societal impact of various materials used in engineering application.

KDJ21503 PEMROSESAN LOGAM [METAL PROCESSING]**No of Credits: 3****Course Synopsis:**

This course aims to equip students with advanced competencies in metal forming and machining techniques, practical ability in modern casting, joining, and surface treatments, a comprehensive understanding of the diverse applications and implications of various metal processing methodologies, and the analytical skills necessary to evaluate and enhance metal processing techniques within engineering frameworks.

Course Outcome (CO)

1. Ability to apply appropriate metal forming techniques to produce components from different metals.
2. Ability to analyze the outcomes of different metal processing methods to identify defects and propose modifications or optimizations for improving the efficiency and quality of the processes.
3. Ability to evaluate the implications of selected metal processing techniques on product quality and manufacturing efficiency, considering material properties, processing parameters, and production costs.

KDJ30303 PERLINDUNGAN LOGAM [METAL PROTECTIONS]**No of Credits: 3****Course Synopsis:**

This course is to expose students to the theory of metals corrosion in different environments, its damage to the community and its possible preventions and countermeasures. The topics covered in this course are as follows; the principles of corrosion, types of corrosion, surface technology, tribology, surface coatings and metals protection methods.

Course Outcome (CO)

1. Ability to evaluate metal degradation based on fundamental of corrosion and tribology.
2. Ability to analyze the corrosion behavior based on electrochemical methods.
3. Ability to respond effectively in presenting concepts and ideas based on metal protection.

KDJ30403 KESELAMATAN PEKERJAAN DAN PENGURUSAN KUALITI [OCCUPATIONAL SAFETY AND QUALITY MANAGEMENT]**No of Credits: 3****Course Synopsis:**

This course is intended to provide an introductory knowledge in occupational safety and quality management. It provides basic information and common theories for prospective safety and quality personnel to oversee a program that encompasses both areas of responsibility. At the end of this course, students are expected to be able to identify suitable quality techniques and tools to be implemented in production management and can apply Industrial Safety standards and professional ethics in a real industrial environment.

Course Outcome (CO)

1. Ability to apply fundamental principles, techniques and tools to address quality issues based on Occupational Safety and Health standards.
2. Ability to apply fundamental principles, techniques and tools to address quality issues based on Quality Control and Management standards.
3. Ability to respond to technician practice issues by prioritizing professional ethics and norms.
4. Ability to evaluate HIRARC analysis, techniques, and tools to resolve safety issues through continuous learning in compliance with Occupational Safety and Health standards.

KDJ30604 PROJEK TAHUN AKHIR [FINAL YEAR PROJECT]**No of Credits: 4****Course Synopsis:**

This course is a small-scale research project for final year students and expected to be completed within the same semester. The projects are based on solving the engineering problem by understand the problems, troubleshooting, identify, solves and finally report writing for the documentation purposes.

Course Outcome (CO)

1. Ability to analyse an engineering problem and propose solutions based on research literatures.
2. Ability to propose project solution by utilizing standard engineering techniques and processes.
3. Ability to apply theories, principles, and specifications of processes and tests in an engineering methodology.
4. Ability to use modern engineering tools or software to solve well-defined engineering problems.
5. Ability to apply ethical principles in writing project report.
6. Ability to function effectively as an individual, and as a supervised team member.
7. Ability to communicate effectively in delivering concepts and ideas with engineering community.
8. Ability to demonstrate commitment to project management principles and the economic quality of the project.
9. Ability to engage in life-long learning in the broad context of technological change.
10. Ability to engage in self-improvement and entrepreneurial activities.

KDJ30703 SIFAT DAN PEMROSESAN POLIMER [POLYMER PROPERTIES AND PROCESSING]**No of Credits: 3****Course Synopsis:**

This course covers essential topics related to polymers in a straightforward manner. Students will learn about the relationship between the structure of polymers and their properties. They will also explore the mechanical and thermal properties of polymers and understand how these properties affect their use. The course will introduce different techniques for processing polymers, explaining their advantages and limitations, as well as how processing parameters impact the final product's properties. Students will also gain insights into the flow behaviour of polymers and the role of additives and fillers in polymer processing. The course emphasizes the importance of testing and characterizing polymers and provides an overview of common testing methods. Finally, students will learn about the process of selecting the right polymer for specific engineering applications. By the end of the course, students will have a practical understanding of polymer properties, processing techniques, and how to choose the appropriate polymers for different purposes.

Course Outcome (CO)

1. Ability to explain the relationship between polymer structure and its properties in different applications.
2. Ability to investigate the properties and behavior of polymeric material for product manufacturing
3. Ability to propose alternative materials and additives in polymer processing by considering safety and environmental aspects.
4. Ability to explain the concept and idea of entrepreneurship in product manufacturing.

KDJ30803 MEKANIK BENDALIR [FLUID MECHANICS]**No of Credits: 3****Course Synopsis:**

Fluid mechanics provides students with a strong understanding of the fundamentals of fluid mechanics principles related with fluid properties, fluid classification and force types in fluids. Thus, student will be learning about fluid properties in two different conditions, static and dynamic condition. Student also will learn momentum principles including basic equations for controlled system and volume, and then basic equations in differential form.

Course Outcome (CO)

1. Ability to assess fluid related problems based on their properties, classification, static, dynamics, kinematic and applications in materials engineering.
2. Ability to analyze the experimental results in fluid mechanics.
3. Ability to communicate effectively in delivering concepts and ideas in fluid mechanics through presentation.

KDJ30902 BAHAN TERMAJU [ADVANCED MATERIALS]**No of Credits: 2****Course Synopsis:**

These topics offer diploma-level students a thorough introduction to modern materials science and engineering. By addressing core principles, practical uses, and environmental impacts, students achieve a well-rounded comprehension of how materials science drives technological innovation and supports sustainable development. Each topic is crafted to engage students and build a strong knowledge base, equipping them for advanced studies or careers in materials science.

Course Outcome (CO)

1. Ability to apply fundamental concepts of modern materials science to real- world scenarios.
2. Ability to analyze and interpret the practical applications of various materials in different industries.
3. Ability to evaluate the environmental and sustainability impacts of material use and development.
4. Ability to integrate their knowledge to prepare for advanced studies or careers in materials science with a comprehensive foundational understanding.

KDJ39908 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]**No of Credits: 8****Course Synopsis:**

The course will expose students to aspects such as technical, application, company organization structure, company operation, department function, work procedure, safety procedure, management, communication, skills, project management and presentation. The students are also required to submit their log book and final report at the end of the industrial training. Overall, the course is practical-based.

Course Outcome (CO)

1. Ability to apply theoretical knowledge and practical skills using tools and technology in industry application.
2. Ability to practice safety, health, legal and cultural issues in working environment.
3. Ability to respond to professional ethics in technician practices.
4. Ability to work effectively as an individual, and as a team member in diverse technical environment to complete tasks assigned by the host company.
5. Ability to demonstrate communication skills to complete task, write reports and present work effectively.
6. Ability to demonstrate effective management of cost and resource in solving engineering and technical problems during industrial training.
7. Ability to engage in life-long learning in the broad context of technological change.
8. Ability to demonstrate initiative, creativity, and professionalism in handling workplace challenges during industrial training.

KDK12603 ENGINEERING SCIENCE [SAINS KEJURUTERAAN]**No of Credits: 3****Course Synopsis:**

This course provides a foundation of fundamental science and engineering technology applications, focusing on the core principles of physics and chemistry. Students will explore the core concepts of physics and chemistry apply to engineering science that govern real-world practices from a technical perspective. The course also includes laboratory sessions where students will develop hands-on proficiency in instrument handling while adhering to standard operating procedures. By the end of the course, students will acquire scientific foundation and practical skills based on integration of theoretical physics and chemistry in engineering science application.

Course Outcome (CO)

1. Ability to apply the principles of matter, mechanical dynamics, oscillations, electrostatics, electromagnetism and thermal effects based on physics and chemistry in engineering science.
2. Ability to analyse the experimental results including graph and data interpretation, calculation and discussion in engineering science applications.
3. Ability to perform standard laboratory experiments related to physical and chemistry applications in engineering science.

KDK12703 INTRODUCTION TO POLYMER [PENGENALAN KEPADA POLIMER]**No of Credits: 3****Course Synopsis:**

This course introduces the fundamental principles of polymer science, including polymer classification, molecular structure, and basic polymerisation mechanisms. Students are introduced to different types of polymers, including thermoplastics, thermosets, and elastomers, together with their characteristics, processing behaviour, and common industrial applications. Basic molecular characteristics such as molecular weight distribution and the differences between amorphous and semi-crystalline polymers are also discussed. The course further explores the mechanical behaviour of polymers and provides a basic comparison between polymers and other engineering materials such as metals, ceramics, glasses, and composites. Sustainability and recycling of polymer materials are also introduced to highlight environmental considerations and responsible material use. Laboratory activities support the lecture topics through hands-on experiments including thermoplastics identification, thermoplastic polymer growth through chain-growth polymerisation, thermoset gelling and curing time, thermoset cross-linking behaviour, elastomer resilience testing, and polymer sustainability testing using standard laboratory equipment. Laboratory work is documented through reports and practical assessments.

Course Outcome (CO)

1. Ability to apply fundamental concepts of polymer classification, molecular structure and polymerisation mechanisms to the properties and applications of thermoplastics, thermosets, and elastomers.
2. Ability to evaluate relationships between polymer molecular structure, characterisation, material properties, sustainability and recycling considerations in thermoplastics, thermosets, and elastomers.
3. Ability to perform polymer identification, processing, and characterisation experiments related to real-life applications of thermoplastics, thermosets, elastomers, and sustainable polymer materials.

KDK12803 GENERAL CHEMISTRY [KIMIA AM]**No of Credits: 3****Course Synopsis:**

This introductory course provides students with a solid foundation in general chemistry. It engages students through interactive, conceptually driven learning and scientific inquiry, covering atoms, elements, and the periodic table; chemical bonding and molecular structure; nomenclature and chemical formulas; stoichiometry of chemical formulas and equations; gas behaviour; acids and bases; thermochemistry; chemical kinetics; chemical equilibrium; and electrochemistry. Through laboratory experiments, students will conduct scientific investigations, develop measurement and data-handling skills, and perform fundamental chemical calculations. Laboratory work will be assessed through reports and written test.

Course Outcome (CO)

1. Ability to apply chemical concepts and principles related to substance properties, bonding, interactions, and reactions based on fundamental chemistry knowledge.
2. Ability to analyse the chemical properties and behaviour of substances in a materials science and engineering context.
3. Ability to analyse the substance properties and behaviours using specific methods and procedures based on basic chemistry concepts and theories.

KDK12903 ELECTRICAL TECHNOLOGY [TEKNOLOGI ELEKTRIK]**No of Credits: 3****Course Synopsis:**

This course introduces the fundamental concepts and principles of electrical technology, integrating basic mathematics, science, and engineering knowledge technology in the study of DC and AC circuits. The course covers electromagnetic principles, magnetic material properties, transformers, generators, and the operation of DC and AC electrical machines. Emphasis is placed on understanding and analysing circuit behaviour and machine operation based on electromagnetic concepts, supported by guided laboratory activities involving the safe operation of electrical measuring instruments and standard operating procedures.

Course Outcome (CO)

1. Ability to apply basic circuit laws and electrical principles in DC and AC circuits.
2. Ability to analyse magnetic material properties and machine operation of DC and AC circuits in electromagnetic principles.
3. Ability to analyse electrical circuit configurations and measurement data to validate electromagnetic principles and machine performance through practical investigation
4. Ability to demonstrate manipulative skills in using electrical measuring instruments and laboratory equipment to collect and record data accurately in laboratory work.

KDK13003 INTRODUCTION TO COMPUTER PROGRAMMING [PENGENALAN KEPADA PENGATURCARAAN KOMPUTER]**No of Credits: 3****Course Synopsis:**

In this course, students will be introduced to the computer system and then problem-solving analysis and programming concept including programming language, variables, operator, control structure, repetition structure, function, array, structure and pointer. Students will also learn how to write programming using C language and solve engineering related problem using computer programming technique and tools.

Course Outcome (CO)

1. Ability to apply concept and principle of computer programming based on C language and tools.
2. Ability to analyse programming problems in developing structured solution for related technical applications.
3. Ability to operate tools in solving programming problems based on coding, compiling, executing, and debugging computer programming.

KDK13103 STATIC AND DYNAMIC [STATIK DAN DINAMIK]**No of Credits: 3****Course Synopsis:**

This course introduces the fundamental concepts and principles of engineering mechanics, covering both static and dynamic systems. Students will apply their knowledge of mathematics, applied sciences, and engineering fundamentals to solve well-defined technical problems through the calculation of force components, moments, and structural equilibrium. The course also covers the study of particle motion through the principles of kinematics and kinetics, involving the application of Newton's Second Law as well as the principles of Work and Energy. Major emphasis is placed on the integration of theory with practical laboratory activities, where students will safely operate mechanical testing equipment, accurately collect experimental data, and systematically interpret test results.

Course Outcome (CO)

1. Ability to apply the basic concepts and principles of engineering mechanics in static and dynamic states.
2. Ability to analyse engineering mechanics problems by applying the principles of static and dynamic through sketching and/or drawing diagrams in specific conditions.
3. Ability to analyse experimental measurement data to validate static and dynamic principles through practical investigation.
4. Ability to demonstrate manipulative skills in using mechanical testing equipment and apparatus to collect and record data accurately in laboratory work.

KDK13203 THERMODYNAMICS [TERMODINAMIK]**No of Credits: 3****Course Synopsis:**

This course introduces the fundamental concepts of thermodynamics and related chemical principles covering atoms, molecules, chemical reactions, chemical equilibrium, and reaction kinetics. Students will develop basic scientific and engineering knowledge through the study of atomic and molecular concepts, chemical equations, amounts of reactants and products, and limiting reagents. The course also covers the First and Second Laws of Thermodynamics, including heat, work, enthalpy, free energy, reaction feasibility, and the effect of temperature on reaction viability. In addition, students will learn the basic principles of chemical equilibrium and reaction kinetics, including the mass action law, equilibrium

position, reaction rate, rate law, and the effects of concentration and temperature on reaction rates. Through laboratory experiments, students will conduct basic scientific investigations, practise measurement and data-handling skills, perform fundamental chemical calculations, and interpret experimental results. Laboratory work will be assessed through reports and written tests.

Course Outcome (CO)

1. Ability to analyse the fundamental principles of the First and Second Laws of Thermodynamics in solving basic thermodynamic problems.
2. Ability to analyse chemical equilibrium and reaction kinetics problems using appropriate equations and scientific principles.
3. Ability to apply correct laboratory techniques and safety practices in conducting chemical experiments.
4. Ability to analyse experimental data and interpret laboratory results from conducted experiments.

KDK13303 POLYMER CHEMISTRY [KIMIA POLIMER]**No of Credits: 3****Course Synopsis:**

This subject introduces the fundamental principles of polymer chemistry for engineering technology students. It covers polymer classification, polymer structures, polymerization reactions and mechanisms, copolymerization, and structure–property relationships. Students will examine how polymer chain architecture, intermolecular forces, and processing conditions influence the mechanical, thermal, and physical properties of polymeric materials. Through laboratory experiments, students will conduct scientific investigations, develop data interpretation and handling skills, and apply fundamental chemistry concepts related to polymer systems. Laboratory activities will strengthen students' understanding of theoretical concepts and will be assessed through laboratory reports and written tests.

Course Outcome (CO)

1. Ability to apply polymer chemistry concepts related to polymer structures and properties based on fundamental chemistry knowledge.
2. Ability to analyse polymerization reactions and mechanisms in the context of materials science and engineering applications
3. Ability to analyse the properties and behaviours of polymeric materials using appropriate experimental methods and procedures based on polymer chemistry concepts.

KDK13403 POLYMER TECHNOLOGY [TEKNOLOGI POLIMER]**No of Credits: 3**

Course Synopsis:

This course introduces the classification, structure, and properties of thermoplastics, thermosets, and elastomers. Students learn to relate molecular structure to material performance and select appropriate polymers or additives for specific engineering applications. Emphasis is placed on understanding material behavior and making informed design choices. Students will also communicate technical justifications effectively through presentations and documentation.

Course Outcome (CO)

1. Ability to demonstrate understanding of thermoplastic, thermoset, and elastomer structures and their performance characteristics.
2. Ability to propose suitable polymer materials and additives based on performance requirements and application needs.
3. Ability to communicate technical information and material selection rationale clearly in both oral and written forms.

KDK13503 ENGINEERING DRAWING AND COMPUTER AIDED DRAFTING [LUKISAN KEJURUTERAAN DAN LUKISAN TERBANTU KOMPUTER]**No of Credits: 3****Course Synopsis:**

This course introduces beginners to the fundamentals of engineering drawing, progressing from basic techniques to advanced projection systems and oblique or isometric sketching. Students will develop essential skills in dimensioning and geometric tolerancing to accurately interpret technical data. Bridging theory and practice, the curriculum includes hands-on projects guided by experienced engineers. Additionally, students transition from manual drafting to mastering AutoCAD for 2D and 3D design.

Course Outcome (CO)

1. Ability to apply the basic skills and knowledge of engineering drawing.
2. Ability to analyze various technical problems related to orthographic and isometric views in engineering drawing.
3. Ability to sketch the required design in engineering drawing via computer-aided design (CAD).

KDK13603 ENGINEERING SKILLS [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 Outcome (CO)

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 tools or software.
6. Ability to communicate effectively on laboratory/ workshop activities, make effective explanations and give and receive clear.

KDK12602 CHEMISTRY ENGINEERING LABORATORY [MAKMAL KEJURUTERAAN KIMIA]**No of Credits: 2****Course Synopsis:**

This laboratory course focuses on translating fundamental chemistry concepts into engineering applications through hands-on experiments. Students explore how chemical properties influence material behaviour, physical transformations and lab-scale engineering processes. Emphasis is placed on developing practical skills in operating, monitoring and analysing chemical engineering systems. The course trains students to apply combined theoretical chemistry and engineering principles in laboratory settings while enhancing their ability to investigate and solve problems through experimental methods.

Course Outcome (CO)

1. Ability to analyse experimental problems related to fundamental chemical concepts and chemical interactions.
2. Ability to conduct experiments, collect data and interpret results related to chemical properties and their application within engineering processes.

KDK22601 FINAL YEAR PROJECT I [PROJEK TAHUN AKHIR I]**No of Credits: 1****Course Synopsis:**

This course introduces students to independent research and problem-solving through a small-scale final year project. Under supervision, students identify an engineering challenge, propose viable solutions, and support their work with a literature review and preliminary experiments or analysis. Emphasis is placed on applying theoretical knowledge, critical thinking, and research methodology. Students also develop self-learning and documentation skills through report writing and project planning.

Course Outcome (CO)

1. Able to demonstrate knowledge relevant to the selected project topic and justify the proposed approach.
2. Ability to analyse engineering problems and formulate appropriate preliminary solutions or hypotheses.
3. Ability to pursue independent learning and research to support continuous development in the project.

KDK22602 PLASTIC PROCESSING TECHNOLOGY LABORATORY [MAKMAL TEKNOLOGI PEMROSESAN PLASTIK]**No of Credits: 2****Course Synopsis:**

This laboratory course focuses on the processing and testing of thermoplastic and thermoset materials. Students apply prior knowledge to conduct hands-on experiments involving product design, molding, and mechanical testing. Emphasis is placed on understanding the behavior of polymers during processing and evaluating their performance through standard testing methods. The course develops students' investigative and technical skills in a practical manufacturing context.

Course Outcome (CO)

1. Ability to conduct experiments and analyse results related to the processing and performance of thermoplastic and thermoset products.
2. Ability to operate polymer processing and testing equipment safely and effectively in laboratory settings.

KDK22603 FINAL YEAR PROJECT II [PROJEK TAHUN AKHIR II]**No of Credits: 3****Course Synopsis:**

This course continues the final year research project, emphasising the implementation and completion of the proposed solution. Students apply engineering design, conduct experiments, and use appropriate tools to validate findings. They manage project timelines, resources, and budgeting, while enhancing technical, documentation, and presentation skills. The course nurtures independent learning, innovation, and professional development aligned with real-world engineering and entrepreneurial practices.

Course Outcome (CO)

1. Ability to design and develop appropriate solutions based on identified engineering problems.
2. Ability to conduct investigations and experiments to support project objectives and validate results.
3. Ability to use relevant tools and technologies effectively in executing the project.
4. Ability to manage project activities, timelines, and resources efficiently.
5. Ability to engage in self-directed learning to improve project outcomes and technical

skills.

6. Ability to demonstrate entrepreneurial awareness and innovative thinking in delivering project results.

KDK22702 ELASTOMER PROCESSING TECHNOLOGY LABORATORY [MAKMAL TEKNOLOGI PEMROSESAN ELASTOMER]**No of Credits: 2****Course Synopsis:**

This laboratory course provides hands-on experience in the processing of natural and synthetic rubber and latex. Students apply theoretical knowledge and field procedures to perform mixing, molding, and curing operations. The course also covers the role of additives in rubber product design. Through practical activities, students gain investigative and technical skills essential for the development and evaluation of elastomer-based engineering products.

Course Outcome (CO)

1. Ability to investigate and analyse the processing behavior and material properties of elastomer compounds.
2. Ability to operate elastomer processing tools and equipment safely and effectively for product development.

KDK22703 STRUCTURE AND POLYMER PROPERTIES [STRUKTUR DAN SIFAT-SIFAT POLIMER]**No of Credits: 3****Course Synopsis:**

This course introduces students to the structure–property relationship of polymeric materials. It covers principles and methods for analysing, testing, and characterising polymers using standard equipment. Students learn to interpret test data to evaluate mechanical, thermal, and chemical properties of polymers. Emphasis is placed on applying scientific knowledge to understand how polymer structure influences performance in engineering applications.

Course Outcome (CO)

1. Ability to demonstrate knowledge of polymer structure and its influence on mechanical, thermal, and chemical properties.
2. Ability to analyse test results and identify property-performance relationships in polymer materials.

KDK22802 STRUCTURE AND POLYMER PROPERTIES LABORATORY [MAKMAL STRUKTUR DAN SIFAT-SIFAT POLIMER]**No of Credits: 2****Course Synopsis:**

This laboratory course trains students in the use of testing tools and techniques for analysing polymer properties. Products developed from earlier processing labs are evaluated for mechanical, thermal, and physical performance. Students gain practical experience in using standard testing equipment and interpreting test results. The course enhances investigative and technical skills in characterizing polymer materials for quality assurance and product development.

Course Outcome (CO)

1. Ability to conduct experiments to evaluate and interpret the physical and mechanical properties of polymer products.
2. Ability to operate polymer testing tools and equipment accurately and safely to support material analysis.

KDK22803 FLUID MECHANICS [MEKANIK BENDALIR]**No of Credits: 3****Course Synopsis:**

This course introduces the fundamental principles of fluid mechanics, including fluid properties, classification, and forces. Students study fluid behavior in static and dynamic states and explore momentum principles through control volume and differential analysis. Applications include pipe flow, turbomachinery, and flow measurement techniques. The course equips students with knowledge and analytical skills to solve fluid-related problems in engineering contexts.

Course Outcome (CO)

1. Ability to demonstrate understanding of fluid properties, classifications, and fundamental fluid mechanics principles.
2. Ability to analyse and solve engineering problems related to fluid behavior, pipe flow, and flow measurements.

KDK22902 ENGINEERING TECHNICIAN AND MANAGEMENT [JURUTEKNIK KEJURUTERAAN DAN PENGURUSAN]**No of Credits: 2****Course Synopsis:**

This course integrates technical knowledge with foundational management skills, preparing students to support and lead engineering activities effectively. Students learn to manage resources, understand technical workflows, and contribute to team-based

engineering projects. Emphasis is placed on professionalism, ethical responsibility, effective communication, and team collaboration. The course equips students to serve as a vital link between technical operations and organisational goals in engineering environments.

Course Outcome (CO)

1. Ability to describe the role of technicians in supporting sustainable and socially responsible engineering practices.
2. Ability to demonstrate ethical behavior and responsibility in engineering decision-making.
3. Ability to function effectively both as an individual and as a contributing team member in engineering activities.
4. Ability to communicate technical information clearly and professionally in written and oral forms.

KDK22903 INDUSTRIAL REVOLUTION IN POLYMER ENGINEERING [REVOLUSI PERINDUSTRIAN DALAM KEJURUTERAAN POLIMER]**No of Credits: 3****Course Synopsis:**

This course introduces students to Industry 4.0 technologies and their applications in polymer engineering. Topics include artificial intelligence (AI), big data, robotics, and the Internet of Things (IoT) in polymer manufacturing. Students explore how these technologies enhance productivity, sustainability, and innovation. The course also emphasises problem-solving, teamwork, and entrepreneurial thinking in adapting IR4.0 tools for smart polymer production and industry transformation.

Course Outcome (CO)

1. Ability to demonstrate understanding of Industry 4.0 technologies and their relevance to polymer engineering.
2. Ability to analyse the impact of digital technologies on polymer manufacturing challenges.
3. Ability to explain the societal, environmental, and economic implications of adopting smart manufacturing solutions.
4. Ability to contribute individually and collaboratively to problem-solving tasks involving IR4.0 technologies.
5. Ability to demonstrate entrepreneurial awareness in identifying digital solutions for polymer industry applications.

KDK23003 MOULD AND DIE TECHNOLOGY [TEKNOLOGI ACUAN DAN DAI]**No of Credits: 3****Course Synopsis:**

This course introduces students to the principles and practices of mould and die design in manufacturing. It covers the design process based on product geometry, material characteristics, and processing methods. Students learn how to analyse product specifications and manufacturing requirements, and apply appropriate tools and techniques to develop and maintain moulds. Practical sessions enhance investigative and technical skills in precision tooling for polymer processing.

Course Outcome (CO)

1. Ability to design moulds and dies based on product requirements, material behavior, and manufacturing constraints.
2. Ability to investigate manufacturing issues and apply solutions related to mould and die performance.
3. Ability to operate and utilise relevant tools and equipment for mould and die fabrication and maintenance.

KDK23103 OCCUPATIONAL SAFETY AND QUALITY MANAGEMENT [KESELAMATAN PEKERJAAN DAN PENGURUSAN KUALITI]**No of Credits: 3****Course Synopsis:**

This course introduces fundamental concepts in occupational safety and quality management. Students learn key safety practices, hazard identification, and compliance with industrial safety standards. The course also covers quality control tools, inspection methods, and production management strategies. Emphasis is placed on ethical responsibility and the role of technicians in promoting a safe and high-quality work environment aligned with industry regulations and best practices.

Course Outcome (CO)

1. Ability to analyse safety risks and quality issues within industrial processes using appropriate methods.
2. Ability to explain the importance of sustainability, safety, and legal compliance in engineering workplaces.
3. Ability to demonstrate professional ethics in applying industrial safety standards and quality control practices.

KDK23203 POLYMER AND SUSTAINABILITY [POLIMER DAN KELESTARIAN]**No of Credits: 3****Course Synopsis:**

This course provides foundational knowledge of sustainability in relation to polymer materials and applications. Students explore global challenges such as resource scarcity, climate change, and ecosystem degradation, while examining the role of sustainable polymer production. Topics include environmental policy, sustainable product design, and life cycle analysis. The course emphasises ethical responsibility and environmental awareness in designing and using polymer-based systems for a more sustainable future.

Course Outcome (CO)

1. Ability to demonstrate knowledge of sustainability principles and their application in polymer science and engineering.
2. Ability to explain the ethical and environmental implications of polymer usage and apply sustainability concepts in decision-making.

KDK39908 INDUSTRIAL TRAINING [LATIHAN INDUSTRI]**No of Credits: 8****Course Synopsis:**

This practical-based course immerses students in real industrial environments where they apply engineering knowledge and skills. Students engage with technical operations, organisational functions, safety protocols, communication practices, and project management. Through hands-on tasks, reporting, and supervisor evaluations, students enhance workplace competence, professionalism, and adaptability. This experience develops their ability to integrate technical and soft skills while fostering continuous learning and career readiness.

Course Outcome (CO)

1. Ability to apply tools and technologies effectively in real industrial tasks.
2. Ability to relate technical work to societal, environmental, and global considerations.
3. Ability to demonstrate ethical behavior and adherence to workplace safety and conduct.
4. Ability to contribute effectively as an individual and as a team member in professional settings.
5. Ability to communicate clearly with peers and supervisors through reports and presentations.
6. Ability to manage time, resources, and project tasks effectively in the workplace.
7. Ability to engage in reflective learning for personal and professional growth.
8. Ability to demonstrate entrepreneurial thinking and adaptability in solving workplace challenges.

KDK10103 ASAS TEKNOLOGI ELEKTRIK [BASIC ELECTRICAL TECHNOLOGY]**No of Credits: 3****Course Synopsis:**

This course introduces the International System of Measurement and fundamental electrical systems, focusing on the characteristics and operating principles of DC and AC circuits and machines, capacitance, inductance and transformer. It also covers basic magnetic circuits, electromagnetism, and the applications of electrical technology in various industries.

Course Outcome (CO)

1. Ability to explain the operation of electrical circuits in designing basic electronic and electrical systems.
2. Ability to analyse the behaviour 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.

KDK10203 SAINS BAHAN [MATERIALS SCIENCE]**No of Credits: 3****Course Synopsis:**

This course covers the introduction to materials science and engineering which focused on different types of material properties, structures, and application. The course includes 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 application and processing of specific material as well as introduction of electrical, magnetic and optical properties of materials are also presented in the course.

Course Outcome (CO)

1. Ability to apply fundamental concepts and relationship of material structure, mechanical and classification of engineering materials.
2. Ability to analyze the experiment results in material science.
3. Ability to conduct basic material testing in the laboratory following standard procedures.

KDK10303 IMBANGAN JISIM [MASS BALANCE]**No of Credits: 3****Course Synopsis:**

This is an introductory course for the chemical engineering curriculum. The course emphasizes the concept of mass balance (material balance) in chemical processes. Students will be introduced to fundamental engineering calculations, including units and

dimensions. Additionally, students will learn how to interpret chemical processes and the various process variables involved. Subsequent topics include an introduction to mass balance and the calculation of mass balances for reactive and non-reactive processes within both single-unit and multiple-unit systems.

Course Outcome (CO)

1. Ability to analyze material balances of reactive and non-reactive systems in chemical processes.
2. Ability to analyze material balance data and organise a report.
3. Ability to perform simulation tools in solving materials.

KDK10403 KIMIA ORGANIK [ORGANIC CHEMISTRY]**No of Credits: 3****Course Synopsis:**

This course covers the structure, nomenclature, synthesis, physical properties, chemical properties, and reactions of major classes of organic compounds. These include alkanes, alkenes, alkynes, alcohols, ethers, aldehydes, ketones, benzene rings, other aromatic compounds, and carboxylic acids. The course also introduces basic mechanistic pathways of organic synthesis involving these organic compounds.

Course Outcome (CO)

1. CO1: Ability to identify classes of organic compounds based on their molecular structures, physical properties, chemical characteristics, mechanism and reaction condition.
2. Ability to analyze the experiment results in organic chemistry.
3. Ability to follow standard procedures for handling laboratory equipment, apparatus, and techniques in the organic chemistry process.

KDK10503 KIMIA FIZIKAL [PHYSICAL CHEMISTRY]**No of Credits: 3****Course Synopsis:**

This 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, and equilibrium electrochemistry.

Course Outcome (CO)

1. Ability to apply basic laws of thermodynamics, enthalpy, Gibbs free energy, reaction rates and electrochemical cells in chemical systems.
2. Ability to analyze the experimental results including interpretation data, calculation, graph and discussion in physical chemistry.
3. Ability to follow standard procedures for handling laboratory equipment, apparatus, and techniques in the physical chemistry process.

KDK10603 TERMODINAMIK [THERMODYNAMICS]**No of Credits: 3****Course Synopsis:**

This course covers the fundamental principles of thermodynamics and their application in broadly-defined chemical engineering problems. Topics include thermodynamic systems and properties, properties of pure substances, the First Law and Second Law of Thermodynamics, basic thermodynamic cycles, gas mixtures, and introductory phase equilibrium. The course emphasises engineering problem-solving, interpretation of thermodynamic tables and diagrams, laboratory skills, data analysis, teamwork and professional conduct during practical activities.

Course Outcome (CO)

1. Ability to describe thermodynamic principles in analysing and solving well-defined chemical engineering problems.
2. Ability to perform thermodynamics experiments by operating laboratory equipment, analysing experimental data and interpreting results.
3. Ability to demonstrate teamwork and professional conduct in group and laboratory activities.

KDK10703 IMBANGAN TENAGA [ENERGY BALANCE]**No of Credits: 3****Course Synopsis:**

This course is a follow-up to the mass balance course. The course introduces students to the fundamental concept of energy balance in chemical processes. Students are also trained to analyse and interpret experimental data to perform energy balance calculations of chemical processes, focusing on the critical process variables involved. By the end of this course, students will be able to identify and perform energy balances for reactive and non-reactive chemical processes in single systems and multiple systems.

Course Outcome (CO)

1. Ability to apply basic principles of units and dimensions, process variables and introductory concepts of energy balance in chemical engineering technology.
2. Ability to analyse experimental data on energy balance including calculations and data interpretation for reactive and non-reactive chemical processes in single systems and multiple systems.
3. Ability to apply appropriate simulation tools to perform energy balances for reactive and non-reactive chemical processes in single systems and multiple systems.

KDK10803 MEKANIK BENDALIR [FLUID MECHANICS]**No of Credits: 3****Course Synopsis:**

This course covers all the fundamental principles of fluid mechanics, including statics and dynamics. The course begins with an introduction to fluids, their properties, and basic concepts such as pressure and viscosity. Fluid statics which involve fundamental equations, pressure measurement, buoyancy, hydraulic forces, and stability, will also be introduced. In the fluid dynamics section, students will learn about flow types, velocity, theoretical foundations, and the Bernoulli equation, including its applications in pumps and turbines.

Course Outcome (CO)

1. Ability to apply basic principles of fluid properties, fluid statics, and fundamental equations of fluid dynamics in chemical engineering technology.
2. Ability to analyze experimental data on fluid mechanics, including calculations and data interpretation for fluid statics, flow measurements, and energy losses in piping systems.
3. Ability to follow standard procedures for handling laboratory equipment, apparatus, and techniques in fluid mechanics.

KDK10903 KIMIA ANALISIS [ANALYTICAL CHEMISTRY]**No of Credits: 3****Course Synopsis:**

The course covers the basic principle of analytical chemistry which includes data analysis and its interpretation. The course also covers the introduction and application of classical analytical methods such as gravimetry and titrimetry as well as modern methods in analytical chemistry such as chromatographic and spectroscopic techniques.

Course Outcome (CO)

1. Ability to understand and apply the basic chemical concepts, analytical techniques in order to calculate and solve analytical problems.
2. Ability to analyze the experimental results by interpretation data, calculation, graph and discussion in analytical chemistry.
3. Ability to follow standard procedures for handling laboratory equipment, apparatus, and techniques in analytical chemistry.

KDK11002 GRAFIK KEJURUTERAAN [ENGINEERING GRAPHIC]**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 and acquire the engineering process drawing skill using an appropriate software package.

Course Outcome (CO)

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.

KDK11103 KEMAHIRAN KEJURUTERAAN [ENGINEERING SKILLS]**No of Credits: 3****Course Synopsis:**

This course aims to provide students with basic knowledge regarding engineering skills. The topics expected to be taught include the use of engineering-related software such as MATLAB, techniques in mechanical engineering workshops such as welding processes, machining, and an introduction to Programmable Logic Controllers (PLC).

Course Outcome (CO)

1. Ability to perform modern engineering and IT tools or software in analysing the data for engineering problems.
2. Ability to perform the skills and standard practice in the mechanical processes.
3. Ability to demonstrate professional ethics in modern engineering and IT tools or software in analysing the data for engineering problems.

KDK11202 PROSES INSTRUMENTASI [INSTRUMENTATION PROCESS]**No of Credits: 2****Course Synopsis:**

This course provides the students with the introductory fundamentals and application knowledge of the essential process instruments (including valves, pumps, compressors, blowers, fans) which are commonly used in the process industries. Students are also trained with the ability to examine both process flow diagrams (PFD) as well as piping and instrumentation diagrams (P&ID) using the Instrumentation Systems and Automation Society (ISA) symbology and tangging systems.

Course Outcome (CO)

1. Ability to analyze the function of various industrial process instrumentation and application of engineering drawing.
2. Ability to demonstrate the ISA symbology and tagging as well as numbering.
3. Ability to construct the process flow diagram (PFD) and piping and instrumentation diagram (P&ID) using appropriate tools.

KDK20103 PEMINDAHAN JISIM [MASS TRANSFER]**No of Credits: 3****Course Synopsis:**

This course introduces the fundamental concepts and principles of mass transfer operations and the mechanisms involved in the movement of substances in gas, liquid, and solid phases. Topics include diffusion phenomena, molecular transport, and the application of Fick's Law in describing mass transfer processes. The course also covers mass transfer coefficients and the factors influencing mass transfer rates in engineering systems, with emphasis on industrial applications such as absorption, distillation, drying, extraction, and membrane separation in chemical and process industries.

Course Outcome (CO)

1. Ability to describe the fundamental concepts, principles, and mechanisms of mass transfer in gas, liquid, and solid systems.
2. Ability to perform calculations and solve engineering problems related to diffusion and molecular transport using Fick's Law and mass transfer equations.
3. Ability to explain mass transfer processes and analyze factors affecting mass transfer coefficients in industrial applications.

KDK20203 PEMINDAHAN HABA [ENERGY TRANSFER]**No of Credits: 3****Course Synopsis:**

This course emphasizes the fundamental concepts and problem-solving techniques related to heat transfer in process engineering. The course covers the basic principles and mechanisms of conduction, convection and radiation in heat transfer under various conditions, as well as the design fundamentals of basic industrial heat exchangers. In particular, the fundamental knowledge gained from single heat exchanger analysis is further applied in the design of a heat exchanger network for a specific process, aiming to minimize energy requirements and heat rejection.

Course Outcome (CO)

1. Ability to analyse the principles and mechanisms of heat transfer including conduction, convection and radiation in chemical engineering processes.
2. Ability to develop heat exchanger designs and heat exchanger network solutions for specific process engineering problems.
3. Ability to demonstrate appropriate techniques for heat transfer equipment under different operating conditions.

KDK20302 KESELAMATAN & PENCEGAHAN KEHILANGAN [SAFETY & LOSS PREVENTION]**No of Credits: 2**

Course Synopsis:

This course introduces the principles and practices of safety, health and environment in engineering workplaces. The course covers occupational safety and health management, legal requirements, hazard identification, risk assessment and risk control, chemical safety, fire and explosion hazards, safe engineering work practices, emergency response planning, accident investigation and basic safety control elements in engineering activities. The course emphasises practical understanding, case-based analysis and appropriate selection of prevention and control methods for broadly-defined engineering problems.

Course Outcome (CO)

1. Ability to demonstrate understanding of occupational safety and health management, planning and legal requirements.
2. Ability to explain suitable methods for preventing and controlling occupational safety and health hazards.
3. Ability to apply appropriate safety control elements in engineering work.

KDK20403 TENAGA BOLEH BAHARU [RENEWABLE ENERGY]**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. The course emphasises on 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 renewable energy.

Course Outcome (CO)

1. Ability to explain the principle and the environmental aspect of renewable energy.
2. Ability to differentiate types of renewable energy resources.
3. Ability to demonstrate biomass energy process in producing biofuels.

KDK20503 KEJURUTERAAN TINDAKBALAS [REACTION ENGINEERING]**No of Credits: 3****Course Synopsis:**

This course introduces the principles of chemical reactions engineering involving knowledge of reactor type and reactor design. Fundamental concepts are emphasized through the knowledge of reaction operation, reactor sizing, reaction kinetics and catalyst and catalytic reaction mechanism.

Course Outcome (CO)

1. Ability to explain the basic principles of chemical reaction engineering, reactor types, and reactor design calculations for chemical processes.
2. Ability to apply the chemical reaction engineering reactors for handling chemical

reaction related processes in operation.

3. Ability to work effectively in a group/team to prepare laboratory reports related to chemical reaction engineering processes.

KDK20603 TEKNOLOGI PEMISAHAN [SEPARATION TECHNOLOGY]**No of Credits: 3****Course Synopsis:**

This course introduces various downstream separation processes applied in the chemical industry and processes such as solid-liquid, liquid-liquid, gas-liquid and gas-gas separation involving specific processes such as distillation, absorption, adsorption, filtration, extraction and crystallization. This course also applies knowledge of mass balance, mass transfer and heat.

Course Outcome (CO)

1. Ability to evaluate and choose good separation techniques commonly involved in the chemical process industry.
2. Ability to analyze experimental data on separation and organise reports.
3. Ability to demonstrate appropriate engineering equipment to perform separation processes.

KDK20703 KEJURUTERAAN ALAM SEKITAR [ENVIRONMENTAL ENGINEERING]**No of Credits: 3****Course Synopsis:**

This course introduces the fundamental principles of environmental engineering in addressing water and wastewater quality, air pollution, noise pollution, and solid and hazardous waste management in engineering and industrial activities. It covers basic pollution control technologies, environmental legislation, environmental impact assessment, and sustainable engineering practices. Students will be exposed to practical methods, engineering technologies, and regulatory frameworks used in maintaining environmental quality and supporting sustainable development.

Course Outcome (CO)

1. Ability to analyze the fundamental principles and environmental issues associated with water and wastewater quality, air pollution, and noise pollution in environmental engineering practice.
2. Ability to integrate awareness and responsibility in applying sustainable solid and hazardous waste management practices in accordance with environmental regulations across various industries.
3. Ability to execute standard laboratory procedures for handling equipment and performing experimental techniques.

KDK20804 PROJEK PENYELIDIKAN [RESEARCH PROJECT]**No of Credits: 4****Course Synopsis:**

This course is a small-scale research project for final year students and expected to be completed within the same semester. The projects are based on solving the engineering problem by understanding the problems, troubleshooting, identifying, solving and finally report writing for the documentation purposes.

Course Outcome (CO)

1. Ability to analyse an engineering problem and propose solutions based on research literature.
2. Ability to propose project solutions by utilizing standard engineering techniques and processes.
3. Ability to apply theories, principles, and specifications in conducting processes and tests by using engineering methodologies.
4. Ability to use modern engineering tools or software to solve well-defined engineering problems.
5. Ability to apply ethical principles in writing project reports.
6. Ability to demonstrate effectively as an individual, and as a supervised team member.
7. Ability to communicate effectively in delivering concepts and ideas within the engineering community.
8. Ability to demonstrate commitment to project management principles and the economic quality of the project.
9. Ability to engage in life-long learning in the broad context of technological change.
10. Ability to demonstrate commitment in self-improvement and entrepreneurial activities.

KDK20903 OPERASI LOJI & PENYELENGGARAAN [PLANT OPERATION & MAINTENANCE]**No of Credits: 3****Course Synopsis:**

This course applies the fundamentals of plant operations management including planning, anticipating, recognising, evaluating and control, installation and commissioning. In addition, it also applies basic maintenance concepts and trouble shooting for major components in the plant.

Course Outcome (CO)

1. Ability to analyze the fundamentals of plant operations management, including planning, installation, commissioning, and operational control activities.
2. Ability to perform basic maintenance and troubleshooting procedures for major plant components and equipment.
3. Ability to evaluate plant operational practices to ensure safe, efficient, and reliable industrial plant performance.

KDK21002 KEMAHIRAN & ETIKA PENYELIAAN [SUPERVISORY SKILLS & ETHICS]**No of Credits: 2****Course Synopsis:**

This course introduces students to the fundamental principles of effective supervision and professional ethics in technical and industrial environments. Emphasis is placed on the roles and responsibilities of supervisors, leadership and communication skills, teamwork, conflict management, ethical decision making, and workplace discipline. Students will also be exposed to ethical issues related to sustainability, safety, quality, and professional conduct within chemical and process industries. The course aims to prepare students to function responsibly as entry-level supervisors who uphold ethical values, sustainable work practices and organizational standards.

Course Outcome (CO)

CO1: Ability to explain the roles, functions and responsibilities of a supervisor in chemical engineering and industrial workplace settings.

CO2: Ability to demonstrate effective supervisory skills, including communication, leadership, teamwork, and basic conflict management in workplace situations.

CO3: Ability to apply ethical principles, professional conduct, and safety awareness in making supervisory decisions related to industrial and chemical engineering practices.

KDK21102 REVOLUSI INDUSTRI DALAM KEJURUTERAAN KIMIA [INDUSTRIAL REVOLUTION IN CHEMICAL ENGINEERING]**No of Credits: 2****Course Synopsis:**

This course introduces students to the evolution of industrial revolutions with emphasis on their impact on chemical engineering processes and industries. It covers the transition from the First Industrial Revolution to the Fourth Industrial Revolution (IR 4.0), including mechanization, digitalization, mass production, automation, and smart manufacturing. Students will explore modern chemical engineering technologies and tools used in chemical plants. The course aims to develop students' awareness of technological changes, adaptability, and readiness to work in modern and future chemical engineering industries.

Course Outcome (CO)

1. Ability to describe the key stages of industrial revolutions and their significance in the development of chemical engineering industries.
2. Ability to explain the applications of modern industrial technologies, including automation and digital systems, in chemical engineering processes.
3. Ability to demonstrate awareness of sustainability, safety, and workforce adaptability issues related to Industrial Revolution practices in chemical engineering.

KDK39908 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]**No of Credits: 8****Course Synopsis:**

This practical-based course transitions students from the classroom to the industry by immersing them within a company's operational workflows, technical functions, and organizational structures. It provides a platform for students to apply foundational engineering knowledge to real-world industrial challenges while adapting to professional workplace cultures.

Course Outcome (CO)

1. Ability to operate appropriate techniques, resources, and modern engineering computing or IT tools proficiently to solve well-defined industrial problems while recognizing their operational limitations.
2. Ability to comply with safety, health, and legal frameworks by accounting for sustainable development impacts when solving well-defined industrial problems.
3. Ability to apply ethical principles and professional responsibility in industrial practices.
4. Ability to collaborate effectively as an active and inclusive team member within diverse, multidisciplinary industrial environments
5. Ability to communicate effectively through technical reports, documentation, and presentations in conveying clear and structured information on industrial training.
6. Ability to demonstrate engineering management principles while functioning effectively as a member or leader of a technical team to manage assignments or projects within multidisciplinary industrial environments.
7. Ability to evaluate specialized technical knowledge and resolve industrial problems independently through critical thinking and self-directed learning.

FACULTY OF CIVIL ENGINEERING & TECHNOLOGY

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
- Diploma in Environmental Engineering

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UR4851001 Diploma in Environmental Engineering

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates are competence in environmental engineering field as demonstrated through career progression

PEO 2

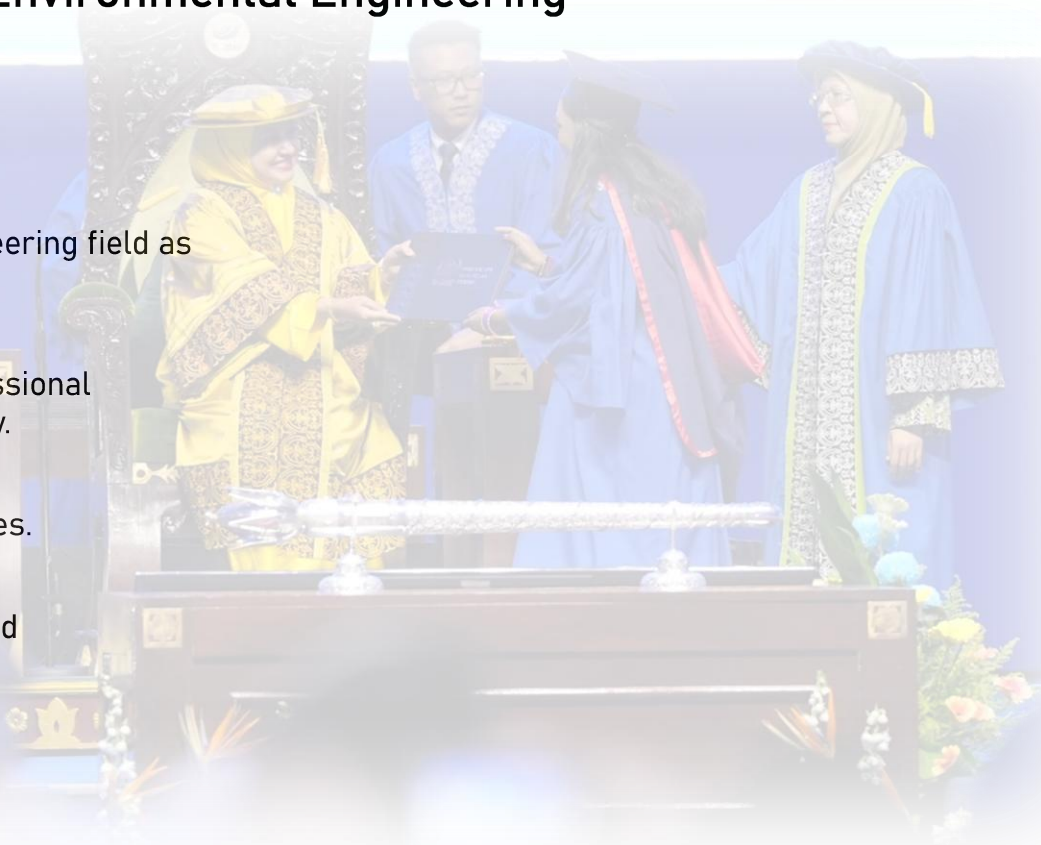
Graduates who are involved in community or professional organization and make contribution towards society.

PEO 3

Graduates pursue continuing education opportunities.

PEO 4

Graduates make contribution through innovation and entrepreneurship.



PROGRAMME OUTCOMES (PO)

P01

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

P02

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.

P03

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.

P04

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.

P05

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.

P06

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.

P07

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.

P08

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.

P09

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.

P010

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.

P011

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 UR4851001 DIPLOMA IN ENVIRONMENTAL ENGINEERING INTAKE 2026/2027 | | | | | | | |
|---|--|---|--|---|--|---|---|
| YEAR | FIRST | | | SECOND | | | THIRD |
| SEMESTER | 1 | 2 | Short Semester** | 3 | 4 | Short Semester** | 5 |
| DISCIPLINE CORE COURSES (73 CREDITS) | ADJ10102 Fundamentals of Engineering Principles [Asas Prinsip Kejuruteraan] | ADJ10702 Fundamental of Chemical Processes [Asas Proses Kimia] | ADJ11202 Mechanics Laboratory [Makmal Mekanik] | ADJ20102 Hydrology [Hidrologi] | ADJ20503 Environmental Assessment and Management [Pengurusan dan Penilaian Alam Sekitar] | ADJ20902 Environmental Engineering Skills [Kemahiran Kejuruteraan Alam Sekitar] | ADJ30108 Industrial Training [Latihan Industri] |
| | ADJ10203 Environmental Chemistry [Kimia Persekitaran] | ADJ10803 Geoenvironmental Soil Mechanics [Mekanik Tanah Geopersekitaran] | ADJ11302 Geotechnical Laboratory [Makmal Geoteknik] | ADJ20203 Management of Solid and Hazardous Waste [Pengurusan Sisa Pepejal dan Sisa Berbahaya] | ADJ20602 Highway and Transport Technology [Teknologi Lebuhraya dan Pengangkutan] | ADJ21003 Computer Programming [Pengaturcaraan Komputer] | |
| | ADJ10302 Legislation on Environmental, Health and Safety [Perundangan Alam Sekitar, Kesihatan dan Keselamatan] | ADJ10903 Engineering Mechanics [Kejuruteraan Mekanik] | ADJ11402 Materials Laboratory [Makmal Bahan] | ADJ20303 Air & Noise Monitoring and Control [Kawalan dan Pemantauan Udara & Bunyi] | ADJ20703 Water Supply Engineering [Kejuruteraan Bekalan Air] | ADJ21102 Environmental Project Work [Kerja Projek Alam Sekitar] | |
| | ADJ10402 Environmental Ecology [Ekologi Persekitaran] | ADJ11002 Water Quality Technology and Monitoring [Teknologi dan Pemantauan Kualiti Air] | ADJ11502 Computer Aided Drafting [Lukisan Terbantu Komputer] | ADJ20403 Fluid Mechanics & Hydraulics [Mekanik Bendalir & Hidraulik] | ADJ20804 Final Year Project [Projek Tahun Akhir] | | |
| | ADJ10503 Strength of Materials [Kekuatan Bahan] | ADJ11102 Environmental Engineering Laboratory [Makmal Kejuruteraan Alam Sekitar] | | | | | |
| | ADJ10603 Introduction to Environmental Engineering [Pengenalan Kepada Kejuruteraan Alam Sekitar] | | | | | | |
| COMMON CORE COURSES (9 CREDITS) | | IDQ10103 Mathematics 1 [Matematik 1] | | IDQ20203 Mathematics 2 [Matematik 2] | IDQ20303 Mathematics 3 [Matematik 3] | | |
| UNIVERSITY REQUIREMENT COURSES (12 CREDITS) | SDZ11XX1 Co-Curriculum 1 [Ko-Kurikulum 1] | SDB11202 Communicative English 2 [Bahasa Inggeris Komunikasi 2] | | SDB11302 Communicative English 3 [Bahasa Inggeris Komunikasi 3] | SDU33602 Introduction to Artificial Intelligence in Society [Pengenalan Kepada Kecerdasan Buatan dalam Masyarakat] | | |
| | SDU22502 Basics of Entrepreneurship [Asas Keusahawanan] | SDZ1XXX1 Co-Curriculum 2 [Ko-Kurikulum 2] | | SDU13002 The Constitution and Integrity Society [Perlembagaan dan Masyarakat Berintegriti] | | | |
| TOTAL CREDITS (94 CREDITS) | 18 | 18 | 8 | 18 | 17 | 7 | 8 |
| AUDIT COURSES | QDQ10002 ^[1] Preliminary Mathematics [Matematik Awalan] | | | | | | |
| | SDB11102 ^[3] Communicative English 1 [Bahasa Inggeris Komunikasi 1] | | | | | | |

[1] Compulsory for students with grade D and without Additional Mathematics (Matematik Tambahan) in SPM. QDQ10002 - Preliminary Mathematics is an Audit course.

[2] Compulsory for students with grades B+ and below in Malay Language (Bahasa Melayu) SPM. SDB31002 - Malay Language is an Audit course.

[3] Compulsory for students with grades B+ and below in English Language (Bahasa Inggeris) SPM. SDB11102 - Communicative English 1 is an Audit course.

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|-------------|--|-------------------|
| ADJ10102 | Fundamentals of Engineering Principles [Asas Prinsip Kejuruteraan] | SDG 4 |
| ADJ10203 | Environmental Chemistry [Kimia Persekitaran] | SDG 6,13 |
| ADJ10302 | Legislation on Environmental, Health and Safety [Perundangan Alam Sekitar, Kesihatan dan Keselamatan] | SDG 16 |
| ADJ10402 | Environmental Ecology [Ekologi Persekitaran] | SDG 6,11,14 |
| ADJ10503 | Strength of Materials [Kekuatan Bahan] | SDG 9 |
| ADJ10603 | Introduction to Environmental Engineering [Pengenalan Kepada Kejuruteraan Alam Sekitar] | SDG 6,11,12,13,14 |
| ADJ10702 | Fundamental of Chemical Processes [Asas Proses Kimia] | Tiada |
| ADJ10803 | Geoenvironmental Soil Mechanics [Mekanik Tanah Geopersekitaran] | SDG 6 |
| ADJ10903 | Engineering Mechanics [Kejuruteraan Mekanik] | SDG 9 |
| ADJ11002 | Water Quality Technology and Monitoring [Teknologi dan Pemantauan Kualiti Air] | SDG 6 |
| ADJ11102 | Environmental Engineering Laboratory [Makmal Kejuruteraan Alam Sekitar] | SDG 6,11,12,15 |
| ADJ11202 | Mechanics Laboratory [Makmal Mekanik] | SDG 9 |
| ADJ11302 | Geotechnical Laboratory [Makmal Geoteknik] | SDG 9,11 |
| ADJ11402 | Materials Laboratory [Makmal Bahan] | SDG 9,11 |

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|-------------|---|--------------------|
| ADJ11502 | Computer Aided Drafting [Lukisan Terbantu Komputer] | SDG 4,9 |
| ADJ20102 | Hydrology [Hidrologi] | SDG 6 |
| ADJ20203 | Management of Solid and Hazardous Waste [Pengurusan Sisa Pepejal dan Sisa Berbahaya] | SDG 11,12 |
| ADJ20303 | Air & Noise Monitoring and Control [Kawalan dan Pemantauan Udara & Bunyi] | SDG 11,13 |
| ADJ20403 | Fluid Mechanics & Hydraulics [Mekanik Bendalir & Hidraulik] | SDG 6, 11 |
| ADJ20503 | Environmental Assessment and Management [Pengurusan dan Penilaian Alam Sekitar] | SDG 12,13,16 |
| ADJ20602 | Highway and Transport Technology [Teknologi Lebuhraya dan Pengangkutan] | SDG 9,11 |
| ADJ20703 | Water Supply Engineering [Kejuruteraan Bekalan Air] | SDG 6,11 |
| ADJ20804 | Final Year Project [Projek Tahun Akhir] | SDG 6,7,9,11,12,13 |
| ADJ20902 | Environmental Engineering Skills [Kemahiran Kejuruteraan Alam Sekitar] | SDG 9,11,13 |
| ADJ21003 | Computer Programming [Pengaturcaraan Komputer] | SDG 4,9 |
| ADJ21102 | Environmental Project Work [Kerja Projek Alam Sekitar] | SDG 6,11,12,13 |
| ADJ30108 | Industrial Training [Latihan Industri] | SDG 4,8,9 |
| ADJ20102 | Hydrology [Hidrologi] | SDG 6 |

ADJ10102 FUNDAMENTALS OF ENGINEERING PRINCIPLES [ASAS PRINSIP KEJURUTERAAN]**No of Credits: 2****Course Synopsis:**

This course introduces fundamental engineering calculations, focusing on units, dimensions, and measurement systems. Students learn key physical quantities including length, time, mass, force, and temperature, along with related parameters. Emphasis is placed on unit conversions, dimensional consistency, and practical problem-solving skills essential for understanding and applying basic engineering principles in real-world contexts.

Course Outcomes:

1. Ability to explain basic engineering calculation principles in solving simple engineering problems.
2. Ability to apply fundamental engineering concepts and physical quantities in engineering applications.

ADJ10203 ENVIRONMENTAL CHEMISTRY [KIMIA PERSEKITARAN]**No of Credits: 3****Course Synopsis:**

Students will apply fundamental chemical principles acquired in this course to environmental processes. They will learn to incorporate these principles into the analysis of natural processes, as well as industrial and other anthropogenic impacts on air, water, and soil. Students will also study how these principles are applied in environmental monitoring, control, and analysis.

Course Outcomes:

1. Ability to apply the fundamental concept of chemistry involving water, soil and atmospheres.
2. Ability to apply environmental chemistry principles to pollution and quality management of water, air, and soil.

ADJ10302 LEGISLATION ON ENVIRONMENTAL, HEALTH AND SAFETY [PERUNDANGAN ALAM SEKITAR, KESIHATAN DAN KESELAMATAN]**No of Credits: 2****Course Synopsis:**

This course focuses on the main Environmental, Health and Safety Legislation in Malaysia. Students will be exposed to the Environmental Law (e.g. Environmental Quality Act 1974, Water Act 1920 (Revised 1989), Solid Waste Management and Public Cleansing Act 2007) as well as OSH Laws (e.g. Occupational Safety and Health

1994, CIDB Act 1994) and other relevant acts. Students will learn to interpret the requirements stipulated under these documents and be able to apply them to the working environment. This course will also provide students the necessary information in identifying hazards, assessing and managing the risks that may be harmful to humans in the workplace, and developing mitigation plan/action to control or prevent the hazards and risks.

Course Outcomes:

1. Ability to analyze relevant Environmental, Health and Safety (EHS) legislation to the engineering practices, considering impacts on safety, health, environment, and legal compliance.
2. Ability to explain the principles and ethical requirements of Environmental, Health and Safety (EHS) legislation.
3. Ability to discuss effectively the Environmental, Health and Safety (EHS) legislative requirements, risk assessment outcomes, and mitigation.

ADJ10402 ENVIRONMENTAL ECOLOGY [EKOLOGI PERSEKITARAN]**No of Credits: 2****Course Synopsis:**

The course introduces the study of basic ecology to understand nature, the environment, and the relationship between organisms and their environment. Students will understand the effects of global environmental changes on the environment and how to preserve it. The syllabus covers ecology, ecosystems, populations, communities, global environmental changes, and environmental microbiology.

Course Outcomes:

1. Ability to describe the theory related to the basic concept of ecology, environment, and the relationship among the organisms/microorganisms in ecosystems.
2. Ability to explain fundamental principles, impacts of human activities, and global environmental changes on ecological systems using basic ecological studies.
3. Ability to demonstrate commitment to professional ethics in applying ecological principles to sustainable environmental engineering practices.

ADJ10503 STRENGTH OF MATERIALS [KEKUATAN BAHAN]**No of Credits: 3****Course Synopsis:**

This course aims to enable students to learn the basics of material engineering. Students will be introduced to material science and engineering and taught about the structure of crystalline solids, the imperfection of solids, and the strength of a material.

Course Outcomes:

1. Ability to apply fundamental knowledge of materials engineering and construction materials based on engineering fundamental and materials characteristic.
2. Ability to analyze mechanical behaviour of structural elements using engineering principles.

ADJ10603 INTRODUCTION TO ENVIRONMENTAL ENGINEERING [PENGENALAN KEPADA KEJURUTERAAN ALAM SEKITAR]**No of Credits: 3****Course Synopsis:**

This course will introduce students to the fundamental concept of environmental engineering. The course will expose students to the main components of environmental engineering, including air, water, noise, solid and hazardous waste. The basic principles, theories and brief legislation that relate to air pollution, water pollution, noise pollution, solid and hazardous waste will be covered in this course.

Course Outcomes:

1. Ability to explain fundamental concepts and the scope of environmental engineering, including air, water, noise, and solid waste management.
2. Ability to discuss major sources and types of environmental pollution, as well as basic control strategies.
3. Ability to demonstrate awareness of environmental legislation, standards, and the role of an engineering technician in addressing environmental issues

ADJ10702 FUNDAMENTAL OF CHEMICAL PROCESSES [ASAS PROSES KIMIA]**No of Credits: 2****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 discuss the basic process calculation and process system variables.
2. Able to analyze material and energy balances on non-reactive processes and reactive multiple unit processes.

ADJ10803 GEOENVIRONMENTAL SOIL MECHANICS [MEKANIK TANAH GEOPERSEKITARAN]**No of Credits: 3****Course Synopsis:**

This course introduces the basic principles of Geoenvironmental Soil Mechanics with emphasis on soil composition, properties, groundwater flow, and soil–water interaction in the environment. Students will learn fundamental concepts of subsurface contamination, pollutant transport, and simple site characterization methods. The course also provides an overview of waste containment systems and liners used in protecting soil and groundwater. Emphasis is given on understanding concepts, identifying environmental issues, and applying basic knowledge to real situations, preparing students with a foundation for further study in environmental and geotechnical engineering.

Course Outcomes:

1. Ability to discuss the fundamental concept consist 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.

ADJ10903 ENGINEERING MECHANICS [KEJURUTERAAN MEKANIK]**No of Credits: 3****Course Synopsis:**

The aim of this course is to enable the students to learn the basic of mechanics engineering. Students will be introduced to fundamentals and principles of static and dynamics mechanics. Resultant and equilibrium of coplanar force system as well as spatial force system will be covered in static portion, while kinematics and kinetics of particle in dynamics portion.

Course Outcomes:

1. Ability to apply the fundamental knowledge of statics and dynamics.
2. Ability to analyze problems related to statics and dynamics.

ADJ11002 WATER QUALITY TECHNOLOGY AND MONITORING [TEKNOLOGI DAN PEMANTAUAN KUALITI AIR]**No of Credits: 2****Course Synopsis:**

The course includes fundamental design and operation of water and wastewater treatment systems. The topics include analysis of water and wastewater characteristics, water quality and system design conforming to regulatory requirements, as well as related physical, chemical, and biological concepts on water and wastewater treatment methods.

Course Outcomes:

1. Ability to analyze water and wastewater characteristics using appropriate physical, chemical, and biological principles to identify treatment requirements in compliance with regulatory standards.
2. Ability to evaluate environmental conditions and system performance through laboratory and field investigations using appropriate sampling, measurement, and data interpretation techniques.

ADJ11102 ENVIRONMENTAL ENGINEERING LABORATORY [MAKMAL KEJURUTERAAN ALAM SEKITAR]**No of Credits: 2****Course Synopsis:**

This course introduces students to key concepts in environmental engineering through hands-on experiments. The course will cover sampling procedures, giving students knowledge of sampling techniques and methods. Students will explore water and wastewater quality testing and analyze air quality using monitoring devices. The course also covers solid and hazardous waste management (e.g. waste segregation, recycling, and proper disposal methods) and study noise pollution by measuring decibel levels in various environments. Students will also be exposed to soil sampling procedures based on depth and soil type. These experiments provide a practical understanding of environmental issues and their regulation.

Course Outcomes:

1. Ability to identify environmental issues and compliance requirements by interpreting environmental quality data using appropriate engineering principles and standards.
2. Ability to carry out environmental laboratory and field activities using appropriate sampling, measurement, and data interpretation techniques.

ADJ11202 MECHANICS LABORATORY [MAKMAL MEKANIK]**No of Credits: 2****Course Synopsis:**

The course introduces the basic concepts of statics and dynamics, focusing on practical applications relevant to environmental engineering. In the statics portion, students will perform experiments related to the resultant and equilibrium of coplanar and spatial force systems. In the dynamics portion, students will explore the kinematics and kinetics of particles through experimental setups.

Course Outcomes:

1. Ability to identify force system behavior and motion characteristics using appropriate engineering principles.
2. Ability to analyze the results by carry out statics and dynamics experiments using appropriate measurement techniques.

ADJ11302 GEOTECHNICAL LABORATORY [MAKMAL GEOTEKNIK]**No of Credits: 2****Course Synopsis:**

This course is 100% coursework. This course contains modules which are architectural and engineering plans, 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 Civil and Environmental Engineering Program.

Course Outcomes:

1. Ability to identify construction, geotechnical, and site-related issues by interpreting practical work data and observations using appropriate engineering principles, standards, and safety requirements.
2. Ability to carry out practical activities and sampling to examine construction practices and site conditions using appropriate tools and techniques.

ADJ11402 MATERIALS LABORATORY [MAKMAL BAHAN]**No of Credits: 2****Course Synopsis:**

This course introduces students to the fundamentals of material engineering with emphasis on practical applications in environmental engineering. The course is divided into two parts: strength of materials and construction materials. In the first part, students will conduct experiments to understand the behaviour of materials under different loading conditions such as tension, compression, bending, shear, and torsion, while also learning about stress, strain, and crystalline structures. In the second part, students will be introduced to common construction materials including cement, metals, polymers, and composites, focusing on their properties, applications, and performance under environmental conditions.

Course Outcomes:

1. Ability to examine the properties and behavior of materials under different loading conditions using appropriate testing methods and equipment.
2. Ability to apply appropriate safety practices and standard procedures during materials testing activities in accordance with established guidelines.

ADJ11502 COMPUTER AIDED DRAFTING [LUKISAN TERBANTU KOMPUTER]**No of Credits: 2**

Course Synopsis:

Student will develop fundamental computer aided drafting (CAD) skills using industry-standard software. Student will construct two-dimensional geometric construction, dimensioning and drawing output.

Course Outcomes:

1. Ability to interpret and construct engineering drawings based on given specifications using appropriate techniques.
2. Ability to use computer-aided drafting (CAD) software to produce two-dimensional drawings with appropriate geometric construction and dimensioning.
3. Ability to apply appropriate standards, conventions, and good practices in preparing engineering drawings.

ADJ20102 HYDROLOGY [HIDROLOGI]**No of Credits: 2****Course Synopsis:**

This course introduces the fundamental concepts of hydrological processes, including the hydrologic cycle, precipitation, evaporation, transpiration, evapotranspiration, and infiltration. Students will apply basic equations and use appropriate instruments to measure key hydrological parameters such as rainfall, evaporation rate, and infiltration rate. The course also covers the analysis of relationships between rainfall, land use, and streamflow. Emphasis is given to flowrate measurement in rivers, development of rating curves, and the application of unit hydrographs for basic hydrological analysis.

Course Outcomes:

1. Ability to explain the scenario of hydrological cycle.
2. Ability to identify the problem related to hydrology.
3. Ability to carry out hydrological measurements and calculations using appropriate techniques and equipment.

ADJ20203 MANAGEMENT OF SOLID AND HAZARDOUS WASTE [PENGURUSAN SISA PEPEJAL DAN SISA BERBAHAYA]**No of Credits: 3****Course Synopsis:**

Students will be taught how solid and hazardous waste is generated, methods of collection, handling, treatment, disposal of waste and related pollution impacts. Concepts of waste minimisation such as recycling, reuse, reduction and waste exchange will be highlighted as effective tools for sustainable waste management. Issues in hazardous waste with emphasis on biomedical waste generation, collection and treatment will be addressed. Local legislation for solid and hazardous waste will be explained in relation to the overall waste management system.

Course Outcomes:

1. Ability to identify solid and hazardous waste management problems.
2. Ability to explain the impacts of solid and hazardous waste management on health, safety, environment, and society in compliance with legal and sustainability requirements.
3. Ability to apply sustainability principles in societal and environmental contexts, including basic entrepreneurial approaches in waste management.

ADJ20303 AIR & NOISE MONITORING AND CONTROL [KAWALAN DAN PEMANTAUAN UDARA & BUNYI]**No of Credits: 3****Course Synopsis:**

This course focuses on controlling noise and air pollution, the essential aspects of environmental management. Students will learn the fundamentals of how noise pollution arises, its health impacts, and the methods for measuring and monitoring noise levels. Preventive and control measures, along with local environmental legislation, will also be covered. Additionally, students will explore air pollution, including its sources, types of pollutants, and their effects on health and the environment. The course will introduce dispersion modeling, indoor air quality audits, sampling techniques, pollutant identification, and relevant control measures, as well as air quality guidelines and legislation.

Course Outcomes:

1. Ability to explain the basic principle and control measures for noise and air pollution.
2. Ability to analyze noise and air quality using appropriate measurement techniques, sampling methods, and data interpretation.
3. Ability to apply appropriate instruments and software tools for noise and air quality monitoring.

ADJ20403 FLUID MECHANICS & HYDRAULICS [MEKANIK BENDALIR & HIDRAULIK]**No of Credits: 3****Course Synopsis:**

This course introduces the fundamental principles of fluid mechanics, focusing on the behavior and movement of fluid particles. Students will learn basic concepts of fluid properties, fluid statics, and fluid dynamics, including hydrostatics and basic hydrodynamics. The course also covers the analysis of fluid flow in pipes and open channels, enabling students to differentiate between these flow systems and understand their practical applications in engineering.

Course Outcomes:

1. Ability to explain the basic knowledge of fluid mechanics and hydraulics.
2. Ability to identify fluid mechanics and hydraulics problems using appropriate engineering concepts and principles.
3. Ability to apply the appropriate methods and techniques to solve basic calculations of fluid mechanics and hydraulics.

ADJ20503 ENVIRONMENTAL ASSESSMENT AND MANAGEMENT [PENGURUSAN DAN PENILAIAN ALAM SEKITAR]**No of Credits: 3****Course Synopsis:**

This course introduces the principles and implementation of Environmental Management Systems (EMS) based on ISO 14001. It covers the key processes involved in EMS, including environmental aspects and impacts, monitoring, auditing, and compliance with regulatory and stakeholder requirements. Students will learn to interpret ISO 14001 requirements and apply appropriate measures to minimize environmental impacts. The course also introduces corporate environmental reporting as a tool to demonstrate organizational commitment to environmental sustainability.

Course Outcomes:

1. Ability to explain the principles and requirements of Environmental Management System (EMS).
2. Ability to identify environmental aspects and impacts of human activities in relation to sustainability, health, safety, and legal requirements.
3. Ability to apply ethical principles and professional responsibilities in environmental decision-making in compliance with relevant regulations.
4. Ability to apply basic environmental management practices, including planning and documentation, in managing environmental-related activities.

ADJ20602 HIGHWAY AND TRANSPORT TECHNOLOGY [TEKNOLOGI LEBUHRAYA DAN PENGANGKUTAN]**No of Credits: 2****Course Synopsis:**

This course introduces basic concepts in highway and transport technology, focusing on road planning, construction materials, drainage, traffic management, and Traffic Impact Assessment (TIA). It emphasizes the relationship between transport infrastructure and the environment. Students will learn simple, practical methods for designing and assessing roads and transportation systems that support sustainable development.

Course Outcomes:

1. Ability to explain the main components of highway and traffic systems
2. Ability to identify pavement design and traffic control problems.
3. Ability to perform basic experiments and assessments related to highway

materials and traffic using appropriate standards and codes.

ADJ20703 WATER SUPPLY ENGINEERING [KEJURUTERAAN BEKALAN AIR]**No of Credits: 3****Course Synopsis:**

This course introduces the principles of water supply engineering, including water sources, water demand estimation, and water quality characteristics in accordance with relevant regulations. It covers conventional and selected advanced water treatment processes, as well as water distribution and reticulation systems. Emphasis is given to the application of standard design guidelines for basic water treatment units and distribution systems, with reference to practices used in Malaysia.

Course Outcomes:

1. Ability to explain water sources, water demand, and water quality characteristics, including appropriate water treatment processes.
2. Ability to apply standard design procedures for basic water treatment units and water distribution systems.
3. Ability to perform basic design and analysis of water supply system using appropriate engineering tools and software.

ADJ20804 FINAL YEAR PROJECT [PROJEK TAHUN AKHIR]**No of Credits: 4****Course Synopsis:**

The Final Year Project (FYP) is an individual capstone project that requires students to identify and analyze a well-defined environmental engineering problem and develop appropriate solutions. Students will carry out investigations through data collection, experimentation, and analysis using suitable methods and tools. The project also emphasizes consideration of environmental, societal, safety, and regulatory aspects, as well as adherence to professional ethics. Students are expected to work independently, manage project tasks effectively, and demonstrate initiative and lifelong learning skills. The course also develops students' ability to communicate technical findings through written reports and oral presentations.

Course Outcomes:

1. Ability to develop appropriate solutions to the identified problem.
2. Ability to perform investigations using appropriate research methods.
3. Ability to explain the impacts of the proposed solution on health, safety, environment, and society.
4. Ability to apply ethical principles and professional responsibilities.
5. Ability to explain the project with efficient communication skills.
6. Ability to apply independent learning skills to acquire and use relevant information for project development.
7. Ability to demonstrate initiative and self-management in planning and completing project activities.

ADJ20902 ENVIRONMENTAL ENGINEERING SKILLS [KEMAHIRAN KEJURUTERAAN ALAM SEKITAR]**No of Credits: 2****Course Synopsis:**

This course introduces fundamental skills in surveying, Geographical Information Systems (GIS), and engineering drawing. Students will perform basic surveying activities such as levelling, tacheometry, and traversing. The course also covers GIS data capture, analysis, and map production using appropriate software. In addition, students will learn basic engineering drawing using AutoCAD, including 2D and introductory 3D drawings. The course emphasizes hands-on laboratory work to develop practical skills in using surveying equipment and computer-aided tools, supported by relevant theoretical knowledge.

Course Outcomes:

1. Ability to apply the basic knowledge of surveying, mapping, and drawing to produce maps and engineering drawings.
2. Ability to select the suitable method and/or technique in solving environmental related problems.
3. Ability to demonstrate the proper use of equipment and/or software in surveying, mapping, and engineering drawing.
4. Ability to explain concepts and practices related to surveying, mapping, and engineering drawing effectively and inclusively.

ADJ21003 COMPUTER PROGRAMMING [PENGATURCARAAN KOMPUTER]**No of Credits: 3****Course Synopsis:**

This course introduces the fundamental concepts of computer programming using a suitable programming language in a current operating system environment. It covers basic problem-solving techniques and essential programming constructs, including variables, operators, control structures, functions, and arrays. Students will develop simple programs and gain experience in coding, compiling, executing, and debugging using appropriate development tools. The course emphasizes logical thinking and the application of programming techniques to solve basic engineering-related problems.

Course Outcomes:

1. Ability to apply computer programming concepts and principles.
2. Ability to follow instructions to use GNU/LINUX compiler for coding, compiling, executing and debugging computer programs.
3. Ability to analyze solution for basic engineering-related problems using computer programming techniques.

ADJ21102 ENVIRONMENTAL PROJECT WORK [KERJA PROJEK ALAM SEKITAR]**No of Credits: 2****Course Synopsis:**

This course provides students with hands-on experience in conducting field-based environmental project work using knowledge gained from previous courses. Students will carry out baseline environmental assessment and site characterization through data collection, measurement, and analysis using appropriate methods and tools. The course also emphasizes teamwork, project planning, and effective communication in reporting findings. Environmental, social, and regulatory considerations are incorporated to support responsible and sustainable engineering practices.

Course Outcomes:

1. Ability to apply appropriate methods to develop basic solutions for environmental assessment.
2. Ability to demonstrate the proper use of appropriate tools and equipment for environmental fieldwork.
3. Ability to explain environmental, social, and regulatory considerations related to site assessment activities.
4. Ability to work effectively as an individual and as a team member in conducting environmental fieldwork.
5. Ability to communicate project findings effectively through written reports and oral presentations.
6. Ability to apply basic project planning and management skills in organizing and completing environmental fieldwork.
7. Ability to apply independent learning skills and use relevant information for environmental fieldwork.

ADJ30108 INDUSTRIAL TRAINING [LATIHAN INDUSTRI]**No of Credits: 8****Course Synopsis:**

The course will expose students to technical and application aspect as well as other aspect such as company's operation, work culture, safety procedure, project management, communication, technical skills and presentation. The students are required to submit their logbook and final report at the end of the industrial training. Overall, the course is practical based.

Course Outcomes:

1. Ability to demonstrate the proper use of appropriate tools and equipment to perform assigned tasks in an industrial environment.
2. Ability to adapt to health, safety, legal, environmental, and organizational practices.
3. Ability to work effectively as an individual, and as a member in diverse technical teams to complete the given task by the host company.
4. Ability to communicate effectively and able to comprehend the works of others, writing report and present own work.
5. Ability to apply basic project management practices in planning, organizing, and completing assigned tasks.
6. Ability to apply theoretical knowledge and practical skills to application in the industry.

Course Synopsis:

FACULTY OF INTELLIGENT COMPUTING (FIC)

Programmes Offered:

- Bachelor of Computer Engineering with Honours
- Bachelor in Data Science (Artificial Intelligence) with Honours
- Diploma in Computer Engineering

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UR4523002 Diploma in Computer Engineering

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Graduates who have demonstrated career advancement in the field of Computer 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

PEO 4

Graduates who have contributed through innovation and entrepreneurship activity.

PROGRAMME OUTCOMES (PO)

P01

Knowledge: Apply knowledge of applied mathematics, applied science, computing and engineering fundamentals and an engineering specialisation to wide practical procedures and practices

P02

Problem Analysis: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity.

P03

Design/Development of Solutions: Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, as well as cultural, societal, and environmental considerations as required

P04

Investigation: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements.

P05

Tool Usage: Apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations.

P06

The Engineering Technician and the World: Consider sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well-defined engineering problems.

P07

Ethics: Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

P08

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

P09

Communications: Communicate effectively and inclusively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.

P010

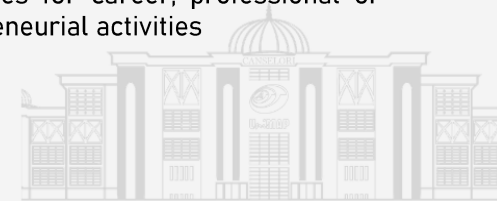
Project Management and Finance: Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments.

P011

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 specialised technical knowledge.

P012

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 | | | | | | |
|--|---|---|---|---|---|--|
| UR4523002 DIPLOMA IN COMPUTER ENGINEERING INTAKE 2026/2027 | | | | | | |
| YEAR | FIRST | | SECOND | | THIRD | |
| SEMESTER | 1 | 2 | 3 | 4 | 5 | 6 |
| DISCIPLINE CORE COURSES (73 CREDITS) | IDJ10102 Fizik Kejuruteraan <i>[Engineering Physics]</i> | IDJ10503 Peranti Elektronik <i>[Electronic Devices]</i> | IDJ20203 Litar Elektronik <i>[Electronic Circuits]</i> | IDJ20903 Sistem Komputer <i>[Computer System]</i> | IDJ30304 Projek Tahun Akhir <i>[Final Year Project]</i> | IDJ30508 Latihan Industri <i>[Industrial Training]</i> |
| | IDJ10203 Litar Elektrik <i>[Electrical Circuits]</i> | IDJ10603 Teknologi Elektrik <i>[Electrical Technology]</i> | IDJ20803 Sistem Pangkalan Data <i>[Database System]</i> | IDJ20703 Sistem Pengoperasian <i>[Operating System]</i> | IDJ30003 Instrumentasi Elektronik <i>[Electronic Instrumentation]</i> | |
| | IDJ10003 Kemahiran Kejuruteraan Elektronik <i>[Electronic Engineering Skill]</i> | IDJ10703 Pengaturcaraan Berasaskan Objek <i>[Object-Oriented Programming]</i> | IDJ20403 Sistem Mikropengawal <i>[Microcontroller System]</i> | IDJ21003 Perhubungan Data dan Rangkaian <i>[Data Communication and Network]</i> | IDJ30403 Kejuruteraan Perisian <i>[Software Engineering]</i> | |
| | IDJ10403 Pengaturcaraan Komputer <i>[Computer Programming]</i> | IDJ10803 Sistem Digit 2 <i>[Digital System 2]</i> | IDJ20002 Keselamatan Industri, Pengurusan Kualiti dan Etika <i>[Industrial Safety, Quality Management and Ethics]</i> | IDJ21103 Prinsip Isyarat dan Sistem <i>[Principles of Signals and Systems]</i> | IDJ30103 Sistem Kawalan <i>[Control System]</i> | |
| | IDJ10303 Sistem Digit 1 <i>[Digital System 1]</i> | | | | IDJ30203 Kejuruteraan Perhubungan <i>[Communication Engineering]</i> | |
| COMMON CORE COURSES (9 CREDITS) | | IDQ10103 Matematik 1 <i>[Mathematics 1]</i> | IDQ20203 Matematik 2 <i>[Mathematics 2]</i> | IDQ20303 Matematik 3 <i>[Mathematics 3]</i> | | |
| UNIVERSITY REQUIREMENT COURSES (12 CREDITS) | SDZ1XXXX Kokurikulum 1 <i>[Co-Curriculum 1]</i> | SDZ1XXXX Kokurikulum 2 <i>[Co-Curriculum 2]</i> | SDB11302 B. Inggeris Komunikasi 3 <i>[Communicative English 3]</i> | SDU22502 Asas Keusahawanan <i>[Basics of Entrepreneurship]</i> | SDU13002 Perlembagaan dan Masyarakat Berintegriti <i>[The Constitution and Integrity Society]</i> | |
| | | SDB11202 B. Inggeris Komunikasi 2 <i>[Communicative English 2]</i> | SDU33602 Pengenalan Kepada Kecerdasan Buatan dalam Masyarakat <i>[Introduction to Artificial Intelligence in Society]</i> | | | |
| TOTAL CREDITS (94 CREDITS) | 15 | 18 | 18 | 17 | 18 | 8 |
| AUDIT COURSES | IDQ10002 ^[1] Matematik Awalan <i>[Preliminary Mathematics]</i> | | | SDB31002 ^[3] Bahasa Melayu <i>[Malay Language]</i> | | |
| | SDB11102 ^[2] B. Inggeris Komunikasi 1 <i>[Communicative English 1]</i> | | | | | |

[1] Compulsory for students with grade D and without Additional Mathematics (Matematik Tambahan) in SPM. QDQ10002 - Preliminary Mathematics is an Audit course.

[2] Compulsory for students with grades B+ and below in Malay Language (Bahasa Melayu) SPM. SDB31002 - Malay Language is an Audit course.

[3] Compulsory for students with grades B+ and below in English Language (Bahasa Inggeris) SPM. SDB11102 - Communicative English 1 is an Audit course.

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|---|--------------|
| IDJ10003 | Kemahiran Kejuruteraan Elektronik [Electronic Engineering Skills] | Tiada |
| IDJ10102 | Fizik Kejuruteraan [Engineering Physics] | Tiada |
| IDJ10203 | Litar Elektrik [Electrical Circuits] | Tiada |
| IDJ10303 | Sistem Digit 1 [Digital System 1] | Tiada |
| IDJ10403 | Pengaturcaraan Komputer [Computer Programming] | Tiada |
| IDJ10503 | Peranti Elektronik [Electronic Devices] | Tiada |
| IDJ10603 | Teknologi Elektrik [Electrical Technology] | Tiada |
| IDJ10703 | Pengaturcaraan Berasaskan Objek [Object Oriented Programming] | Tiada |
| IDJ10803 | Sistem Digit 2 [Digital System 2] | Tiada |
| IDJ20002 | Keselamatan Industri, Pengurusan Kualiti Dan Etika [Industrial Safety, Quality Management and Ethics] | SDG 3, 9, 11 |
| IDJ20203 | Litar Elektronik [Electronic Circuits] | Tiada |
| IDJ20403 | Sistem Mikropengawal [Microcontroller System] | Tiada |
| IDJ20803 | Sistem Pangkalan Data [Database System] | Tiada |
| IDJ20703 | Sistem Pengoperasian [Operating System] | Tiada |

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|---|-------------|
| IDJ21003 | Perhubungan Data dan Rangkaian [Data Communication and Network] | Tiada |
| IDJ211103 | Prinsip Isyarat dan Sistem [Principles of Signal and System] | Tiada |
| IDJ30003 | Instrumentasi Elektronik [Electronic Instrumentation] | Tiada |
| IDJ30103 | Sistem Kawalan [Control System] | Tiada |
| IDJ30203 | Kejuruteraan Perhubungan [Communication Engineering] | Tiada |
| IDJ30403 | Kejuruteraan Perisian [Software Engineering] | Tiada |
| IDJ30304 | Projek Tahun Akhir [Final Year Project] | SDG 4, 7, 9 |
| IDJ30508 | Latihan Industri [Industrial Training] | SDG 4, 8, 9 |

IDJ10003 KEMAHIRAN KEJURUTERAAN ELEKTRONIK [ELECTRONIC ENGINEERING SKILL]**No of Credits: 3****Course Synopsis:**

This subject is fully practical coursework and 3 credit hours. This course is designed to expose students to the basics of electronic skills. It consists of 4 modules which are basic knowledge of computers, electronic circuits, PCB layout design and technical drawing. This course also helps students apply their knowledge to other subjects.

Course Outcomes:

1. Ability to assemble basic computer system components and follow their configurations.
2. Ability to reproduce electronic schematic diagrams and PCB layouts using KICAD software.
3. Ability to follow instructions to create technical drawings according to engineering standards.
4. Ability to follow CAD software techniques in solving engineering drawing problems.

IDJ10102 FIZIK KEJURUTERAAN [ENGINEERING PHYSICS]**No of Credits: 2****Course Synopsis:**

This course provides students with a basic understanding of fundamental physics concepts used in engineering. Students will learn about measurement systems, forces, and momentum, wave, electrostatics and magnetism. Overall, this course develops essential problem-solving skills and prepares students for practical applications in engineering and further technical studies.

Course Outcomes:

1. Ability to explain physics principles and their relevance to engineering applications.
2. Ability to apply fundamental physics knowledge to solve basic engineering related problems.
3. Ability to analyse key concepts used in engineering contexts.

IDJ10203 LITAR ELEKTRIK [ELECTRICAL CIRCUITS]**No of Credits: 3****Course Synopsis:**

This course covers an introduction to the basics of electrical measurements, Ohm's Law, Series and Parallel Circuits, Circuits Theorems and Conversions and RLC Circuits. This course will expose the students to electrical circuit theory elements and principles appropriate to any RLC circuit application and demonstrate knowledge in the laboratory.

Course Outcomes:

1. Ability to apply fundamental electrical circuit concepts.
2. Ability to analyse problems related to electrical circuits.
3. Ability to construct the fundamental of electrical circuits in practical laboratory.

IDJ10303 SISTEM DIGIT 2 [DIGITAL SYSTEM 2]**No of Credits: 3****Course Synopsis:**

This course provides students an exposure to combinational logic functions and expected to demonstrate the fundamentals of digital electronic circuits through exposure of basic logic IC's and simulation software. The course develops students to understand and analyse its applications such as decoder, encoder, multiplexer, demultiplexer, adders, comparators and parity circuits.

Course Outcomes:

1. Ability to apply fundamental digital logic design concepts.
2. Ability to analyze well defined combinational logic functions.
3. Ability to construct practical circuit designs for well-defined combinational logic functions.

IDJ10403 PENGATURCARAAN KOMPUTER [COMPUTER PROGRAMMING]**No of Credits: 3****Course Synopsis:**

It delivers the competency to students in applying the fundamental programming concepts and able to analyze problems and produce the solution using algorithm development tools. The course will be delivered using the basic programming language that is trending at the current market and it gives full control over the underlying hardware.

Course Outcomes:

1. Ability to explain the concepts of programming and its principles.
2. Ability to implement appropriate tools for coding, compiling, executing, and debugging computer program.
3. Ability to perform programming techniques with precision to develop, test, and debug functional software solutions and prototypes that address defined engineering problems.

IDJ10503 PERANTI ELEKTRONIK [ELECTRONIC DEVICES]**No of Credits: 3****Course Synopsis:**

This course is designed to provide and expose students with fundamentals and applications of basic semiconductor devices such as Diode, Bipolar Junction Transistor (BJT) and Field-Effect Transistor (FET). The syllabus consists of understanding the principles and operation of semiconductor devices, investigates the applications of these devices and solving BJT and FET parameters using various types of biasing. Knowledge on theory acquired in lecture is also enhanced with practical works conducted in the laboratory.

Course Outcomes:

1. Ability to apply the basic theories and operations of semiconductor materials and devices.
2. Ability to analyse the circuits and problems related to semiconductor devices.
3. Ability to construct the semiconductor devices circuits in practical laboratory.

IDJ10603 TEKNOLOGI ELEKTRIK [ELECTRICAL TECHNOLOGY]**No of Credits: 3****Course Synopsis:**

This course introduces the fundamentals of electrical technology, focusing on the principles of electrical power generation, transmission, and distribution, along with their applications in domestic, commercial, and industrial systems. Students will be exposed to various methods of electrical power generation, hydroelectric power, and renewable energy sources such as solar and wind. Through a combination of theoretical and practical learning, students will acquire fundamental skills in understanding the operation of electrical power systems, using testing instruments, and troubleshooting electrical-related problems.

Course Outcomes:

1. Ability to apply the principles of electrical energization and the behavior of resistance, capacitance, and inductance, individually or in combination, within AC/DC circuits and balanced three-phase systems, based on fundamental electrical laws.
2. Ability to analyze the principles and operational characteristics of transformers, AC motors, DC motors, and generators, using standard engineering concepts.
3. Ability to operate basic electrical tasks under supervision using appropriate engineering tools, instruments, and software under guided conditions, with awareness of tool functions, limitations, and safety procedures.

IDJ10703 PENGATURCARAAN BERASASKAN OBJEK [OBJECT-ORIENTED PROGRAMMING]**No of Credits: 3****Course Synopsis:**

This course offers an in-depth introduction to the fundamental principles of Object-Oriented Programming (OOP) including classes, objects, inheritance, polymorphism, encapsulation and abstraction. Students will gain practical experience in applying these concepts to design, develop and maintain efficient, modular and scalable software systems. A strong emphasis is placed on using the C++ programming language to implement OOP techniques in solving real-world problems. Through hands-on programming assignments and projects, students will build and analyze applications that demonstrate a solid understanding of object-oriented design principles, improving their ability to write structures, reusable and maintainable code in C++ environments.

Course Outcomes:

1. Ability to apply the concepts of Object Oriented Programming
2. Ability to analyse Object Oriented Programming design concept for any computational problem descriptions
3. Ability to construct Object Oriented Programming concept in laboratory using simulation tools.

IDJ10803 SISTEM DIGIT 2 [DIGITAL SYSTEM 2]**No of Credits: 3****Course Synopsis:**

This course introduced students to the applications of Combinational and Sequential Logic Systems, focusing on shift registers and counter design. It also includes an introduction to Sequencing and Control, providing foundational knowledge essential for understanding more advanced topics in future semesters. The course builds essential skills for continued study in digital systems.

Course Outcomes:

1. Ability to analyze the basic storage devices and fundamental operations of sequential circuit application.
2. Ability to design counters using transition tables and counter application using finite state machine.
3. Ability to construct sequential circuit using CAD tools and program onto hardware.
4. Ability to complete a digital system application project within a team-based environment.

**IDJ20002 KESELAMATAN INDUSTRI, PENGURUSAN KUALITI DAN ETIKA
[INDUSTRIAL SAFETY, QUALITY MANAGEMENT AND ETHICS]****No of Credits: 2****Course Synopsis:**

This course introduces industrial safety standards, quality management concepts, and ethics. Students will gain a comprehensive understanding of industry practices, learning to identify effective quality tools for production management. By the end, they will be equipped to apply safety guidelines and professional ethics within real-world industrial environments.

Course Outcomes:

1. Ability to analyze the impact of industrial safety and quality management systems (QMS) on health, safety and sustainability using relevant laws and standards.
2. Ability to analyze ethical principles and issues related to engineering ethics and the Code of Ethics.
3. Ability to communicate effectively by structuring presentations on engineering activities, with a focus on Industrial Safety, Quality Management Systems, or Ethical Issues.
4. Ability to evaluate for life-long learning on the case studies in the context of Industrial Safety, QMS or Ethical issues.

IDJ20203 LITAR ELEKTRONIK [ELECTRONIC CIRCUITS]**No of Credits: 3****Course Synopsis:**

This course covers the introduction to operational amplifier, common op-amp circuitry, active filtering, voltage regulating and voltage oscillating circuits using op-amp. This course will expose the students to the elements and principles of electronic circuitry, advantages and analysis of op-amp circuitry to determine responses for practical applications.

Course Outcomes:

1. Ability to apply the concept of op-amp characteristics, parameters, and circuit operations.
2. Ability to justify the op-amp configurations, op-amp circuits and other related op-amp applications.
3. Ability to construct the practical op-amp circuits and perform troubleshooting.

IDJ20403 SISTEM MIKROPENGAWAL [MICROCONTROLLER SYSTEM]**No of Credits: 3****Course Synopsis:**

This course introduces fundamental microcontroller concepts focusing on the Intel 8051 architecture. Students study system components, memory organization, I/O interfacing, special functions, and assembly programming. Emphasis is placed on practical applications, development tools, project design, testing, and basic embedded system implementation using appropriate hardware and software tools.

Course Outcomes:

1. Ability to analyse the concept of microcontroller system.
2. Ability to construct a simple microcontroller system application.
3. Ability to design a simple microcontroller system project.
4. Ability to demonstrate awareness of entrepreneurship in completing engineering project.

IDJ20803 SISTEM PANGKALAN DATA [DATABASE SYSTEM]**No of Credits: 3****Course Synopsis:**

This course prioritizes practical mastery, dedicating 60% of the curriculum to hands-on database development and implementation. Students transition from theoretical modeling to high-impact application, mastering industry-standard tools and accreditation-ready workflows. By balancing core design principles with intensive technical practice, the program ensures graduates are fully equipped to build, manage, and optimize the data architectures powering modern applications.

Course Outcomes:

1. Ability to apply fundamental concept of database system.
2. Ability to create SQL program, recognize types of SQL statement by using software tool and demonstrate the workability of the programs
3. Ability to design conceptual models of an application domain for database applications
4. Ability to complete task among team members and group project

IDJ20703 SISTEM PENGOPERASIAN [OPERATING SYSTEM]**No of Credits: 3****Course Synopsis:**

This course introduces the fundamentals of operating systems and its usage in computer system. Topics include inter-process communication, process scheduling, threading, concurrency principle, memory management, virtual memory, input/output management and file system. Format principles are illustrated with examples and case studies of one or more contemporary operating systems. Laboratory sessions include exploration using command line to observe system calls and threads management, concurrency principle and memory management.

Course Outcomes:

1. Ability to relate the major concepts which builds up an operating system.
2. Ability to analyze the processes, file management, processor scheduler and memory management.
3. Ability to implement C programs in a GNU/Linux environment to simulate operating system issues.

IDJ20903 SISTEM KOMPUTER [COMPUTER SYSTEM]**No of Credits: 3****Course Synopsis:**

This course will cover the topics of computer performance, the principles of architecture and organization, the data path and control unit, fetch and execute cycle, instruction sets, memory organization and input-output organization. A design methodology using industry standard computer aided design tool will introduce students the design technique to design and analyze basic computer systems.

Course Outcomes:

1. Ability to differentiate the basics of computer system architecture and organization operations.
2. Ability to evaluate the structural and functional components of the central processing unit.
3. Ability to implement basic central processing unit (CPU) components within relevant computer system operations.

IDJ21003 PERHUBUNGAN DATA DAN RANGKAIAN [DATA COMMUNICATION AND NETWORK]**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 analyse network connection concepts, communication protocols, and the functionality of network equipment and instrumentation.
2. Ability to conduct investigation of the network architectures, protocols, and device configuration by using appropriate networking tools.

3. Ability to implement a network setup and troubleshoot issues independently

IDJ21103 PRINSIP ISYARAT DAN SISTEM [PRINCIPLES OF SIGNALS AND SYSTEMS]**No of Credits: 3****Course Synopsis:**

This course is designed to expose students to types of signals, operations of signals and systems. Specifically, this subject covers analysis of signals in time domain and frequency domain representation, operation of signals and transformations of signals in s-domain and also the properties of a Linear Time Invariant system.

Course Outcomes:

1. Ability to interpret types, characteristics and operations of the signal and system.
2. Ability to analyze the LTI system, involving time-domain signals and other related transforms
3. Ability to implement signal transformations and system transfer functions analysis using related software independently.

IDJ30003 INSTRUMENTASI ELEKTRONIK [ELECTRONIC INSTRUMENTATION]**No of Credits: 3****Course Synopsis:**

This course covers modern electronic instrumentation, focusing on transducers, DAQ systems, and IoT platforms. Students explore sensor interfacing and signal conditioning essential for embedded design. Through hands-on labs, students bridge physical phenomena and digital intelligence by developing circuits that transmit real-world data to the IoT networks for various practical applications.

Course Outcomes:

1. Ability to analyze problems related to electronic instrumentation, multiple type of sensors and Internet of Things (IoT)
2. Ability to build model-based problems related to instrumentation and Internet of Things (IoT)
3. Ability to demonstrate awareness of managing engineering project in electronic instrumentation
4. Ability to demonstrate awareness of entrepreneurship in completing engineering project

IDJ30103 SISTEM KAWALAN [CONTROL SYSTEM]**No of Credits: 3****Course Synopsis:**

Students will learn the mathematical modelling of electrical systems using Laplace Transforms, control system block Transfer Functions, Signal-Flow Graphs and Time Response Analysis. Afterwards students will learn some stability techniques using Root Locus and Bode Plot. Laboratory experiments using computer-aided design tools help understand further.

Course Outcomes:

1. Ability to analyze the mathematical model of electrical circuit networks using Laplace transform and the characteristics of feedback control system.
2. Ability to evaluate the control system's response and stability in time and frequency domain.
3. Ability to reproduce open and close loop feedback stability conditions of a system using computer aided software tools.

IDJ30203 KEJURUTERAAN PERHUBUNGAN [COMMUNICATION ENGINEERING]**No of Credits: 3****Course Synopsis:**

This course introduces fundamental principles of communication engineering, including basic communication systems, signal characteristics, noise effects, and transmission media. Students will learn analog modulation techniques such as Amplitude Modulation (AM) and Frequency Modulation (FM), as well as basic digital communication and multiplexing. Practical work helps students to understand communication applications in wireless systems and computer networking.

Course Outcomes:

1. Ability to explain the fundamental principles and components of basic communication systems, signals, and transmission media.
2. Ability to evaluate communication systems by explaining theoretical concepts and performing basic calculations related to analog modulation, digital communication, and multiplexing techniques.
3. Ability to construct communication system experiments using simulation tools and basic electronic components

IDJ30403 KEJURUTERAAN PERISIAN [SOFTWARE ENGINEERING]**No of Credits: 3****Course Synopsis:**

The subject focuses on the concepts and principles of software engineering. It introduces essential aspects of software development activities, including theories, techniques,

processes, and tools for professional practice. The course also emphasizes understanding system requirements, identifying appropriate engineering compromises, and applying effective methods of design and software development.

Course Outcomes:

1. Ability to apply the software engineering techniques for engineering problems
2. Ability to build design models based on software engineering problems by using software tools.
3. Ability to evaluate suitable software engineering techniques to solve engineering problems
4. Ability to demonstrate awareness of managing engineering project in software engineering

IDJ30304 PROJEK TAHUN AKHIR [FINAL YEAR PROJECT]**No of Credits: 4****Course Synopsis:**

This course involves solving practical engineering technology problems under the supervision of a faculty member. The project undertaken may fall under one of the following areas: hardware and/or software development. Each student prepares comprehensive engineering reports. Presents and demonstrates findings and results or project work.

Course Outcomes:

1. Ability to evaluate engineering problems on the proposed project.
2. Ability to develop data interpretation and analysis approaches to solve engineering problems.
3. Ability to discuss research and investigations systematically by planning and executing in a timely manner.
4. Ability to perform appropriate techniques, modern engineering and IT tools to well-defined engineering problems.
5. Ability to demonstrate the element of environment and sustainability in project implementation.
6. Ability to demonstrate the commitment of professional ethics and responsibilities in completing the project.
7. Ability to explain the project with efficient communication skills
8. Ability to propose the project management and finance according to Gantt Chart (Milestone) and effective costing.
9. Ability to develop continuous learning of new knowledge and skill to support the development of the project.
10. Ability to demonstrate personal and entrepreneurial skills in a project presentation by clearly explaining market potential and commercialization strategy.

IDJ30508 LATIHAN INDUSTRI [INDUSTRIAL TRAINING]**No of Credits: 8****Course Synopsis:**

The course will expose students to aspects such as technical, application, company organization structure, company operation, department function, work procedure, safety procedure, management, communication skills, project management and presentation. The students are also required to submit their logbook and final report at the end of the industrial training. Overall, the course is practical-based.

Course Outcomes:

1. Ability to implement technical knowledge and practical skills for application in the industry.
2. Ability to practice safety, health, legal and cultural issues in working environment.
3. Ability to commit to professional ethics of technician practices.
4. Ability to work effectively as an individual, and as a member in diverse technical teams to complete the given task by the host company.
5. Ability to communicate effectively and comprehend the work of others to complete the given task.
6. Ability to apply independent learning skills by identifying and documenting new knowledge and skills gained during industrial training.

FACULTY OF BUSINESS & COMMUNICATION

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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LIST OF GENERAL STUDIES & LANGUAGE COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|---|------------|
| SDU13002 | Perlembagaan dan Masyarakat Berintegriti (The Constitution and Integrity Society) | SDG 16 |
| SDU33602 | Pengenalan kepada Kecerdasan Buatan dalam Masyarakat (Introduction to Artificial intelligence in Society) | SDG 9 |
| SDU22502 | Basics Entrepreneurship (Asas Keusahawanan) | SDG 8 |
| SDB31002 | Bahasa Melayu [Malay Language] | SDG 4 |
| SDB11102 | Bahasa Inggeris Komunikasi 1 [Communicative English 1] | SDG 4 |
| SDB11202 | Bahasa Inggeris Komunikasi 2 [Communicative English 2] | SDG 4 |
| SDB30102 | Bahasa Inggeris Komunikasi 3 [Communicative English 3] | SDG 4 |

SDU13002 PERLEMBAGAAN DAN MASYARAKAT BERINTEGRITI (THE CONSTITUTION AND INTEGRITY SOCIETY)**No of Credits: 2****Course Synopsis:**

Kursus ini memberi pendedahan kepada pelajar tentang prinsip asas Perlembagaan Persekutuan Malaysia sebagai asas pembinaan masyarakat berintegriti. Perbincangan merangkumi sejarah dan konsep Perlembagaan, hak serta tanggungjawab warganegara, serta peranan institusi negara dalam mengekalkan kestabilan dan keharmonian. Kursus ini turut menekankan nilai integriti, etika dan tadbir urus yang baik, termasuk isu rasuah, faktor penyumbang serta langkah pencegahan dalam konteks masyarakat Malaysia. Pelajar digalakkan menganalisis isu semasa dari perspektif undang-undang, sosial dan hubungan etnik. Pengajaran dan pembelajaran dilaksanakan melalui pengalaman pembelajaran aktif, pembelajaran berasaskan masalah dan pembelajaran berasaskan perkhidmatan bagi membentuk pelajar yang berpengetahuan, beretika dan bertanggungjawab.

Course Outcomes:

1. Berkebolehan menerangkan konsep, sejarah dan isu-isu perlembagaan, integriti dan anti rasuah.
2. Berkebolehan mengaitkan konsep perlembagaan, integriti dan antirasuah dengan isu-isu semasa.
3. Berkebolehan memberi respons terhadap isu-isu perlembagaan, integriti dan antirasuah ke arah memantapkan nilai kewarganegaraan dan jati diri kebangsaan

SDU33602 PENGENALAN KEPADA KECERDASAN BUATAN DALAM MASYARAKAT (INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN SOCIETY)**No of Credits: 2****Course Synopsis:**

Kursus ini memperkenalkan pelajar kepada kemahiran asas dalam penggunaan kecerdasan buatan (AI) dalam kehidupan harian sebagai pelajar, pengguna digital dan bakal pekerja. Tumpuan utama diberikan kepada aplikasi praktikal (*hands-on*) menggunakan alat AI generatif, termasuk penguasaan teknik prompting yang berkesan serta peningkatan kesedaran terhadap risiko digital semasa seperti penipuan (*scam*) dan teknologi *deepfake*. Pelajar akan mempelajari cara menggunakan AI bagi menyokong pembelajaran, komunikasi, kreativiti dan produktiviti peribadi. Kandungan kursus disampaikan dengan mengambil kira contoh

dan konteks tempatan di Malaysia bagi memastikan kefahaman yang lebih relevan.

Course Outcomes:

1. Menjelaskan konsep asas AI termasuk cara AI berfungsi secara konseptual, dan penggunaannya dalam kehidupan, pembelajaran, dan masyarakat.
2. Menggunakan serta menilai alat AI secara bertanggungjawab, beretika, dan kritikal.
3. Mengaplikasikan AI bagi menyokong tugas harian, pembelajaran, atau penyelesaian masalah mudah.

SDU22502 BASICS OF ENTREPRENEURSHIP (ASAS KEUSAHAWANAN)**No of Credits: 2****Course Synopsis:**

kursus ini bertujuan melengkapkan pelajar dengan asas yang kukuh dalam keusahawanan. Melalui pembelajaran yang menarik dan latihan praktikal, pelajar bukan sahaja akan memperoleh pemahaman yang kukuh tentang prinsip teras tetapi juga meningkatkan kecekapan dalam menggunakan alatan perniagaan penting seperti *Business Model Canvas*, *Value Proposition Canvas*, dan *Ansoff Matrix*. Objektif utama kursus ini adalah untuk memperkasakan pelajar dengan pengetahuan dan kemahiran yang diperlukan untuk memulakan perniagaan sekiranya mereka memilih untuk meneruskan laluan sebagai usahawan.

Course Outcomes:

1. Keupayaan untuk mendefinisikan dengan jelas konsep dan ilmu asas dalam keusahawanan.
2. Keupayaan untuk menghuraikan elemen utama berkaitan kreativiti, inovasi, rancangan perniagaan dan alat asas dalam perniagaan seperti BMC, VPC dan Matrik Ansoff.
3. Keupayaan untuk menggunakan pengetahuan dalam keusahawanan untuk menangani isu-isu semasa dalam konteks global.

SDB31002 BAHASA MELAYU [MALAY LANGUAGE]**No of Credits: 2****Course Synopsis:**

Kursus ini memberi pengetahuan kepada para pelajar tentang sejarah perkembangan bahasa Melayu dan memberi pendedahan kepada keempat-empat kemahiran berbahasa (mendengar, membaca, menulis dan bertutur) dengan memberi tumpuan kepada kemahiran bertutur dan menulis. Komponen menulis difokuskan kepada ketepatan penggunaan aspek tatabahasa, struktur dan semantik (makna) yang akan memberi peluang kepada pelajar untuk mempelajari proses-proses tatabahasa seperti penggunaan kata, aplikasi aspek kesalahan bahasa yang dikukuhkan dalam pelbagai konteks penulisan dan sintaksis. Aspek kemahiran bertutur akan membantu pelajar untuk berkomunikasi dengan menggunakan sistem bahasa yang berkesan seperti dalam aspek sebutan dan juga pembinaan ayat dalam bahasa Melayu.

Course Outcomes:

1. Kebolehan memahami sejarah dan perkembangan bahasa Melayu.
2. Kebolehan mengaplikasi aspek tatabahasa dan binaan ayat yang betul dan berkesan dalam pelbagai jenis laras penulisan dan lisan.

SDB11102 BAHASA INGGERIS KOMUNIKASI 1 [COMMUNICATIVE ENGLISH 1]**No of Credits: 2****Course Synopsis:**

The course uses communicative-based approach to improve the students proficiency level. The course aligns with the Common European Framework of Reference for Languages (CEFR) in exposing the students to a variety of authentic materials. The course engages with receptive and productive skills commonly encountered by students in day-to-day situations, with more emphasis particularly on receptive skills (reading and listening).

Course Outcomes:

1. Ability to demonstrate comprehension of simple informational materials and short simple descriptions from everyday materials.
2. Ability to demonstrate comprehension of simple day-to-day informational audio and speech.
3. Ability to write simple connected texts on familiar topics covering formal and less formal issues.

SDB11202 BAHASA INGGERIS KOMUNIKASI 2 [COMMUNICATIVE ENGLISH 2]**No of Credits: 2****Course Synopsis:**

The course aligns with the Common European Framework of Reference for Languages (CEFR) in exposing the students to a variety of authentic materials. It adopts a communicative-based approach to improve the students' proficiency levels. The course engages with receptive and productive skills commonly encountered by students in day-to-day situations and in academic context. Emphasis is given more to productive skills particularly speaking and writing.

Course Outcomes:

1. Ability to write short, detailed descriptions on familiar topics covering formal and less formal issues.
2. Ability to explain and argue on topics covering formal and less formal issues.
3. Ability to demonstrate analytical comprehension skills on information covering familiar topics.

SDB11302 BAHASA INGGERIS KOMUNIKASI 3 [COMMUNICATIVE ENGLISH 3]**No of Credits: 2****Course Synopsis:**

This course is aligned with the Common European Framework of Reference for Languages (CEFR) in exposing the students to a variety of authentic materials. It adopts the communicative-based approach to improve students' proficiency level. The course engages with receptive and productive skills commonly encountered by students in day-to-day situations, academic and professional context. Emphasis is given more on productive skills particularly speaking and writing.

Course Outcomes:

1. Ability to analyse straightforward texts covering formal and less formal issues.
2. Ability to argue in a discussion covering formal and less formal issues.
3. Ability to write clear coherent writing on topics covering formal and less formal issues

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LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|---|------------|
| ZDZ11101 | Kumpulan Latihan Kelanasiswa Malaysia 1 [Malaysian Universiti Rover Training Group 1] | SDG 16 |
| ZDZ11201 | Kumpulan Latihan Kelanasiswa Malaysia 2 Malaysian Universiti Rover Training Group 2] | SDG 16 |
| ZDZ11301 | Briged Bomba Dan Penyelamat 1 [Fire And Rescue Bridged 1] | SDG 16 |
| ZDZ11401 | Briged Bomba Dan Penyelamat 2 [Fire And Rescue Bridged 2] | SDG 16 |
| ZDZ11501 | Bulan Sabit Merah Malaysia 1 [Malaysian Red Crescent 1] | SDG 16 |
| ZDZ11601 | Bulan Sabit Merah Malaysia 2 [Malaysian Red Crescent 2] | SDG 16 |
| ZDZ11701 | Pertahanan Awam 1 [Civil Defense 1] | SDG 16 |
| ZDZ11801 | Pertahanan Awam 2 [Civil Defense 2] | SDG 16 |
| ZDZ11901 | Pandu Puteri Klover 1 [Clover 1] | SDG 16 |
| ZDZ12001 | Pandu Puteri Klover 2 [Clover 2] | SDG 16 |
| ZDZ12101 | St. John Ambulans Malaysia 1 [Malaysian St. John Ambulance 1] | SDG 16 |
| ZDZ12201 | St. John Ambulans Malaysia 2 [Malaysian St. John Ambulance 2] | SDG 16 |
| ZDZ12301 | Pancaragam 1 [Brass Band 1] | SDG 04 |

LIST OF COURSES

| COURSE CODE | COURSE NAME | SDG |
|--------------------|---|------------|
| ZDZ12401 | Pancaragam 2 [Brass Band 2] | SDG 04 |
| ZDZ12501 | Pasukan Askar Wataniah 1 [Territorial Army 1] | SDG 16 |
| ZDZ12601 | Pasukan Askar Wataniah 2 [Territorial Army 2] | SDG 16 |
| ZDZ22501 | Pasukan Askar Wataniah 3 [Territorial Army 3] | SDG 16 |
| ZDZ22601 | Pasukan Askar Wataniah 4 [Territorial Army 4] | SDG 16 |
| ZDZ14001 | Tahfiz 1 [Tahfiz 1] | SDG 04 |
| ZDZ14101 | Tahfiz 2 [Tahfiz 2] | SDG 04 |
| ZDZ24001 | Tahfiz 3 [Tahfiz 3] | SDG 04 |
| ZDZ24101 | Tahfiz 4 [Tahfiz 4] | SDG 04 |
| ZDZ34001 | Tahfiz 5 [Tahfiz 5] | SDG 04 |

ZDZ11101 MALAYSIAN UNIVERSITI ROVER TRAINING GROUP 1**No of Credits: 1****Course Synopsis:**

Kumpulan Latihan Kelanasiswa Malaysia (KLKM) merupakan badan beruniform bersifat antarabangsa yang membincangkan mengenai ilmu kemahiran hidup dan ikhtiar hidup. Kursus ini meliputi sejarah dan latar belakang, undang-undang dan persetujuan pengakap, latihan lencana kemahiran asas, latihan lencana wajib, latihan lencana pilihan dan latihan lencana Baden Powell. Pelajar juga akan didedahkan dengan pelbagai jenis ikatan dan simpulan.

Course Outcomes:

1. CO1 - Keupayaan untuk mempamerkan sifat kepimpinan, pengurusan masa dan disiplin diri yang baik sebagai seorang Kelanasiswa Malaysia.
2. Keupayaan untuk mempamerkan kemahiran dan teknik asas dalam aktiviti secara individu atau berkumpulan.

ZDZ11201 MALAYSIAN UNIVERSITI ROVER TRAINING GROUP 2**No of Credits: 1****Course Synopsis:**

Kursus Kumpulan Latihan Kelanasiswa Malaysia (KLKM) 2 merupakan kesinambungan daripada kursus KLKM 1 yang memfokuskan kepada kemahiran insaniah dan ikhtiar hidup berteraskan prinsip latihan Baden Powell. Selain memupuk etika kehidupan, para pelajar diterapkan dengan semangat kerjasama, saling menghormati, serta kasih sayang terhadap sesama manusia dan alam sekitar melalui penghayatan Persetiaan dan Undang-Undang Pengakap serta penyesuaian penglibatan dalam program berkaitan dengan kemasyarakatan.

Course Outcomes:

1. Keupayaan untuk mempamerkan sifat kepimpinan, pengurusan masa dan disiplin diri yang baik sebagai seorang Kelanasiswa Malaysia.
2. Keupayaan untuk mempamerkan kemahiran dan teknik asas Kelanasiswa Malaysia dalam aktiviti KLKM 2 secara individu atau berkumpulan.

ZDZ11301 FIRE AND RESCUE BRIGADE 1**No of Credits: 1****Course Synopsis:**

Kursus Briged Bomba dan Penyelamat 1 bertujuan untuk membentuk mahasiswa yang berdisiplin, berdaya kepimpinan dan berkeupayaan memberi perkhidmatan sukarela dalam bidang kebombaan dan penyelamatan. Kursus ini memperkenalkan sejarah, peranan dan fungsi Jabatan Bomba dan Penyelamat Malaysia serta kepentingan Briged Bomba di institusi pengajian tinggi dan komuniti. Penekanan diberikan kepada pembentukan nilai jati diri, semangat kesukarelawanan, kerja berpasukan, komunikasi berkesan dan kemahiran asas kawad kaki sebagai asas profesionalisme anggota briged. Melalui latihan teori dan amali, kursus ini turut meningkatkan kesedaran mahasiswa terhadap bahaya kebakaran serta kepentingan keselamatan nyawa dan harta benda, sejajar dengan keperluan keselamatan masyarakat dan pembangunan modal insan yang holistik.

Course Outcomes:

1. Keupayaan untuk mempamerkan sifat kepimpinan, pengurusan masa dan disiplin diri yang baik dalam aktiviti yang berkaitan dengan kursus Briged Bomba dan Penyelamat.
2. Keupayaan untuk mempamerkan kemahiran dan teknik asas Briged Bomba dan Penyelamat secara individu atau berkumpulan.

ZDZ11401 FIRE AND RESCUE BRIGADE 2**No of Credits: 1****Course Synopsis:**

Kursus Briged Bomba dan Penyelamat 2 adalah lanjutan daripada Kursus ZDZ11301 Briged Bomba dan Penyelamat 1. Pelajar akan didedahkan dengan teknik-teknik menyelamatkan mangsa dari lokasi kebakaran dan tatacara pengurusan risiko kebakaran. Pelajar juga akan diajar asa ikhtiar hidup dan bahaya kebakaran. Kursus ini juga memberi pengetahuan, latihan, kemahiran kepada mahasiswa UniMAP sebagai langkah berjaga-jaga serta pencegahan. Di samping meningkatkan semangat untuk perkhidmatan kepada masyarakat dalam kalangan mahasiswa UniMAP terutama apabila berlaku sesuatu ancaman kebakaran.

Course Outcomes:

1. Keupayaan untuk mempamerkan sifat kepimpinan, pengurusan masa dan disiplin diri yang baik dalam aktiviti yang berkaitan dengan kursus Briged Bomba dan Penyelamat
2. Keupayaan untuk mempamerkan kemahiran dan teknik asas Briged Bomba dan Penyelamat 2 secara individu atau berkumpulan.

ZDZ11501 MALAYSIAN RED CRESCENT 1 (BSSM 1)**No of Credits: 1****Course Synopsis:**

Kursus ini adalah bertujuan untuk mendedahkan mahasiswa UniMAP kepada aspek-aspek pengetahuan asas pertolongan cemas, latihan kawad asas dan khidmat masyarakat. Kursus di peringkat 1 ini merangkumi pengetahuan tentang Bulan Sabit Merah, pendidikan dan undang-undang kemanusiaan antarabangsa bulan sabit merah serta teori dan praktikal yang berkaitan asas pertolongan cemas berdasarkan modul bulan sabit merah Malaysia. Dengan Kursus ini juga memberi kesedaran kepada mahasiswa UniMAP tentang kepentingan bantuan menyelamatkan secara pantas apabila sesuatu ancaman kecemasan nyawa berlaku.

Course Outcomes:

1. Keupayaan untuk mempamerkan sifat kepimpinan, pengurusan masa dan disiplin diri yang baik dalam aktiviti yang berkaitan dengan kursus Bulan Sabit Merah Malaysia.
2. Keupayaan untuk mempamerkan kemahiran dan teknik asas Bulan Sabit Merah Malaysia secara individu atau berkumpulan.

ZDZ11601 MALAYSIAN RED CRESCENT 2 (BSSM 2)**No of Credits: 1****Course Synopsis:**

Kursus ini Kursus Lanjutan dari kursus ZDZ11501 Bulan Sabit Merah Malaysia 1 ini pelajar akan didedahkan dengan prinsip-prinsip asas serta matlamat pertolongan cemas. Pelajar akan didedahkan dengan konsep dan kemahiran aktiviti menyelamatkan dan pertolongan cemas secara beretika. Amalan keselamatan dan kesihatan, operasi pengurusan bencana dan operasi menyelamatkan dalam situasi-situasi yang berbeza juga ditekankan berdasarkan modul bulan sabit merah Malaysia.

Course Outcomes:

1. Keupayaan untuk mempamerkan sifat kepimpinan, pengurusan masa dan disiplin diri yang baik dalam aktiviti yang berkaitan dengan kursus Bulan Sabit Merah Malaysia 2.
2. Keupayaan untuk mempamerkan kemahiran dan teknik asas Bulan Sabit Merah Malaysia 2 secara individu atau berkumpulan.

ZDZ11701 CIVIL DEFENSE 1**No of Credits: 1****Course Synopsis:**

Kursus ini menawarkan pengetahuan dan kemahiran asas kawad kaki, asas pertolongan cemas, sistem pendarahan tubuh manusia, sokongan asas kehidupan, pemadaman kebakaran asas dan pengenalan bencana alam. Para pelajar akan diajar secara teori dan praktikal berkenaan operasi menyelamatkan dan pertolongan cemas semasa kecemasan, khususnya kebakaran. Pelajar juga akan didedahkan dengan jenis-jenis kecederaan akibat kebakaran dan cara rawatan serta tatacara pengurusan kecemasan Jabatan Pertahanan Awam Malaysia.

Course Outcomes:

1. Keupayaan untuk menunjukkan sifat kepimpinan, pengurusan masa dan disiplin diri yang baik dalam pelbagai aktiviti kursus Pertahanan Awam 1.
2. Keupayaan untuk mempamerkan kemahiran dan teknik asas kawad kaki dan pertolongan cemas dalam aktiviti yang berkaitan kursus Pertahanan Awam 1 secara individu atau berkumpulan.

ZDZ11801 CIVIL DEFENSE 2**No of Credits: 1****Course Synopsis:**

Sebagai kesinambungan Kursus Pertahanan Awam 1, kursus ini memantapkan kemahiran kawad kaki, pertolongan cemas, dan sokongan asas kehidupan. Pelajar akan didedahkan kepada elemen tambahan iaitu pengurusan kebakaran bangunan serta pengenalan bencana alam melalui latihan teori dan praktikal. Fokus turut diberikan kepada teknik rawatan kecederaan kebakaran dan operasi menyelamatkan mengikut piawaian Jabatan Pertahanan Awam Malaysia (APM) bagi melahirkan individu yang kompeten dalam menguruskan situasi kecemasan secara efektif.

Course Outcomes:

1. Keupayaan untuk menunjukkan sifat kepimpinan, pengurusan masa dan disiplin diri yang baik dalam pelbagai aktiviti kursus Pertahanan Awam 2.
2. Keupayaan untuk mempamerkan kemahiran dan teknik asas kawad kaki dan pertolongan cemas dalam aktiviti yang berkaitan kursus Pertahanan Awam 2 secara individu atau berkumpulan.

ZDZ11901 CLOVER 1**No of Credits: 1****Course Synopsis:**

Kursus Pandu Puteri Klover 1 memperkenalkan pelajar kepada asas gerakan kepanduan melalui penerapan nilai kepimpinan, disiplin diri, kerja berpasukan dan kesukarelawanan. Kursus ini merangkumi pengetahuan berkaitan sejarah, prinsip dan kaedah kepanduan, pengurusan organisasi, kawad dan istiadat, kemahiran asas perkhemahan, pertolongan cemas serta khidmat masyarakat. Melalui pendekatan pembelajaran teori dan amali, kursus ini bertujuan membentuk sahsiah pelajar yang berakhlak, bertanggungjawab dan berketerampilan, selaras dengan aspirasi Persatuan Pandu Puteri Malaysia dan piawaian antarabangsa World Association of Girl Guides and Girl Scouts, serta mampu mengaplikasikan kemahiran insaniah dalam persekitaran kampus, komuniti dan kerjaya masa hadapan.

Course Outcomes:

1. Keupayaan untuk mempamerkan sifat kepimpinan, pengurusan masa dan disiplin diri yang baik dalam aktiviti yang berkaitan dengan kursus Pandu Puteri Klover.
2. Keupayaan untuk mempamerkan kemahiran dan teknik asas Pandu Puteri Klover secara individu atau berkumpulan.

ZDZ12001 CLOVER 2**No of Credits: 1****Course Synopsis:**

Kursus Pandu Puteri Klover 2 ini bertujuan untuk memupuk kemahiran insaniah melalui Program Pandu Puteri terutamanya dari aspek pengetahuan dan kemahiran asas Pandu Puteri yang bersifat global. Pelajar akan didedahkan dengan aspek-aspek pengurusan dan pentadbiran organisasi Pandu Puteri sedunia (WAGGGS). Pengaplikasian konsep kerja secara berpasukan yang boleh dalam program-program perkhemahan dan istiadat tertentu pandu puteri Malaysia.

Course Outcomes:

1. Keupayaan untuk mempamerkan sifat kepimpinan, pengurusan masa dan disiplin diri yang baik dalam aktiviti yang berkaitan dengan kursus Pandu Puteri Klover 2.
2. Keupayaan untuk mempamerkan kemahiran dan Teknik asas Pandu Puteri Klover 2 secara individu atau berkumpulan.

ZDZ12101 MALAYSIAN ST. JOHN AMBULANCE 1**No of Credits: 1****Course Synopsis:**

Kursus ini direka untuk memperkenalkan prinsip-prinsip asas serta matlamat utama pertolongan cemas kepada para pelajar. Pelajar akan didedahkan kepada sejarah, struktur organisasi, dan etika pemakaian uniform St. John Ambulans Malaysia bagi memupuk jati diri dan disiplin. Melalui pendekatan teori dan amali, pelajar akan mempelajari kemahiran kritikal seperti protokol tindakan kecemasan (DR ABC), pengurusan peralatan kit pertolongan cemas, serta teknik pembalutan dan pembebatan yang betul. Kursus ini juga merangkumi rawatan untuk pendarahan luaran, keadaan renjatan, serta pengurusan kecederaan tulang dan sendi seperti kepatahan, terseliuh, dan dislokasi. Di akhir kursus, pelajar dijangka berupaya menunjukkan kemahiran asas kurikulum, berkomunikasi secara berkesan dalam kumpulan, serta mempamerkan ciri kepimpinan melalui aktiviti komuniti yang bersesuaian.

Course Outcomes:

1. Keupayaan untuk mempamerkan sifat kepimpinan, pengurusan masa dan disiplin diri yang baik dalam aktiviti yang berkaitan dengan kursus St. John Ambulans Malaysia.
2. Keupayaan untuk mempamerkan kemahiran dan Teknik asas St. John Ambulans Malaysia secara individu atau berkumpulan.

ZDZ12201 MALAYSIAN ST. JOHN AMBULANCE 2**No of Credits: 1****Course Synopsis:**

Kursus St. John Ambulans Malaysia 2 ini Adalah lanjutan daripada kursus St. John Ambulans Malaysia 1 bagi memberikan pendedahan dalam pengurusan pertolongan cemas dan bagaimana memberi bantuan dalam sesuatu kecemasan. Mereka akan belajar kaedah memberi kecemasan mangsa tercekik dan sistem peredaran oksigen dalam darah. Pelajar juga akan mengenali kepatahan tulang, terseliuh, dislokasi dan cara memberi rawatan kecemasan ke atas kes-kes tersebut dan kaedah CPR.

Course Outcomes:

1. Keupayaan untuk mempamerkan sifat kepimpinan, pengurusan masa dan disiplin diri yang baik dalam aktiviti yang berkaitan dengan kursus St. John Ambulans Malaysia 2.
2. Keupayaan untuk mempamerkan kemahiran dan Teknik asas St. John Ambulans Malaysia 2 secara individu atau berkumpulan.

ZDZ12301 BRASS BAND 1**No of Credits: 1****Course Synopsis:**

Kursus kokurikulum ini bertujuan mendedahkan pelajar kepada ilmu pancaragam secara teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada terminologi, pengurusan diri dan teknik-teknik yang berkaitan dengan pancaragam seperti pernafasan, bacaan nota muzik dan pergerakan. Manakala dari segi teknikal, kursus ini lebih menumpukan kepada latihan amali (praktikal) dari segi kemahiran bermain alat muzik di dalam kumpulan pancaragam.

Course Outcomes:

1. Keupayaan untuk mempamerkan sifat kepimpinan, pengurusan masa dan disiplin diri yang baik sebagai seorang ahli pancaragam.
2. Keupayaan untuk mempamerkan kemahiran dan teknik asas dalam aktiviti yang berkaitan dengan kursus Panncaragam 1 secara individu atau berkumpulan.

ZDZ12401 BRASS BAND 2**No of Credits: 1****Course Synopsis:**

Kursus ini merupakan kesinambungan daripada Pancaragam I yang direka khusus untuk memantapkan penguasaan pelajar terhadap ilmu pancaragam secara holistik, merangkumi aspek teori dan teknikal. Dari sudut teori, penekanan diberikan kepada pengukuhan terminologi muzik, disiplin pengurusan diri, serta teknik fundamental seperti kawalan pernafasan, pembacaan nota muzik, dan ketepatan pergerakan. Manakala dari aspek teknikal, kursus ini memfokuskan kepada latihan amali secara intensif bagi meningkatkan kemahiran bermain alat muzik secara individu dan berkumpulan.

Course Outcomes:

1. Keupayaan untuk mempamerkan sifat kepimpinan, pengurusan masa dan disiplin diri yang baik sebagai seorang ahli pancaragam.pancaragam.
2. Keupayaan untuk mempamerkan kemahiran dan teknik lanjutan dalam aktiviti yang berkaitan dengan kursus Panncaragam 2 secara individu atau berkumpulan.

ZDZ12501 TERRITORIAL ARMY 1**No of Credits: 1****Course Synopsis:**

Kursus ini bertujuan untuk memberikan pendedahan kepada anggota Askar Wataniah mengenai asas sistem ketenteraan, yang merangkumi struktur organisasi, disiplin, dan etika dalam tentera. Pelajar akan mempelajari mengenai tugas dan penugasan dalam operasi tentera serta kepentingan kerja berpasukan dalam memastikan keberkesanan misi. Di samping itu, kursus ini turut mengutamakan pengembangan nilai kepimpinan dan sifat setia kawan bertujuan membentuk anggota yang bukan sahaja berkemahiran dalam aspek ketenteraan tetapi juga memiliki ciri-ciri kepimpinan yang berkualiti. Dengan penekanan terhadap pembinaan sahsiah dan kerjasama, kursus ini akan melahirkan pemimpin yang bertanggungjawab dan berwibawa dalam menghadapi pelbagai cabaran.

Course Outcomes:

1. Keupayaan untuk mengamalkan prinsip dan disiplin asas ketenteraan dalam memainkan peranan sebagai seorang pemimpin.
2. Keupayaan untuk mengamalkan prinsip asas komunikasi ketenteraan.
3. Keupayaan untuk mempamerkan kemahiran asas dan etika profesional ketenteraan yang bersesuaian dalam menjalankan aktiviti berkumpulan.

ZDZ12601 TERRITORIAL ARMY 2**No of Credits: 1****Course Synopsis:**

Kursus ini memberikan pendedahan kepada anggota Askar Wataniah mengenai pelaksanaan latihan secara berkumpulan, etika kerja, dan pengurusan maklumat serta idea baharu melalui asas ketenteraan. Anggota akan dilatih dalam ilmu medan perang (IMP) yang merangkumi latihan taktikal dan strategi ketenteraan. Selain itu, kursus ini juga membolehkan peserta menjalani latihan mingguan, memahami urusan latihan, pentadbiran, serta aspek sosial dan kehidupan di dalam kem. Dengan latihan yang komprehensif, kursus ini bertujuan untuk membentuk anggota yang berdisiplin, bekerjasama, dan berdaya saing dalam menghadapi pelbagai cabaran ketenteraan.

Course Outcomes:

1. Keupayaan untuk mengamalkan prinsip asas latihan kepimpinan ketenteraan dalam memainkan peranan sebagai seorang pemimpin.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi yang berkesan dalam aktiviti latihan asas kepimpinan dan kemahiran ketenteraan.
3. Keupayaan untuk mempamerkan kaedah kemahiran kepimpinan dan ketahanan fizikal ketenteraan yang bersesuaian dalam aktiviti berkumpulan.

SDZ22501 TERRITORIAL ARMY 3**No of Credits: 1****Course Synopsis:**

Kursus ini bertujuan untuk memberi pendedahan kepada anggota Askar Wataniah mengenai operasi ketenteraan, undang-undang tentera, serta prosedur dan tugas rejimental. Pelajar akan mempelajari aspek penting dalam melaksanakan tugas ketenteraan, termasuk menguasai kemahiran komunikasi yang efektif dalam situasi operasi. Selain itu, kursus ini menekankan nilai kerjasama dalam kumpulan untuk mencapai matlamat bersama, serta melaksanakan aktiviti ketenteraan dengan cekap dan berkesan. Dengan pendekatan ini, pelajar akan lebih bersedia untuk menghadapi cabaran dalam tugas ketenteraan yang sebenar.

Course Outcomes:

1. Keupayaan untuk memahami dan mengamalkan undang-undang ketenteraan dalam memainkan peranan sebagai seorang pemimpin.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi dalam aktiviti bacaan peta dan aktiviti komunikasi ketenteraan yang lain.
3. Keupayaan untuk mempraktikkan kemahiran ketenteraan yang bersesuaian dalam aktiviti berkumpul yang berkaitan dengan operasi ketenteraan

SDZ22601 TERRITORIAL ARMY 4**No of Credits: 1****Course Synopsis:**

Kursus ini memberi pendedahan kepada anggota Askar Wataniah mengenai sistem perjawatan, pembahagian tanggungjawab, serta penugasan rejimental dalam Angkatan Tentera Malaysia. Selain itu, kursus ini juga memberikan latihan intensif yang melibatkan aspek fizikal dan mental, termasuk Ujian Jalan Lasak (UJL), Ujian Kemahiran Menembak (UKM), dan Senaman Perang. Tujuan utama kursus ini adalah untuk mempersiapkan anggota dengan kemahiran dan kekuatan yang diperlukan dalam menghadapi tugas ketenteraan, serta memperkukuh ketahanan fizikal dan mental mereka dalam situasi yang mencabar.

Course Outcomes:

1. Keupayaan untuk mempamerkan sifat kepimpinan dalam menguruskan tugas rejimental dan aktiviti sosial ketenteraan.
2. Keupayaan untuk mempraktikkan kemahiran komunikasi yang berkesan dalam pelbagai aktiviti ketenteraan.
3. Keupayaan untuk mempamerkan etika profesional ketenteraan, kemahiran ketenteraan dan ketahanan fizikal ketenteraan yang bersesuaian dalam aktiviti berkumpul.

ZDZ14001 TAHFIZ 1**No of Credits: 1****Course Synopsis:**

Kursus ini bertujuan mendedahkan dan memberikan kefahaman pelajar berkenaan dengan aspek-aspek Kemahiran insaniah dan keagamaan seperti kemahiran penjagaan Al Quran, kemahiran menulis semula Al Quran, Kemahiran pengurusan masa, kerjasama berpasukan dan pembelajaran sepanjang hayat serta disiplin kepada para pelajar dan memperbanyakkan platform kerjasama di antara universiti lain samada di dalam atau luar negara melalui aktiviti kokurikulum.

Course Outcomes:

1. Keupayaan untuk memahami dan mengamalkan hukum tajwid asas dengan sebutan yang fasih dalam bacaan Al-Quran serta mengaplikasikan kemahiran pengurusan masa secara berkesan dalam kursus tahfiz 1.
2. Keupayaan untuk menyampaikan hafazan dan bacaan al-Quran secara bertajwid dengan yakin, teratur, dan berkesan.

ZDZ14101 TAHFIZ 2**No of Credits: 1****Course Synopsis:**

Kursus ini merupakan lanjutan kepada kursus SDZ14001 Tahfiz 1 dan dirangka untuk memperkukuh pemahaman pelajar dalam aspek kemahiran insaniah dan nilai-nilai keagamaan. Penekanan diberikan kepada kemahiran penjagaan dan penulisan semula Al-Quran, pengurusan masa yang berkesan, pembentukan kerjasama dalam pasukan, serta penerapan konsep pembelajaran sepanjang hayat dan disiplin diri. Kursus ini turut menyediakan platform kerjasama dengan institusi pengajian tinggi lain, sama ada di peringkat nasional mahupun antarabangsa, melalui pelaksanaan aktiviti kokurikulum yang strategik dan berimpak tinggi.

Course Outcomes:

1. Keupayaan untuk mengamalkan hukum tajwid asas dengan sebutan yang fasih dalam bacaan Al-Quran serta mengaplikasikan kemahiran pengurusan masa secara berkesan dalam aktiviti yang berkaitan kursus tahfiz 2.
2. Keupayaan untuk menyampaikan hafazan dan bacaan al-Quran secara bertajwid dengan yakin, teratur, dan berkesan.

ZDZ24001 TAHFIZ 3**No of Credits: 1****Course Synopsis:**

Kursus ini adalah lanjutan daripada ZDZ14101-Tahfiz 2 dan bertujuan mendedahkan dan memberikan kefahaman pelajar berkenaan dengan aspek-aspek Kemahiran insaniah dan keagamaan seperti kemahiran penjagaan Al quran, kemahiran menulis semula Al Quran, Kemahiran pengurusan masa, kerjasama berpasukan dan pembelajaran sepanjang hayat serta disiplin kepada para pelajar dan memperbanyakkan platform kerjasama di antara universiti lain samada di dalam atau luar negara melalui aktiviti kokurikulum.

Course Outcomes:

1. Keupayaan untuk memahami dan mengamalkan hukum tajwid asas dengan sebutan yang fasih dalam bacaan Al- Quran serta mengaplikasikan kemahiran pengurusan masa secara berkesan dalam kursus tahfiz 3.
2. Keupayaan untuk menyampaikan hafazan dan bacaan Al-Quran secara bertajwid dengan yakin, teratur, dan berkesan.

ZDZ24101 TAHFIZ 4**No of Credits: 1****Course Synopsis:**

Kursus ini adalah lanjutan daripada ZDZ24001-Tahfiz 3 dan bertujuan mendedahkan dan memberikan kefahaman pelajar berkenaan dengan aspek-aspek Kemahiran insaniah dan keagamaan seperti kemahiran penjagaan Al quran, kemahiran menulis semula Al Quran, Kemahiran pengurusan masa, kerjasama berpasukan dan pembelajaran sepanjang hayat serta disiplin kepada para pelajar dan memperbanyakkan platform kerjasama di antara universiti lain samada di dalam atau luar negara melalui aktiviti kokurikulum.

Course Outcomes:

1. Keupayaan untuk mengamalkan hukum tajwid asas dengan sebutan yang fasih dalam bacaan Al-Quran serta mengaplikasikan kemahiran pengurusan masa secara berkesan dalam aktiviti yang berkaitan kursus tahfiz 4.
2. Keupayaan untuk menyampaikan hafazan dan bacaan Al-Quran secara bertajwid dengan yakin, teratur, dan berkesan.

ZDZ34001 TAHFIZ 5**No of Credits: 1****Course Synopsis:**

Kursus ini adalah lanjutan daripada ZDZ24101-Tahfiz 4 dan bertujuan mendedahkan dan memberikan kefahaman pelajar berkenaan dengan aspek-aspek Kemahiran insaniah dan keagamaan seperti kemahiran penjagaan Al-quran, kemahiran menulis semula Al-quran, Kemahiran pengurusan masa, kerjasama berpasukan dan pembelajaran sepanjang hayat serta disiplin kepada para pelajar dan memperbanyakkan platform kerjasama di antara universiti lain samada di dalam atau luar negara melalui aktiviti kokurikulum.

Course Outcomes:

1. Keupayaan untuk memahami dan mengamalkan hukum tajwid asas dengan sebutan yang fasih dalam bacaan Al-Quran serta mengaplikasikan kemahiran pengurusan masa secara berkesan dalam kursus tahfiz 5.
2. Keupayaan untuk menyampaikan hafazan dan bacaan Al-Quran secara bertajwid dengan yakin, teratur, dan berkesan.



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