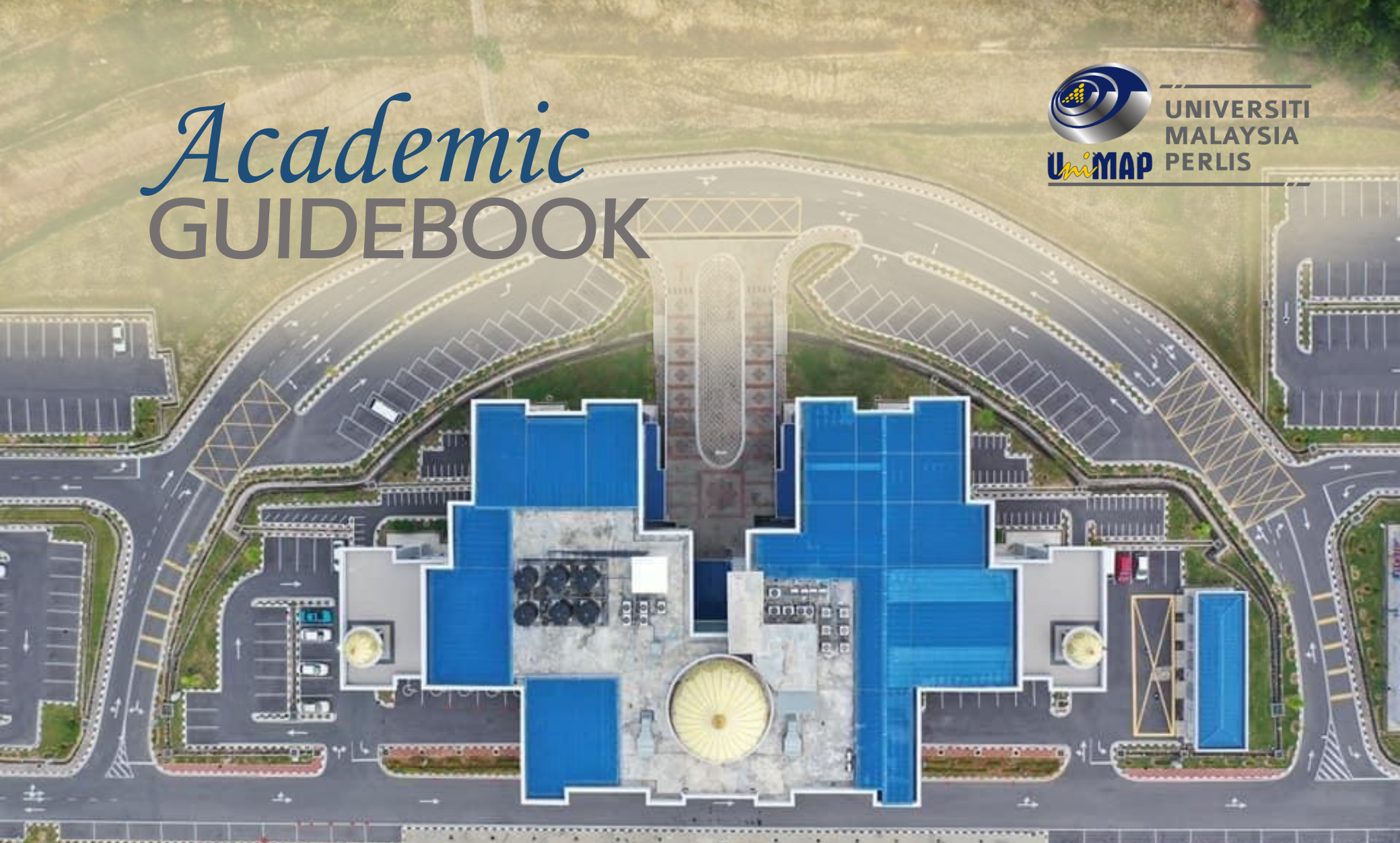# *Academic* GUIDEBOOK

UNIVERSITI MALAYSIA PERLIS

DIPLOMA PROGRAMME
ACADEMIC SESSION 2022/2023

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dan/*and*

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

serta/*and*

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all the staff at Academic Management Centre (AMC), Universiti Malaysia Perlis.

ISI KANDUNGAN / CONTENTS

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 Teknologi Kejuruteraan Elektrik
2. Fakulti Teknologi Kejuruteraan Elektronik
3. Fakulti Teknologi Kejuruteraan Mekanikal
4. Fakulti Teknologi Kejuruteraan Kimia
5. Fakulti Teknologi Kejuruteraan
6. Fakulti Sains Gunaan dan Kemanusiaan

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.

List of Faculties:

1. *Faculty of Electrical Engineering Technology*
2. *Faculty of Electronic Engineering Technology*
3. *Faculty of Mechanical Engineering Technology*
4. *Faculty of Chemical Engineering Techonolgy*
5. *Faculty of Civil Engineering Techonolgy*
6. *Faculty of Applied and Human Sciences*

Senarai Program Diploma / *List of Diploma Programmes:*

1. Diploma Kejuruteraan Komputer / *Diploma in Computer Engineering*
2. Diploma Kejuruteraan Elektrik / *Diploma in Electrical Engineering*
3. Diploma Kejuruteraan Mekatronik / *Diploma in Mechatronic Engineering*
4. Diploma Kejuruteraan Pembuatan / *Diploma in Manufacturing Engineering*
5. Diploma Kejuruteraan Elektronik / *Diploma in Electronic Engineering*
6. Diploma Kejuruteraan Metalurgi / *Diploma in Metallurgical Engineering*

MISI / *MISSION:*

Melahirkan insan kamil yang menyumbang kepada agenda pembangunan dan daya saing industri negara**.**
To produce exemplary individuals who contribute to the nation's development and industrial competitiveness agenda.

VISI / *VISION:*

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

NILAI TERAS / *CORE VALUES*
Ilmu, Keikhlasan, Kecemerlangan
Knowledge, Sincerity, Excellence

LAGU UniMAP / *UniMAP ANTHEM:*

WAWASANKU
Universiti Malaysia Perlis
Alam Kejuruteraan
Ilmu Keikhlasan Kecemerlangan
Wawasan Jiwa Kita

Berdikari rohaniah
Berteknologi
Pemimpin Berbestari
Untuk Bangsa Insan Dan Umat dunia
Negara Yang Tercinta

Universiti Malaysia Perlis
Alam Kejuruteraan
Ilmu Keikhlasan Kecemerlangan
Wawasan Jiwa Kita

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

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

D.Y.T.M TUANKU HAJAH LAILATUL SHAHREEN AKASHAH KHALIL
S.P.M.P.

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

PENGURUSAN TERTINGGI
TOP MANAGEMENT

Lt. Kol. Prof. Ts. Dr. Zaliman Sauli
Naib Canselor / *Vice Chancellor*

Prof. Dr. Mohd Yusoff Mashor
Timbalan Naib Canselor (Akademik & Antarabangsa) /
Deputy Vice Chancellor (Academic & International)
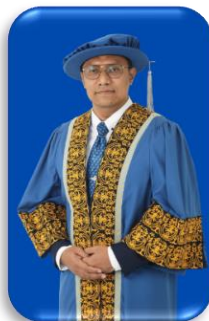
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Deputy Vice Chancellor (Students Affairs & Alumni)

Tuan Haji Mohd Saad Din
Pendaftar / *Registrar*

En. Rusdi Puteh
Bendahari / Bursar

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

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KALENDAR AKADEMIK DIPLOMA / *DIPLOMA ACADEMIC CALENDAR*
SIDANG AKADEMIK / *ACADEMIC SESSION* **2022/2023**

AKTIVITI / *ACTIVITIES*	SEMESTER PERTAMA / *FIRST SEMESTER* 8 Ogos 2022 – 8 Januari 2023 (19 minggu / *weeks*)		
	JANGKA MASA / *DATE*	**TEMPOH /** *DURATION*	**CATATAN /** *NOTES*
Pendaftaran Pelajar Baharu & Minggu Suai Kenal / *New Intake Registration & Orientation Week*	1 – 7 Ogos 2022	1 minggu / *week*	-
Kuliah / *Lectures*	8 Ogos – 25 September 2022	7 minggu / *weeks*	**Hari Kebangsaan /** *National Day* 31.08.2022 [Rabu / *Wednesday*] **Hari Malaysia /** *Malaysia Day* 19.09.2022 [Jumaat / *Friday*]
Cuti Pertengahan Semester / *Mid Semester Break*	26 September – 2 Oktober 2022	1 minggu / *week*	-
Kuliah / *Lectures*	3 Oktober – 20 November 2022	7 minggu / *weeks*	**Maulidur Rasul /** *Prophet Muhammad's Birthday* 9.10.2022 [Ahad / *Sunday*] **Hari Deepavali /** *Deepavali* 24.10.2022 [Isnin / *Monday*]
Minggu Ulangkaji / *Revision Week*	21 – 27 November 2022	1 minggu / *week*	-
Peperiksaan / *Examination*	28 November – 18 Disember 2022	3 minggu / *weeks*	-
Cuti Antara Semester / *Mid Semester Break*	19 Disember 2022 – 8 Januari 2023	3 minggu / *weeks*	**Hari Krismas /** *Christmas* 25.12.2022 [Ahad / *Sunday*]

KALENDAR AKADEMIK DIPLOMA / *DIPLOMA ACADEMIC CALENDAR*
SIDANG AKADEMIK / *ACADEMIC SESSION* 2022/2023

AKTIVITI / *ACTIVITIES*	SEMESTER KEDUA / *SECOND SEMESTER* 9 Januari – 30 Julai 2023 (19 minggu / *weeks*)		
	JANGKA MASA / *DATE*	TEMPOH / *DURATION*	CATATAN / *NOTES*
Kuliah / *Lectures*	9 Januari – 26 Februari 2023	7 minggu / *weeks*	**Tahun Baru Cina / *Chinese New Year*** 22 – 24.01.2023 [Ahad - Selasa / Sunday - Tuesday] **Israk Mikraj** 18.02.2023 [Sabtu / *Saturday*]
Cuti Pertengahan Semester / *Mid Semester Break*	27 Februari – 5 Mac 2023	1 minggu / *week*	-
Kuliah / *Lectures*	6 Mac – 23 April 2023	7 minggu / *weeks*	**Nuzul Al-Quran** 8.04.2023 [Sabtu / *Saturday*] **Hari Raya Aidilfitri / *Eid-ul Fitr*** 22 - 24.04.2023 [Sabtu – Isnin / *Saturday - Monday*]
Minggu Ulangkaji / *Revision Week*	24 – 30 April 2023	1 minggu / *week*	
Peperiksaan / *Examination*	1 – 21 Mei 2023	3 minggu / *weeks*	**Hari Pekerja / *Labour Day*** 1.05.2023 [Isnin / *Monday*] **Hari Wesak / *Wesak Day*** 4.05.2023 [Khamis / *Thursday*] **Hari Keputeraan Raja Perlis / *Birthday of DYMM Perlis*** 17.05.2023 [Rabu / *Wednesday*]
Cuti Panjang / *Long Break*	22 Mei – 30 Julai 2023	10 minggu / *weeks*	**Hari Raya Haji / *Eid-ul Adha*** 28 - 29.06.2023 [Rabu - Khamis/ *Wednesday - Thursday*] – tertakluk kepada pindaan / *subject to change*

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SISTEM AKADEMIK

Tahun Akademik Universiti dibahagikan kepada dua semester lazim iaitu Semester I dan Semester II. Setiap semester ini mengandungi 14 minggu pembelajaran. Universiti juga menawarkan semester khas iaitu Semester Tambahan dan Semester Pendek pada cuti akhir sidang akademik. Peperiksaan akan diadakan pada hujung semester. Pelajar juga perlu lulus semua kursus dan mendapat jumlah kredit yang diperlukan mengikut program pengajian masing-masing serta PNGK sekurang-kurangnya 2.00 untuk berijazah.

ACADEMIC SYSTEM

The University Academic Year is divided into two regular semesters, namely Semester I and Semester II. Each semester contains 14 learning weeks. The University also offers special semesters consists Additional Semester and Short Semester on the end of the academic year break. Examination will be held at the end of the semester. To graduate, students also need to pass all courses and obtain the required number of credits according to their respective study programmes as well as a GCPA of at least 2.00.

STRUKTUR PROGRAM DIPLOMA

Struktur umum program Diploma adalah dikelompokkan seperti yang ditunjukkan dalam Jadual 1. Bagi tujuan pengijazahan, pelajar dikehendaki untuk memperoleh kredit minimum yang ditetapkan oleh kurikulum program serta mendapat PNGK sekurang-kurangnya 2.00 untuk berijazah.

DIPLOMA PROGRAMME STRUCTURE

The general programme structures for the Diploma are shown in Table 1. For graduation purposes, students are required to complete the minimum credits specified by the curriculum of the respective programme and obtain a CGPA at least 2.00 to graduate.

Jadual 1 : Struktur Program Diploma Kejuruteraan
Table 1 : Programme Structure for the Diploma of Engineering

KURSUS / *COURSES*	Kredit / *Credits*
KURSUS TERAS / *CORE COURSES*	**76***
KURSUS WAJIB UNIVERSITI / *UNIVERSITY REQUIREMENT COURSES*	**16**
a) Keusahawanan Kejuruteraan / *Engineering Entrepreneurship*	2
b) Falsafah dan Isu Semasa / *Philosophy and Current Issues*	2
c) Kemahiran dan Teknologi Dalam Komunikasi / *Skill and Technology in Communication*	2
d) Bahasa Melayu / *Malay Language*	2
e) Bahasa Inggeris Komunikasi 1 / *Communicative English 1*	2
f) Bahasa Inggeris Komunikasi 2 / *Communicative English 2*	2
g) Bahasa Inggeris Komunikasi 3 / *Communicative English 3*	2
h) Ko-kurikulum / *Co-curriculum*	2
i) Matematik Awalan / *Preliminary Mathematics*	2**
JUMLAH / *TOTAL*	**92**

Penerangan / *Descriptions*:
- Jumlah nilai kredit kursus teras adalah tertakluk kepada kurikulum program masing-masing./ *The total credits of the core courses are subject to the curriculum of the respective programme.*
- ** Kursus audit ini wajib kepada pelajar yang mendapat gred D dan kebawah dalam subjek Matematik Tambahan peringkat SPM/ *This audit course is compulsary for student who obtained grade D and below in Additional Mathematic at SPM level. Audit course*

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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.

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**.

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.*

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.*

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- 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.

- Adalah menjadi tanggungjawab pelajar untuk menyemak dan memastikan bahawa semua butir-butir yang dinyatakan dalam Slip Pendaftaran Kursus adalah betul. Sebarang permohonan pendaftaran kursus/penambahan kursus/pengguguran kursus/tarik diri di luar tempoh yang ditetapkan tanpa sebab-sebab yang boleh diterima oleh Universiti, boleh dikenakan denda kecuali pelajar yang mempunyai alasan yang tertentu sahaja akan dipertimbangkan oleh Dekan Fakulti. Pelajar tidak dibenarkan membuat pendaftaran kursus/penambahan kursus/pengguguran kursus / tarik diri kursus semasa minggu peperiksaan.

- Pelajar yang tidak mendaftar kursus maksimum 2 semester berturut-turut tanpa sebarang alasan boleh ditamatkan pengajian dengan menggunakan Borang HEA(B)-09 (Borang Penamatan Pengajian Pelajar).

- *If there are any changes in student course registration, i.e. add, drop or withdraw courses within the prescribed period, the student must also obtain verification from the RPS.*

- *Students who fail to register within the prescribed period shall be subject to a penalty of RM50. Late registration must not exceed the 3rd week of the semester. Students must complete the HEA(B)-02[b] Late Registration Form and obtain approval from the Dean.*

- *New students will register online on the specified date during the orientation week according to their school. Students will be briefed by their school on their programme courses during the orientation week.*

- *Students are responsible for checking and ensuring that all the particulars stated in their Course Registration Slips are correct. Student who applied to add/drop/withdraw registration after the prescribed period without reasons accepted by the university may be fined. Registration after the prescribed period will only be considered by the Dean of the Faculty for students with specific reasons. Students are not allowed to register add/drop/withdraw during the examination weeks.*

- *Students who do not register for a maximum of 2 consecutive semesters without any reason can be terminated through the submission of the HEA(B)-09 Termination of Study Form.*

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- Pelajar yang telah ditamatkan pengajian dan merayu untuk menyambung semula pengajian perlu menulis surat rayuan permohonan kemasukan kepada Naib Canselor melalui Dekan Fakulti (perakuan Dekan diperlukan). Penalti RM100 akan dikenakan kepada pelajar bagi setiap rayuan kemasukan semula yang diluluskan.

i.   Pendaftaran Kursus Pelajar Berstatus Aktif

- Pelajar berstatus Aktif boleh mendaftar kursus secara atas talian tidak melebihi 20 kredit dan tidak kurang daripada 10 kredit kecuali pelajar yang mengikuti Latihan Industri (LI), Projek Tahun Akhir (FYP) dan pelajar Semester Akhir yang akan menamatkan pengajian. Pelajar yang ingin mendaftar melebihi 20 kredit perlu mendapatkan pengesahan daripada RPS dan kelulusan daripada Dekan Fakulti.

- Keterangan mengenai Pendaftaran Kursus pelajar berstatus Aktif diringkaskan seperti Jadual 2.

- *Students who have been terminated and wish to place an appeal to resume their studies may do so by submitting an appeal letter to the Vice-Chancellor through the Dean (Dean's verification required). A penalty of RM100 will be imposed on students whose application for re-admission has been approved.*

i.   *Active Student Course Registration*

- *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 10 credits except for those who are involved in Industrial Training and the Final Year Project. Student who wish to register for more than 20 credits, need to obtain verification from their RPS and approval by the Dean.*

- *Table 2 summarises the credits that students can register for each semester based on their status.*

Jadual 2 : Ringkasan Pendaftaran Kursus Pelajar Berstatus Aktif
Table 2 : Summary of Credits for Active Student

Status Pelajar / *Student Status*	Kredit Minimum / *Minimum Credits*	Kredit Maksimum / *Maximum Credits*
Pelajar Aktif / *Active Student*	10	20

ii.   Pendaftaran Kursus Pelajar Percubaan [P]

- Pelajar dengan status Percubaan tidak dibenarkan untuk mendaftar sendiri secara dalam talian (online). Pelajar ini perlu bertemu dengan RPS untuk mendapatkan nasihat dan mengisi Borang HEA(B)-02[a] (Borang Pendaftaran Kursus: Status Percubaan) sebelum menyerahkannya kepada Penolong Pendaftar Fakulti untuk didaftarkan. Hanya Penolong Pendaftar Fakulti atau Unit Kemasukan & Rekod sahaja yang boleh mendaftarkan kursus bagi pelajar ini. Jumlah kredit yang dibenarkan untuk Pelajar Percubaan adalah seperti Jadual 3 dibawah:

ii.   *Probation Student Course Registration [P]*

- *Student with the "Probation" status are not allowed to register online by themselves. The students must meet their RPS to discuss about the course registration and to complete the HEA(B)-02[a] Course Registration Form: Probation Status before handing it to the Assistant Registrar. Only the Assistant Registrar of Faculty/Admissions and Student Records Unit is allowed to register the subjects for the students in this case. The numbers of credits allowed is as in Table 3 below:*

Jadual 3 : Ringkasan Pendaftaran Kursus Pelajar Percubaan [P]
Table 3 : Summary of Credits for Probation Student [P]

Status Pelajar / *Student Status*	Kredit Minimum / *Minimum Credits*	Kredit Maksimum / *Maximum Credits*
Percubaan / *Probation* (P1)	10	12
Percubaan / *Probation* (P2)	8	10
Percubaan / *Probation* (P2*)	8	10

PENAMBAHAN, PENGGUGURAN ATAU TARIK DIRI KURSUS

1. Tambah Kursus

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

2. Gugur Kursus

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

3. Tarik Diri Kursus

- Pelajar dengan persetujuan Pensyarah Kursus dan Dekan Fakulti boleh memohon untuk menarik diri daripada kursus yang telah didaftarkan pada semester yang berkenaan tidak lewat dari hari akhir bekerja pada minggu ke-12 minggu pembelajaran. Pelajar yang ingin menarik diri daripada kursus perlulah mengisi Borang HEA(B)-04 (Borang Permohonan Tarik Diri Kursus).

- Kebenaran untuk pelajar menarik diri daripada mengikuti sesuatu kursus adalah tertakluk kepada jumlah kredit minimum, kecuali dengan kebenaran Dekan.

- Status Tarik Diri (TD) akan dicatatkan dalam rekod pendaftaran kursus dan transkrip akademik pelajar. Walau bagaimanapun, gred tidak akan diambil kira dalam pengiraan PNG dan PNGK.

ADD COURSES, DROP COURSES OR COURSE WITHDRAWAL

1. Adding Courses

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

2. Dropping Courses

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

3. Course Withdrawal

- *With the consent of course lecturer and Dean of the Faculty, a student may apply to withdraw from a course registered in a semester no later than the last working day of week 12 (week of study). To apply for a withdrawal from a course, the student must fill in HEA(B)-04 Withdrawal Courses Application Form.*

- *Permission to allow students to withdraw from a course is subject to the minimum credits allowed except with permission from the Dean.*

- *Withdrawal status (TD) will be recorded in the record of registration and academic transcript. However, the grade will not be included to contribute towards the GPA and CGPA.*

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JENIS-JENIS KURSUS

1. KURSUS WAJIB UNIVERSITI

Kursus Wajib Universiti ialah kursus-kursus di luar pengkhususan pelajar. Kursus-kursus ini ditawarkan oleh Pusat Sains Liberal dan Pusat Ko-Kurikulum. Semua kursus ini wajib diambil dan pelajar perlu lulus dengan gred C sebagai syarat untuk pengijazahan.

Kursus-kursus Wajib Universiti bagi program Diploma ialah:

a) Keusahawanan Kejuruteraan (SDU22402) – (2 kredit)
Semua pelajar wajib mengambil kursus Keusahawanan Kejuruteraan. Pelajar digalakkan mengambil kursus-kursus lain di dalam kategori 'keusahawanan', di mana kredit yang dikumpul boleh dikira sebagai Kursus Opsyen.

b) Falsafah dan Isu Semasa (SDU12902) – (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) Kemahiran Dan Teknologi Dalam Komunikasi (SDU12302) – (2 kredit)
Semua pelajar wajib mengambil SDU12302. Kursus ini memperkenalkan pelajar kepada aspek asas komunikasi manusia dan teknologi dalam komunikasi.

TYPES OF COURSES

1. UNIVERSITY REQUIREMENT COURSES

The University Requirement Courses are courses which are not the student's major. These courses are offered by the Centre for Liberal Sciences and the Centre for Co-Curriculum. All these courses are compulsory and students need to pass these courses with grade C or above in order to graduate.

The University Requirement Courses for Diploma rogrammes are:

a) Engineering Entrepreneurship (SDU22402) – (2 credits)
All students are required to enroll in Engineering Entrepreneurship course. Along with this course, students are advised to take other courses in the Entrepreneurship Category too, of which the total enrolled credits will be able to cover the Optional Course requirement.

b) Philosophy and Current Issues (SDU12902) – (2 credits)
All students are required to take SDU12902 Philosophy & Current Issues. This course is offered to local and international students.

c) Skill and Technology in Communication(SDU12302) – (2 credits)
All student are required to take SDU12302. This course introduces students to the basic aspects of human communication and technology in communication.

d) Bahasa Melayu (SDB41002) - (2 kredit)
Kursus ini wajib diambil oleh semua pelajar tempatan (termasuk pelajar antarabangsa daripada negara-negara di mana bahasa Melayu diamalkan sebagai bahasa kebangsaan atau bahasa pertuturan mereka, seperti pelajar dari Indonesia, Brunei dan Singapura).

e) Bahasa Inggeris Komunikasi 1 (SDB10102)- (2 kredit)
Semua pelajar wajib mengambil tiga (3) kursus Bahasa Inggeris secara berperingkat . Kursus Bahasa Inggeris peringkat pertama (1) ini ditawarkan kepada pelajar tempatan dan antarabangsa dengan mengikut kepada struktur kursus dalam penawaran kurikulum program masing-masing.

f) Bahasa Inggeris Komunikasi 2 (SDB20102)- (2 kredit)
Kursus ini merupakan kursus peringkat kedua (2) Bahasa Inggeris yang wajib diambil oleh semua pelajar selepas lulus kursus Bahasa Inggeris Komunikasi 1.

g) Bahasa Inggeris Komunikasi 3 (SDB30102)- (2 kredit)
Kursus ini merupakan kursus peringkat terakhir Bahasa Inggeris yang wajib diambil oleh semua pelajar selepas lulus kursus Bahasa Inggeris Komunikasi 2.

h) Ko-kurikulum (SDZXXXXX)- (2 kredit)
Semua pelajar diploma diwajibkan untuk mengambil dua (2) kredit kursus kokurikulum Badan Beruniform secara berpakej. Dua (2) kredit kursus ini perlu diambil pada semester pertama (1) dan semester kedua (2) tahun pertama pengajian.

d) Malay Language (SDB41002) - (2 credits)
This course is compulsory for all students 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) Communicative English 1 (SDB10102)- (2 credits)
All students are required to take three (3) levels of English Language courses. This first (1) level English language course is offered to local and international students.

f) Communicative English 2 (SDB20102)- (2 credits)
This course is the second (2) level English language course compulsory for all students to take after passing Communicative English 1 course.

g) Communicative English 3 (SDB30102)- (2 credits)
This course is the final level English language course compulsory for all students to take after passing Communicative English 2 course.

h) Co-curriculum (SDZXXXXX)- (2 credits)
All diploma students are required to take two (2) Uniformed Bodies co-curricular course credits in packages. Two (2) credits of this course should be taken in the first semester (1) and the second (2) semester of the first year of study.

2. KURSUS TERAS

Kursus Teras terdiri daripada kursus-kursus yang wajib diambil oleh semua pelajar. Kursus-kursus ini menjadi keperluan utama untuk pengijazahan. Pelajar yang gagal mana-mana kursus teras mesti mengulanginya dan lulus sebelum layak dipertimbangkan untuk pengijazahan.

3. KURSUS ELEKTIF

Kursus Elektif merupakan beberapa pilihan kursus daripada disiplin program pengajian yang boleh diikuti oleh pelajar bagi menyokong bidang pengkhususan pengajian.

4. KURSUS OPSYEN

Kursus Opsyen adalah kursus diluar bidang pengkhususan yang memberi nilai tambah kepada pelajar.

5. KURSUS AUDIT

Kursus audit merujuk kepada:
i. Kursus yang didaftarkan dalam program terdahulu pelajar yang berkaitan dengan program semasa tetapi tidak memenuhi syarat pemindahan kredit.
ii. Kursus yang didaftarkan dalam program terdahulu pelajar yang tidak berkaitan dengan program semasa pelajar.
iii. Kursus yang didaftarkan dan tidak mempunyai kredit.

2. CORE COURSES

Core Courses are courses specific to a programme that must be taken by students. These courses are part of the requirements for graduation. Students who fail these Core Courses must repeat them and pass before they can graduate.

3. ELECTIVE COURSES

Elective courses are a number of course options from the discipline of the programme that student can follow to support their programme of study specialisation.

4. OPTIONAL COURSES

Optional Courses are courses outside students' field of specialization that provide added value to students.

4. AUDIT COURSES

Audit Courses refers to:
i. A course that is registered in student's previous programme of study which is related to their current programme but does not meet the credit transfer requirements.
ii. A course that is registered in student's previous programme of study which is not related to their current programme.
iii. A course that is registered but has no credit.

PENDEKATAN PEMBELAJARAN DAN PENGAJARAN DI UniMAP

- Kebanyakan Kursus Teras yang ditawarkan merangkumi komponen teori dan komponen praktikal dengan nilaian jam.

- Komponen praktikal terdiri daripada bentuk-bentuk pembelajaran dan pengajaran berikut:

i. **Pembelajaran di dalam makmal dan bengkel -** sepasukan pelajar yang terdiri dari 2-3 orang, menjalankan satu eksperimen. Di dalam beberapa program makmal asas, setiap pelajar menjalankan eksperimen secara individu (1:1) dan bukannya dalam pasukan.

ii. **E-pembelajaran –** pendekatan pembelajaran yang diperkukuhkan dengan ICT, yang melengkapkan pendekatan pembelajaran konvensional. Pelajar mempelajari kursus atau topik-topik tertentu menggunakan modul yang boleh diakses dari laman web UniMAP. Modul mengandungi nota kuliah dalam bentuk multimedia, yang merangkumi audio, video, grafik, animasi, simulasi, permainan, dan pelbagai lagi aktiviti berbentuk interaksi.

iii. **Pendedahan kepada industri –** pelajar menjalankan lawatan ke industri selama tempoh masa tertentu beberapa kali sepanjang pengajiannya di UniMAP. Ini termasuklah program InTra (Latihan Industri), Keusahawanan Industri, dan lain-lain lagi.

TEACHING AND LEARNING APPROACHES AT UniMAP

- *Many of the Core Courses offered include theory component and practical component, the values of contact hours for each.*

- *The practical components consist of the following teaching and learning modes:*

i. *Lab and workshop Intensive Learning – two or three students carry out an experiment in a group. In some basic lab intensive programmes, each student will conduct an experiment individually (1:1) and not in a group.*

ii. *E-Learning – Learning approach that is reinforced using ICT to complement the conventional approach. Students obtain access to course modules and topics via the UniMAP website. The modules consist of lecture notes in multimedia format such as audio, video, graphic, animation, simulation, games and other interactive activities*

iii. *Exposure to Industry – Students will make multiple visits to industry for a certain period of time throughout their study at UniMAP. These include InTra (Industrial Training), Industrial Entrepreneurship Exposure and others.*

LATIHAN INDUSTRI

- Latihan Industri merupakan salah satu syarat/kursus wajib Universiti bagi setiap pelajar Universiti Malaysia Perlis (UniMAP) sebelum dianugerahkan pengijazahan. Latihan Industri ini memberi peluang kepada pelajar-pelajar Universiti merasai konsep pembelajaran dan pengajaran serta pengalaman industri dalam dunia pekerjaan sebelum menempuhi alam pekerjaan kelak. Disamping itu juga, dengan kemahiran dan pengetahuan yang telah diadaptasikan dapat memenuhi hasrat dan keperluan kebolehpasaran graduan demi kemajuan negara.

- Tujuan utama Latihan Industri dilaksanakan adalah:-

i. Menyemai sikap profesional di kalangan pelajar.
ii. Menyedarkan pelajar tentang kepentingan dan kaitan yang kuat antara latihan industri, makmal/amali dan teori yang dipelajari.
iii. Memberi pendedahan awal kepada pelajar tentang persekitaran dan keadaan di industri serta amalannya. Pelajar berpeluang melengkapkan diri sebagai bekalan untuk menghadapi cabaran akan datang, baik di dalam pengajian akademik mahupun rintangan yang mendatang.

INDUSTRIAL TRAINING

- *Industrial Training is one of the University compulsory courses for student of University Malaysia Perlis (UniMAP) before graduating. The Industrial Training Course gives an opportunity for students to experience the working llife at industrial world for the preparation in the future. In addition, the adaptation of industrial experience will meet the needs of graduate employment worldwide and the progress of the country.*

- *The main objectives of the Industrial Training are to:-*

i. *Instil professionalism in students*
ii. *Raise students' awareness on the importance and connection between industrial and lab-intensive training, and engineering theories.*
iii. *Provide students with early exposure to industrial environment and practices. Students also are given the opportunity to equip themselves with the necessary skills and knowledge needed in their respective academic and training fields*

- Kursus Latihan Industri peringkat UniMAP terbahagi mengikut bidang pengajian seperti berikut;

- *UniMAP's Industrial Training Courses are divided into the following fields of study:*

Jadual 4 : Latihan Industri
Table 4 : Industrial Training

Bidang Pengajian / *Field of Study*	Kredit / *Credits*	Tempoh Latihan Industri / *Industrial Training Period*
Sarjana Muda Kejuruteraan / *Bachelor of Engineering*	5	10 Minggu / *weeks*
Sarjana Muda Teknologi Kejuruteraan / *Bachelor of Engineering Technology*	12	24 Minggu / *weeks*
Sarjana Muda Teknologi / *Bachelor of Technology*	12	24 Minggu / *weeks*
Sarjana Muda Perniagaan (Perniagaan Antarabangsa) / *Bachelor of Business (International Business)*	4	8 Minggu / *weeks*
Sarjana Muda Perniagaan (Keusahawan Kejuruteraan) / *Bachelor of Business (Engineering Entreprenuership)*	4	8 Minggu / *weeks*
Sarjana Muda Komunikasi Media Baharu / *Bachelor of New Media Communication*	6	12 Minggu / *weeks*
Diploma Kejuruteraan / *Diploma in Engineering*	8	16 Minggu / *weeks*

- Jam pertemuan selama 8 jam sehari selama 5 hari dalam seminggu (dengan perkiraan 8 jam sehari x 5 hari = 40 jam seminggu) adalah dianggap sebagai jam penilaian (waktu bekerja yang ditetapkan oleh organisasi/ syarikat).

- Bengkel Kepimpinan Latihan Industri akan diselaraskan terlebih dahulu sebelum pelajar menjalani latihan industri. Melalui bengkel ini, pelajar akan diberikan taklimat mengenai proses penyediaan diri sebelum memasuki alam industri. Tidak ketinggalan juga, sesi dialog pelajar bersama industri yang mana pihak universiti akan menjemput pakar-pakar luar (dari industri) untuk membentangkan dan berkongsikan pengalaman mengenai industri secara menyeluruh.

- *Contact hours of 8 hours a day for 5 days a week (with estimated 8 hours a day x 5 days = 40 hours a week) is considered an assessment hour (working hours set by the organization / company).*

- *Industrial Training Leadership Workshop will be coordinated in advance before students undergo industrial training. Through this workshop, students will be briefed on the process of self-preparation before entering the industrial world. Not to be missed is the student dialogue session with the industry where the experts (from the industry) will be invited to present and share experiences about the industry as a whole.*

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TEMPOH PENGAJIAN MINIMUM DAN MAKSIMUM

Pelajar hendaklah menamatkan pengajian mengikut tempoh yang ditetapkan oleh universiti. Tempoh pengajian mengikut program pengajian universiti adalah seperti dalam Jadual 5. Tempoh pengajian adalah berbeza bagi pelajar yang memperolehi pengecualian kredit, penangguhan semester dan pelajar yang menduduki Semester Pendek.

MINIMUM AND MAXIMUM PERIOD OF STUDY

Students must graduate according to the time period as stipulated by the university. The duration of study according to each programme of study is as listed in Table 5. The duration of study is different for students who obtain credit exemption, postponed their semester and for students who sit for the Short Semester.

Jadual 5 : Tempoh minimum atau maksimum pengajian pelajar
Table 5 : The minimum and maximum period of study

Program Pengajian / *Programme*	Minimum (Semester) / *Minimum (Semester)*	Maksimum (Semester) / *Maximum (Semester)*
Sarjana Muda Kejuruteraan / *Bachelor of Engineering*	8	14
Sarjana Muda Teknologi Kejuruteraan / *Bachelor of Engineering Technology*	8	14
Sarjana Muda Teknologi / *Bachelor of Technology*	7	12
Sarjana Muda Perniagaan / *Bachelor of Business*	6	10
Sarjana Muda Komunikasi Media Baharu / *Bachelor of New Media Communication*	6	10
Diploma Kejuruteraan / *Diploma in Engineering*	6	10

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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. Walau bagaimanapun, permohonan pertukaran program pengajian boleh dipertimbangkan dengan alasan-alasan yang kukuh dan tertakluk kepada garis panduan seperti berikut:

1. Pertukaran program pengajian mestilah dipohon dalam tempoh dua (2) semester pertama pengajian di UniMAP. Permohonan pertukaran program pengajian boleh dilakukan seawal semester 1 pengajian. Sekiranya permohonan diluluskan, status pelajar dengan program baharu akan berkuatkuasa pada semester yang berikutnya. Pelajar perlu mengisi borang HEA(B)-06 Borang Permohonan Pertukaran Program Pengajian.

2. Bagi pelajar yang mendapat penajaan dan pembiayaan, pelajar mestilah memaklumkan dan mendapatkan kelulusan daripada penaja masing-masing terlebih dahulu sebelum membuat pemohonan.

TRANSFER OF STUDY PROGRAMME

- *Student application for transfer of programme is an application by the student to transfer from their current study programme to either another programme offered by the same Faculty or to an existing programme offered by another Faculty for specific reasons as certified by the Dean of the related Faculty.*

- *A transfer between programmes is not recommended. However, the application for transfer will be considered if the student has strong reasons and adheres to the following guidelines:*

1. *The programme transfer must be applied within the first two (2) semesters of study at UniMAP. The application can be done as early as the first semester of academic session. If the application is approved, the student's status with regards to the new programme will take place in the following semester. The student will have to complete the HEA(B)-06 Change Programme of Study Application Form.*

2. *Students who are under sponsorship and funding must inform and get approval from their respective sponsors before applying.*

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3. Borang permohonan mestilah disertakan dengan lampiran:

a) Salinan keputusan peperiksaan peringkat SPM.
b) Salinan keputusan STPM/ Matrikulasi/ Diploma/setaraf;
c) Salinan keputusan MUET
d) Slip keputusan peperiksaan semester sebelumnya (dikecualikan bagi permohonan pada semester pertama).
e) Surat kebenaran daripada penaja (sekiranya berkaitan).

• Pertukaran program pengajian adalah tidak dibenarkan kepada pemohon yang statusnya telah kembali aktif setelah berjaya dalam permohonan rayuan kemasukan semula.

• Permohonan pertukaran program hanya dibenarkan sekali sahaja sepanjang tempoh pengajian.

• Kebenaran untuk pertukaran program pengajian adalah tertakluk kepada perakuan Dekan Fakulti asal dan persetujuan Dekan Fakulti yang dipohon, perakuan Pengarah Pusat Pengurusan Akademik serta kelulusan Naib Canselor atau Timbalan Naib Canselor (Akademik dan Antarabangsa).

3. *The following documents must be attached with the application form:*

a) *A copy of SPM level examination results.*
b) *A copy of STPM / Matriculation / Diploma / equivalent results;*
c) *A copy of MUET results*
d) *The previous semester examination results slip (excluded for first semester applications).*
e) *A letter of permission from the sponsor (if applicable).*

• *The programme transfer is not allowed for students whose Active status has been restored upon a successful Re-admission appeal.*

• *The programme transfer is only allowed once during the student's entire study period.*

• *Permission for programme transfer is subject to the approval of the Dean of the original Faculty and consent of the Dean of the Faculty applied for, endorsement by the Director of the Academic Management Centre and approval of the Vice Chancellor or Deputy Vice Chancellor (Academic and International).*

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PENANGGUHAN PENGAJIAN

• Penangguhan pengajian adalah kebenaran kepada pelajar untuk tidak mengikuti pengajian pada sesuatu semester atas alasan-alasan tertentu yang dibenarkan Universiti.

• Permohonan penangguhan pengajian dibenarkan kepada pelajar yang mempunyai masalah kesihatan dan disahkan sakit oleh Hospital Kerajaan/Doktor Panel Universiti / Pusat Kesihatan UniMAP sahaja. Bagi kes-kes tertentu sijil sakit yang bukan daripada Hospital Kerajaan atau Doktor Panel Universiti perlu mendapat perakuan Pusat Kesihatan UniMAP. Permohonan yang diasaskan selain daripada masalah kesihatan boleh dipertimbangkan sekiranya mempunyai alasan yang munasabah dan mendapat kelulusan Naib Canselor/Timbalan Naib Canselor (Akademik & Antarabangsa).

• Pelajar yang memohon untuk menangguhkan pengajian perlu mengisi Borang HEA(B)-07 (Borang Permohonan Tangguh Pengajian) yang boleh didapati di Fakulti. Permohonan perlu mendapat perakuan dan kelulusan yang berikut:

1. Pengesahan Rakan Pendamping Siswa (RPS)
2. Perakuan Dekan Fakulti
3. Perakuan Pengarah Pusat Pengurusan Akademik dan
4. Kelulusan Naib Canselor atau Timbalan Naib Canselor (Akademik & Antarabangsa).

POSTPONEMENT OF STUDY

• *Postponement of studies is an authorization for students to postpone their studies for a semester for specific reasons permitted by the University.*

• *Postponement of study is permitted for students who have health complications and illnesses which has been verified by government hospitals or the University panel of doctors or Pusat Kesihatan UniMAP. For certain cases, students who present medical certificates from hospitals other than those mentioned, must obtain endorsement from Pusat Kesihatan UniMAP. An application made due to reasons other than ill health may be considered if it is reasonable and approved by the Vice Chancellor / Deputy Vice Chancellor (Academic and International).*

• *Students can apply for postponement of study by filling in the HEA(B)-07 Deferment of Study Application Form which can be obtained from the Registrar or their Faculty. Application must be:*

1. *Confirmation by the Rakan Pendamping Siswa (RPS),*
2. *Verification by the Dean of Faculty,*
3. *Verification by the Director of Academic Management, and*
4. *Approved by the Vice Chancellor / Deputy Vice Chancellor (Academic and International)*

- Borang pemohonan penangguhan pengajian pelajar perlu dikemukakan sebelum minggu ketujuh(7) pengajian. Pemohonan selepas minggu ketujuh(7) hanya dibenarkan atas sebab kesihatan atau kes-kes tertentu yang mendapat kelulusan Naib Canselor/Timbalan Naib Canselor (Akademik & Antarabangsa).

- Pelajar tidak dibenarkan menangguhkan pengajian melebihi 2 semester berturut-turut kecuali dengan kelulusan Naib Canselor/Timbalan Naib Canselor (Akademik & Antarabangsa). Bagi kes selain sebab kesihatan, pelajar hanya dibenarkan pulang/keluar daripada universiti setelah permohonan penangguhan pengajian mendapat kelulusan universiti. Sekiranya pelajar telah pulang sebelum kelulusan diperoleh, ia adalah di bawah tanggungjawab pelajar sendiri.

- Bagi pelajar yang menangguhkan pengajian atas sebab kesihatan/sakit atau untuk alasan-alasan yang dibenarkan, semester berkenaan tidak akan diambil kira dalam pengiraan semester yang digunakan untuk pengijazahan (Tanpa Penalti). Bagi kes Tanpa Penalti, kursus yang didaftarkan pada semester tersebut akan digugurkan, dan sekiranya terdapat keputusan peperiksaan yang telah disahkan pada peringkat Majlis Peperiksaan Universiti (MPU), keputusan peperiksaan tersebut juga akan terbatal.

- Pelajar akan diberikan peringatan secara bertulis oleh Fakulti sekiranya didapati tidak mendaftar pada sesuatu semester tanpa memberi sebarang permohonan penangguhan pengajian. Pelajar yang tidak memberi sebarang maklum balas dalam sesuatu tempoh mencapai dua (2) semester berturut- turut boleh ditamatkan pengajian dan disahkan berhenti daripada Universiti.

- *Application for a postponement of study should be submitted before the 7th week of the semester. Application made after that period will only be allowed for medical reasons and other reasons with the approval of the the Vice Chancellor / Deputy Vice Chancellor (Academic and International).*

- *Students are not allowed to postpone their studies for more than 2 semesters consecutively except with the approval of the Vice Chancellor / Deputy Vice Chancellor (Academic and International). In cases not related to health complications, students are only allowed to leave the university after the application for postponement is approved by the university. Students who leave the university before the approval is allowed to do so at their own risk.*

- *Students who postpone their studies due to health or other permissible reasons, the semester will not be taken into account in the calculation for graduation (without penalty). In the case of Without Penalty, courses registered for the semester will be dropped, and examination results confirmed by University Examination Council will also be cancelled.*

- *Students will be given a written reminder by the Faculty if they are found to be unregistered during a semester without any application for study postponement. Students who do not respond within a period of up to two (2) consecutive semesters will be terminated from their studies and confirmed as dropouts from the University.*

PEMINDAHAN KREDIT

- Pemindahan kredit ditakrifkan sebagai pengiktirafan sejumlah kredit yang telah diperolehi oleh seseorang pelajar UniMAP atau IPT lain. Terdapat 2 kategori pemindahan kredit iaitu:

1. Pemindahan Kredit Vertikal atau Pengecualian Kredit
Pemindahan kredit daripada peringkat rendah ke peringkat yang lebih tinggi. Gred dan mata gred bagi kursus yang terlibat TIDAK akan diambil kira dalam pengiraan PNG dan PNGK pelajar.

2. Pemindahan Kredit Horizontal
Pemindahan kredit daripada program di tahap kelayakan yang sama seperti daripada diploma ke diploma ATAU sarjana muda ke sarjana muda. Gred dan mata gred bagi kursus yang terlibat AKAN diambil kira dalam pengiraan PNG dan PNGK pelajar.

- Syarat umum pemindahan pemindahan kredit adalah:

i.   Gred lulus – Gred lulus minimum bagi kursus yang layak dipertimbangkan untuk pemindahan kredit ialah Gred C atau 2.00 (Program Kejuruteraan, Teknologi dan Teknologi Kejuruteraan) dan Gred B atau 3.00 (Program Perniagaan dan Program Sains Sosial).
ii.   Nilai kredit – nilai kredit bagi kursus yang layak dipertimbangkan untuk pemindahan kredit mesti sama atau lebih tinggi dari dengan nilai kredit kursus yang dipohon.
iii. Kesetaraan kandungan kursus-kursus yang terlibat dengan pemindahan kredit mestilah tidak kurang daripada 80%.

CREDIT TRANSFER

- *Credit transfer is defined as the recognition of the amount of credit that has been obtained by a student from UniMAP or from any other higher education institution.*

1. Vertical Credit Transfer or Credit Exemption
Credit transfer from a lower level to a higher level course. Grades and grade points for the courses involved will NOT be taken into the calculation of student's GPA and CGPA.

2. Horizontal Credit Transfer
Credit transfer from programmes at the same level of qualification such as from diploma to diploma OR bachelor degree programme to bachelor degree programme. Grades and grade points for the courses involved WILL be taken into calculation of student's GPA and CGPA.

- *The general terms for credit transfer are:*

i.   *Passing grades - the minimum passing grades for the courses eligible for credit transfer are Grade C or 2.00   (for Engineering programmes,   Engineering   Technology programmes and   Technology programmes) and grade B or 3.00 (For Business Programmes   and   Social   Science Programme).*
ii.   *Credit Value – the credit value of the course eligible for credit transfer must be the same or higher than the credit value of the course applied for credit transfer by the student.*
iii. *The content of the course must have at least 80% similarities to the course for which credit transfer is applied for.*

SEMESTER TAMBAHAN

- Semester Tambahan ditawarkan kepada pelajar-pelajar yang mahu mengulang kursus-kursus yang gagal pada semester biasa, tertakluk kepada syarat dan kelulusan oleh Senat Universiti. Tempoh Semester Tambahan merangkumi empat(4) minggu pembelajaran dan satu(1) minggu peperiksaan. Cuti pertengahan semester dan ulangkaji tidak diperuntukkan untuk semester ini.

- Pelajar wajib mendaftarkan kursus dan pendaftaran hendaklah tidak melebihi 9 kredit per semester dan terhad kepada 16 kredit berdaftar untuk keseluruhan tahun pengajian. Pembelajaran dan pengajaran adalah dalam bentuk tutorial selama 4 minggu dan kehadiran pelajar dalam tutorial yang dikendalikan juga diwajibkan dan kedatangan adalah direkodkan.

- Syarat-syarat kelayakan mengikuti Semester Tambahan adalah:

1. Kursus yang ditawarkan dalam Semester Tambahan layak dimohon oleh pelajar yang mendapat:

   a. Pelajar yang mendapat gred D dan ke bawah untuk Kursus Teras
      ATAU
   b. Pelajar yang mendapat gred C- dan ke bawah untuk Kursus Wajib Universiti;
      DAN
   c. Lulus penilaian berterusan dengan markah 40% bagi kursus-kursus yang berkaitan.

ADDITIONAL SEMESTER

- *The Additional Semester are offered to students who wish to repeat failed courses in the regular semester, subject to conditions and approval by the University Senate. Additional semester period includes four (4) weeks of study and one (1) week of exams. Mid-semester break and revision week are not provided for this semester.*

- *Students must register for courses and enrollment must not exceed 9 credits per semester and be limited to 16 credits registered for the entire academic year. Learning and teaching are in the form of a 4-week tutorial and student attendance in the tutorial is also required and attendance is recorded.*

- *The eligibility requirements for the Additional Semester are:*

1. *Courses offered in the Additional Semester are eligible for students who have:*

   a. *Student who obtained a grade D and below for Core Courses;*
      OR
   b. *Student who obtained grade C- and below for University Requirement Courses;*
      AND
   c. *Obtain a passing mark for continuous assessment with a score of 40% for relevant courses.*

2. Kebenaran untuk mengambil Semester Tambahan bagi tujuan membaiki gred (D+ atau C- bagi Kursus Teras) hanya akan diberikan kepada pelajar tahun akhir sahaja.

3. Pelajar yang mendapat gred F* dan X tidak layak untuk mendaftar Semester Tambahan.

4. Semester Tambahan hanya boleh diduduki oleh pelajar yang telah mendaftar dan membayar yuran sahaja. Tiada rayuan pengecualian bayaran dibenarkan untuk membolehkan pelajar membuat pendaftaran.

5. Pelajar yang terlibat dengan latihan industri semasa semester tambahan berlangsung tidak dibenarkan untuk mengikuti semester tambahan.

2. *Permission to take Additional Semester for the purpose of grade improvement (D+ or C- for Core Courses) will only be given to final year students.*

3. *Students who have F * and X grades are not eligible to enroll in additional semesters.*

4. *Additional Semester can only be taken by students who have registered and paid the fees. Students are not able to apply for exemption in payment when registering.*

5. *Student engaged in industrial training during the Additional Semester are not allowed to attend the Additional Semester*

SISTEM PEPERIKSAAN DAN PENILAIAN

- Keputusan sesuatu kursus biasanya ditentukan berdasarkan komponen penilaian secara berterusan dan peperiksaan. Walau bagaimanapun, penilaian sesuatu kursus adalah tertakluk kepada keperluan kursus tersebut yang telah diluluskan oleh Senat.

- Peperiksaan akhir diadakan pada hujung semester. Setiap pelajar mestilah terlebih dahulu memenuhi syarat kehadiran ke kuliah, tutorial, amali dan sebagainya sebelum layak menduduki peperiksaan. Pelajar yang gagal memenuhi syarat kehadiran 80% boleh dihalang daripada menduduki peperiksaan akhir.

- Prestasi pelajar dalam sesuatu kursus dinilaikan oleh gred yang diperoleh. Hubungan antara gred dan mata nilai adalah seperti dalam Jadual 6 :

EXAMINATION AND EVALUATION SYSTEM

- *Student results in a course are usually determined based on the components of continuous assessment and examination. However, the assessment of a course is subject to the requirements of the course which have been approved by the Senate.*

- *The final exam is conducted at the end of the semester. Every student must first meet the attendance requirements for lectures, tutorials, practical and so on before being eligible to sit for the exam. Students who fail to meet the 80% attendance requirement may be barred from sitting the final exam.*

- *Student performance in a course is presented by the grades obtained. The relationship between grade and point value is as shown in Table 6 :*

Jadual 6 : Hubungan Antara Gred dan Mata Nilai
Table 6 : 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

- Gred LULUS untuk sesuatu kursus adalah seperti berikut:-

i. Gred LULUS bagi sesuatu kursus Wajib Universiti adalah Gred C dan ke atas (Gred A hingga C)
ii. Gred LULUS bagi sesuatu kursus Teras adalah Gred D+ dan ke atas (Gred A hingga D+).

- *Passing grades for a course are as follows;*

i. *The grade for PASS for a University Requirement course is Grade C and above (Grade A to C)*
ii. *The grade for PASS for a Core course is Grade D+ and above (Grade A to D+)*

Jadual 7 : Pengiraan PNG dan PNGK:
Table 7: Calculation of GPA and CGPA

KURSUS/ COURSE	KREDIT/ CREDIT	NILAI GRED/ *GRADE VALUE* [NG]	GRED/ *GRADE* [G]	JUMLAH/ *TOTAL* NG
SDQ10002	2	3.75	A-	7.50
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
	17			51.75
PNG [*GPA*] = 51.75/17 = 3.04					
SDQ20303	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]	= $\dfrac{\text{Jumlah NG Terkumpul [\textit{Total Accumulated Grade Value}]}}{\text{Jumlah Bil. Kredit Terkumpul [\textit{Total Accumulated Credits}]}}$ = $\dfrac{51.75 + 50.50}{17 + 16}$ = 3.09

RAYUAN SEMAKAN SEMULA KEPUTUSAN PEPERIKSAAN

- Atas sebab-sebab tertentu, pelajar mungkin ingin memohon untuk penyemakan dijalankan ke atas keputusan peperiksaan akhir semester pelajar. Pelajar hanya dibenarkan memohon menyemak semula keputusan peperiksaan akhir semester dalam tempoh 10 hari selepas keputusan rasmi peperiksaan dikeluarkan oleh Pusat Pengurusan Akademik. Permohonan selepas tempoh ini tidak akan dipertimbangkan.

- Pelajar perlu menghantar Borang HEA (C)-02(a) (Borang Rayuan Semakan Semula Keputusan Peperiksaan) kepada Unit Peperiksaan & Pengijazahan (UPP), Bahagian Pengurusan Akademik, Pusat Pengurusan Akademik. Borang rayuan hendaklah dikemukakan dalam tempoh 10 hari bermula dari hari keputusan rasmi diumumkan. Pelajar perlu mengisi borang dalam dua (2) salinan. Satu (1) salinan adalah untuk simpanan pelajar. Kadar bayaran rayuan ialah RM50 untuk setiap kursus.

PENGGUNAAN BAHASA INGGERIS

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

APPEAL FOR EXAMINATION RESULTS REVISION

- *In certain cases, a student might wish to apply for a revision of their examination results. Students are only allowed to appeal for a revision within the duration of 10 days after the examination results are officially released by the Academic Management Centre (AMC). Application after this duration will not be considered.*

- *Students must submit the HEA(C)-02(a) form (Appeal for Review of Examination Results) to the Examination & Graduation Unit, Academic Management Division, and Academic Management Centre (AMC). The appeal form must be submitted within the period of 10 days after the official result is announced. Students will have to fill in their details in two (2) copies, one of which is the student copy. Students will be charged RM50 per course for each course appealed.*

ENGLISH LANGUAGE USE

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

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SISTEM RAKAN PENDAMPING SISWA (RPS)

- Sistem Penasihatan Akademik menjadi penghubung antara pelajar dengan pensyarah untuk berbincang dan membuat keputusan berkenaan rancangan pengajian pelajar. Walaupun pelajar mendaftar sendiri secara dalam talian (*on-line*), pelajar perlu berjumpa dengan Rakan Pendamping Siswa (RPS) untuk mendapatkan nasihat semasa tempoh pendaftaran.

- RPS adalah satu sistem di mana staf akademik menyelia sekumpulan kecil pelajar sepanjang tempoh pengajian pelajar di UniMAP. 'Penyeliaan' di sini melibatkan perjumpaan yang kerap secara tidak formal, di mana pelajar boleh bersantai dengan staf yang berperanan sebagai "rakan" bagi membincangkan isu-isu akademik dan sosial yang berkenaan dengan mereka. Pelajar yang mempunyai prestasi akademik yang tidak memuaskan boleh merujuk kepada RPS sebagai 'mentor', dan pelajar tersebut menjadi 'mentee', di mana ini akan benar-benar membantu pelajar dalam setiap perkara yang memerlukan penyelesaian.

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'.*

Online Student Information

UniMAP Academic Guide

DIREKTORI / *DIRECTORY*

Pejabat Timb. Naib Canselor (Akademik & Antarabangsa) /   04-941 4159
Deputy Vice Chancellor (Academic & International) Office

Pusat Pengurusan Akademik (AMC) /   04-941 4158
Academic Management Centre

Bahagian Pemantapan Akademik (AED) /   04-941 4157
Academic Enhancement Division

Bahagian Pengurusan Akademik (AMD) / *Academic Management Division*
▪Unit Kemasukan dan Rekod Pelajar / *Student Admissions & Records Unit* 04-941 4056/4065
▪Unit Peperiksaan dan Pengijazahan / *Examination & Convocation Unit*   04-941 4057/4058
▪Unit SENAT / *Senat Unit*   04-941 4060

Jabatan Bendahari / *Bursary Department*   04-941 4020/4021/4022

Jabatan Pendaftar / *Registrar Department*   04-941 4081

Pusat Pembangunan and Perkhidmatan Pelajar (P3P) /   04-941 4434
Centre for Student Development and Services

Perpustakaan Tuanku Syed Faizuddin Putra (PTSFP) /   04-988 5422/5410
Tuanku Syed Faizuddin Putra Library

FACULTY OF ELECTRICAL ENGINEERING TECHNOLOGY (FTKE)

Programmes Offered:

1. Bachelor of Electrical Engineering with Honours
2. Bachelor of Mechatronic Engineering with Honours
3. Bachelor of Electrical Engineering Technology (Industrial Power) with Honours
4. Bachelor of Electrical Engineering Technology (Robotic And Automation Technology) with Honours
5. Bachelor of Bachelor of Technology in Electrical Maintenance System with Honours
6. Diploma in Electrical Engineering
7. Diploma in Mechatronic Engineering

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Kampus Alam UniMAP Pauh Putra
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PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

The Programme Educational Objectives for the entire Diploma in Electrical Engineering programme at Universiti Malaysia Perlis (UniMAP) is as follows:

PEO 1
Graduates are competence in electrical 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)

PO 1
Knowledge: Apply knowledge of applied mathematics, applied science, engineering fundamentals and an engineering specialization to wide practicalprocedures and practices.

PO 2
Problem analysis: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specificto their field of activity.

PO 3
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, cultural, societal, and environmental considerations.

PO 4
Investigation: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests andmeasurements.

PO 5
Modern Tool Usage: Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations.

PO 6
The Engineer and Society: Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technician practice and solutions to well-defined engineering problems.

PO 7
Environment and Sustainability: Understand and evaluate the sustainability and impact of engineering technician work in the solution of well- defined engineering problems in societal and environmental contexts.

PO 8
Ethics: Understand and commit to professional ethics and responsibilities andnorms of technician practice.

PO 9
Individual and Team Work: Function effectively as an individual, and as amember in diverse technical teams.

PO 10
Communications: Communicate effectively 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.

PO 11
Project Management and Finance: Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projectsin multidisciplinary environments.

PO 12
Life-Long Learning: Recognise the need for, and have the ability to engage in independent updating in the context of specialised technical knowledge.

CURRICULUM STRUCTURE
UR4522001 DIPLOMA IN ELECTRICAL ENGINEERING
INTAKE 2022/2023

YEAR	FIRST		SECOND		THIRD	
SEMESTER	I	II	III	IV	V	VI
ENGINEERING CORE COURSES (76)	SDQ10002 Matematik Awalan [Preliminary Mathematics]	SDQ10103 Matematik I [Mathematics I]	SDQ20203 Matematik II [Mathematics II]	SDQ20303 Matematik III [Mathematics III]	EDJ32003 Sistem Kuasa II [Power System II]	
	EDJ12002 Kemahiran Kejuruteraan Elektrik [Electrical Engineering Skills]	EDJ12503 Asas Litar Elektrik I [Electric Circuit Fundamental I]	EDJ22003 Asas Litar Elektrik II [Electric Circuit Fundamental II]	EDJ22303 Peralatan Elektrik dan Pengukuran [Electrical Instrumentation and Measurement]	EDJ32103 Elektronik Kuasa [Power Electronic]	
	EDJ12102 Pengaturcaraan Komputer [Computer Programming]	EDJ12603 Peranti Elektronik [Electronic Devices]	EDJ22103 Pengawal Logik Boleh Atur Cara [Programmable Logic Controller]	EDJ22403 Sistem Kuasa I [Power System I]	EDJ32203 Asas Pentauliah dan Penyelenggaraan Sistem Elektrik [Power System Commissioning and Maintenance Practice]	EDJ30108 Latihan Industri [Industrial Training]
	EDJ12202 Sains Kejuruteraan [Engineering Science]	EDJ12703 Mikropengawal [Microcontroller]	EDJ22203 Elektronik Analog [Analogue Electronics]	EDJ22503 Reka bentuk Pemasangan Elektrik [Electrical Installation Design]	EDJ32304 Projek Tahun Akhir [Final Year Project]	
	EDJ12302 Lukisan Terbantu Komputer [Computer Aided Drafting]			EDJ22603 Prinsip Kawalan [Control Principle]	EDJ30002 Keselamatan Industri, Pengurusan Kualiti dan Etika [Industrial Safety, Quality Management and Ethics]	
	EDJ12403 Sistem Digit [Digital System]			EDJ22703 Mesin Elektrik dan Aplikasi [Electrical Machine and Application]		
76	11	12	12	18	15	8
UNIVERSITY REQUIREMENT COURSES (16)	SDU12302 Kemahiran dan Teknologi dalam Komunikasi [Skill and Technology In Communication]	SDB20102 Bahasa Inggeris Komunikasi 2 [Communicative English 2]	SDB30102 Bahasa Inggeris Komunikasi 3 [Communicative English 3]		SDU22402 Keusahawanan Kejuruteraan [Engineering Entrepreneurship]	
	SDB10102 Bahasa Inggeris Komunikasi 1 [Communicative English 1]	SDB41002 Bahasa Melayu [Malay Language]	SDU12902 Falsafah dan Isu Semasa [Philosophy and Current Issues]			
	SDZ11XX1 Ko-Kurikulum I [Co-curriculum I]	SDZ12XX1 Ko-Kurikulum II [Co-curriculum II]				
16	5	5	4	0	2	
92	16	17	16	18	17	8

Note:
SDQ10002: Preliminary Mathematics : Prerequisite Mathematics I (SDQ10103) for SPM-level Additional Mathematics with grade D.

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PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

The Programme Educational Objectives for the entire Diploma in Mechatronic Engineering programme at Universiti Malaysia Perlis (UniMAP) is as follows:

PEO 1
Graduates are competence in mechatronic 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.

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PROGRAMME OUTCOMES (PO)

PO 1
Knowledge: Apply knowledge of applied mathematics, applied science, engineering fundamentals and an engineering specialization to wide practicalprocedures and practices.

PO 2
Problem analysis: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specificto their field of activity.

PO 3
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, cultural, societal, and environmental considerations.

PO 4
Investigation: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests andmeasurements.

PO 5
Modern Tool Usage: Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations.

PO 6
The Engineer and Society: Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technician practice and solutions to well-defined engineering problems.

PO 7
Environment and Sustainability: Understand and evaluate the sustainability and impact of engineering technician work in the solution of well- defined engineering problems in societal and environmental contexts.

PO 8
Ethics: Understand and commit to professional ethics and responsibilities andnorms of technician practice.

PO 9
Individual and Team Work: Function effectively as an individual, and as amember in diverse technical teams.

PO 10
Communications: Communicate effectively 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.

PO 11
Project Management and Finance: Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projectsin multidisciplinary environments.

PO 12
Life-Long Learning: Recognise the need for, and have the ability to engage in independent updating in the context of specialised technical knowledge.

CURRICULUM STRUCTURE
UR4523001 DIPLOMA IN MECHATRONIC ENGINEERING
INTAKE 2022/2023

YEAR	FIRST		SECOND		THIRD	
SEMESTER	I	II	III	IV	V	VI
ENGINEERING CORE COURSES (78)	SDQ10002 Matematik Awalan [Preliminary Mathematics]	SDQ10103 Matematik I [Mathematics I]	SDQ20203 Matematik II [Mathematics II]	SDQ20303 Matematik III [Mathematics III]	EDJ39404 Projek Tahun Akhir [Final Year Project]	EDJ30108 Latihan Industri [Industrial Training]
	EDJ16002 Kemahiran Kejuruteraan Mekatronik [Mechatronic Engineering Skills]	EDJ16402 Pengaturcaraan Komputer [Computer Programming]	EDJ28003 Thermo-Bendalir [Thermo-Fluids]	EDJ29403 Pnuematik dan Hidraulik [Pneumatics and Hydraulics]	EDJ39103 Automasi Industri dan Robotik [Industrial Automation and Robotics]	
	EDJ16102 Lukisan Kejuruteraan [Engineering Drawing]	EDJ18503 Mekanik Gunaan [Applied Mechanics]	EDJ27103 Teknologi Elektrik [Electrical Technology]	EDJ28503 Elemen Mekanisma Mesin [Machine Mechanism Elements]	EDJ39203 Sistem Kawalan [Control Systems]	
	EDJ16202 Sains Kejuruteraan [Engineering Science]	EDJ16602 Lukisan Berbantu Komputer [Computer Aided Drafting]	EDJ29202 Amalan Bengkel Mekatronik [Mechatronics Workshop Practice]	EDJ27602 Pengukuran & Penderia [Sensors & Measurements]	EDJ38303 Proses - Proses Pembuatan [Manufacturing Processes]	
	EDJ17303 Litar Elektrik [Electrical Circuits]	EDJ17703 Elektronik Analog [Analogue Electronics]	EDJ27303 Sistem Digit [Digital System]	EDJ29703 Sistem Terbenam dan Pengantaramukaan [Embedded Systems and Interfacing]	EDJ30002 Keelamatan Industri, Pengurusan Kualiti & Etika [Industrial Safety, Quality Management & Ethics]	
		EDJ18802 Kejuruteraan Bahan [Engineering Materials]		EDJ29803 Pengawal Logik Boleh Aturcara [Programmable Logic Controller]		
78	9	15	14	17	15	8
UNIVERSITY REQUIREMENT COURSES (16)	SDU12302 Kemahiran dan Teknologi dalam Komunikasi [Skill and Technology In Communication]	SDB20102 Bahasa Inggeris Komunikasi 2 [Communicative English 2]	SDB30102 Bahasa Inggeris Komunikasi 3 [Communicative English 3]		SDU22402 Keusahawanan Kejuruteraan [Engineering Entrepreneurship]	
	SDB10102 Bahasa Inggeris Komunikasi 1 [Communicative English 1]	SDZ12XX1 Ko-Kurikulum II [Co-curriculum II]	SDU12902 Falsafah dan Isu Semasa [Philosophy and Current Issues]			
	SDB41002 Bahasa Melayu [Malay Language]					
	SDZ11XX1 Ko-Kurikulum I [Co-curriculumI]					
16	7	3	4	0	2	0
94	16	18	18	17	17	8

Note:
SDQ10002: Preliminary Mathematics   : Prerequisite Mathematics I (SDQ10103) for SPM-level Additional Mathematics with grade D.

LIST OF COURSES:

COURSE CODE	COURSE NAME
EDJ12002	Kemahiran Kejuruteraan Elektrik *[Electrical Engineering Skills]*
EDJ12102	Pengaturcaraan Komputer *[Computer Programming]*
EDJ12202	Sains Kejuruteraan *[Engineering Science]*
EDJ12302	Lukisan Terbantu Komputer *[Computer Aided Drafting]*
EDJ12403	Sistem Digit *[Digital System]*
EDJ12503	Asas Litar Elektrik I *[Electric Circuit Fundamental I]*
EDJ12603	Peranti Elektronik *[Electronic Devices]*
EDJ12703	Mikropengawal *[Microcontroller]*
EDJ22003	Asas Litar Elektrik II *[Electric Circuit Fundamental II]*
EDJ22103	Pengawal Logik Boleh Atur Cara *[Programmable Logic Controller]*
EDJ22203	Elektronik Analog *[Analogue Electronics]*
EDJ22303	Peralatan Elektrik Dan Pengukuran *[Electrical Instrumentation And Measurement]*
EDJ22403	Sistem Kuasa I *[Power System I]*
EDJ22503	Reka Bentuk Pemasangan Elektrik *[Electrical Installation Design]*
EDJ22603	Prinsip Kawalan *[Control Principle]*
EDJ22703	Mesin Elektrik Dan Aplikasi *[Electrical Machine And Application]*
EDJ30002	Keselamatan Industri, Pengurusan Kualiti Dan Etika *[Industrial Safety, Quality Management And Ethics]*
EDJ30108	Latihan Industri *[Industrial Training]*
EDJ32003	Sistem Kuasa II *[Power System II]*

LIST OF COURSES:

COURSE CODE	COURSE NAME
EDJ32103	Elektronik Kuasa [Power Electronic]
EDJ32203	Asas Pentauliah Dan Penyelenggaraan Sistem Elektrik [Power System Commissioning And Maintenance Practice]
EDJ32304	Projek Tahun Akhir [Final Year Project]
EDJ16002	Kemahiran Kejuruteraan Mekatronik [Mechatronic Engineering Skills]
EDJ16102	Lukisan Kejuruteraan [Engineering Drawing]
EDJ16202	Sains Kejuruteraan [Engineering Science]
EDJ16402	Pengaturcaraan Komputer [Computer Programming]
EDJ16602	Lukisan Terbantu Komputer [Computer Aided Drafting]
EDJ17303	Litar Elektrik [Electrical Circuits]
EDJ17703	Elektronik Analog [Analogue Electronics]
EDJ18503	Mekanik Gunaan [Applied Mechanics]
EDJ18802	Kejuruteraan Bahan [Engineering Materials]
EDJ27103	Teknologi Elektrik [Electrical Technology]
EDJ27303	Sistem Digit [Digital System]
EDJ27602	Pengukuran & Penderia [Sensors & Measurements]
EDJ28003	Thermo - Bendalir [Thermo-Fluids]
EDJ28503	Elemen Mekanisma Mesin [Machine Mechanism Elements]
EDJ29202	Amalan Bengkel Mekatronik [Mechatronics Workshop Practice]
EDJ29403	Pneumatik dan Hidraulik [Pneumatics And Hydraulics]

LIST OF COURSES:

COURSE CODE	COURSE NAME
EDJ29703	Sistem Terbenam dan Pengantaramukaan *[Embedded Systems And Interfacing]*
EDJ29803	Pegawal Logik Boleh Aturcara *[Programmable Logic Controller]*
EDJ30002	*Keselamatan Industri , Pengurusan Kualiti & Etika [Industrial Safety, Quality Management & Ethics]*
EDJ30108	Latihan Industri *[Industrial Training]*
EDJ38303	Proses-Proses Pembuatan *[Manufacturing Processes]*
EDJ39103	Automasi Industri dan Robotik *[Industrial Automation And Robotics]*
EDJ39203	Sistem Kawalan *[Control Systems]*
EDJ39404	Projek Tahun Akhir *[Final Year Project]*

EDJ12002 KEMAHIRAN KEJURUTERAAN ELEKTRIK [ELECTRICAL ENGINEERING SKILLS]

No of Credits: 2

Course Synopsis:
This subject is a 100% practical coursework. This course contains five modules which are Electrical Wiring & Installation, Technical Drawing, Basic Electronics, Basic MatLab Programming and Basic Arduino Programming.

Course Outcomes:
1. Ability to install electrical wiring by applying proper techniques and follow regulations..
2. Ability to apply and assess electrical wiring procedures of legal related to IEE Wiring Regulations.
3. Ability to apply a standard practiced of manual technical drawing.
4. Ability to apply and reproduce electronic prototyping basic skills, and standard practice of PCB layout using common software.
5. Ability to apply programming to solve basic mathematical equations related to engineering.
6. Ability to apply programming in creating objects or environments by using a general microcontroller.

EDJ12102 PENGATUCARAAN KOMPUTER [COMPUTER PROGRAMMING]

No of Credits: 2

Course Synopsis:
This course introduces students to basic computer programming, for problem solving analysis and programming concept including variables, operator, control structure, function, array, file processing, structure and pointer. Student also learn how to write programming using C language and solve engineering related problem using computer programmig technique.

Course Outcomes:
1. Ability to apply knowledge of basic computer programming.
2. Ability to design solution related problems using computer programming techniques with flowchart and pseudocode.
3. Ability to apply appropriate simulation tool for computer programming analysis.
4. Ability to function effectively in a group/team to design mini project using knowledge from computer programming.

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 field. From the basic engineering science student able to apply, design, and develop solution in engineering. To empower students in the STEM fields, this subject is compulsory to all engineering student.

Course Outcomes:
1. Ability to apply knowledge of principle concepts of science.
2. Ability to analyze and compare the principle concepts of science and engineering.
3. Ability to communicate effectively on principle concepts of science in engineering applications.
4. Ability to engage in independent and life long learning on the theory and the practical knowledge of the concepts of science in engineering applications.

EDJ12302 LUKISAN BERBANTU 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 electrical engineering drawing.

Course Outcomes:
1. Ability to apply knowledge on fundamental concepts of Computer Aided Drafting in engineering related problems.
2. Ability to illustrate engineering drawing by using proper techniques.
3. Ability to use suitable drawing techniques of Computer Aided Drafting to construct a simple product and design to an electrical engineering drawing in practical work based on IEE, IEC and JKR standard.
4. Able to perform in group/teams to illustrate engineering drawing in a group project.

EDJ12403 SISTEM DIGIT [DIGITAL SYSTEM]

No of Credits: 3

Course Synopsis:
This course introduces students to the fundamentals of digital electronic circuits familiarization through exposure of basic logic gates. The course then develops students to appreciate simple digital applications such as arithmetic combinational logic circuit. Flip-flops and its basic application are introducing 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 knowledge of basic principle and theoretical concepts of digital system.
2. Ability to analyze the combinational and sequential logic circuit configuration.
3. Ability to design digital circuit for various digital applications.
4. Ability to investigate and evaluate operational parameters of digital circuit and demonstrate its functional.

EDJ12503 ASAS LITAR ELEKTRIK I [ELECTRIC CIRCUIT FUNDAMENTAL I]

No of Credits: 3

Course Synopsis:
This course introduce students to the fundamentals of DC circuit analysis. The course develop 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 circuit.

Course Outcomes:
1. Ability to apply knowledge of charge, current, voltage, resistance, power, energy and elementary application of resistors, ideal current and voltage source in electrical circuit and its basic laws.
2. Ability to analyze DC circuits using methods of analysis and circuit theorem.
3. Ability to design digital circuit for various digital applications.
4. Ability to conduct investigation and evaluate the concept of electrical rules by examining DC circuit in the laboratory.

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
• Investigates the applications of these devices.
• Solving BJT and FET parameters using various type of biasing.

Course Outcomes:
1. Ability to apply knowledge of diode operation and applications by understanding the theory of semiconductor materials.
2. Ability to analyze and solve the basic biasing techniques of electronic devices.
3. Ability to conduct investigation on electronic devices and their performances through theoretical and simulation
4. Ability to select and apply appropriate simulation tools for electronic devices related problems.

EDJ12703 MIKROPENGAWAL [MICROCONTROLLER]

No of Credits: 3

Course Synopsis:
The aims 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 apply knowledge of basic architecture, C Programming Language and theory of microcontroller system.
2. Ability to design solutions for microcontroller interfacing to the I/O devices.
3. Ability to investigate and analyze a simple application based on microcontroller system.
4. Ability to function effectively in a group / team to design solutions for engineering problems using microcontroller system.

EDJ22003 ASAS LITAR ELEKTRIK II [ELECTRIC CIRCUIT FUNDAMENTAL II]

No of Credits: 3

Course Synopsis:
This course will provide the student with the basic understanding of working with circuits involving Alternating Current (AC), which includes sinusoidal waveforms, vectors & phasors. The course then taught the students to analyze ac circuit using methods of circuit analysis and circuit theorem.

Course Outcomes:
1. Ability to apply knowledge of electrical rules in AC circuit.
2. Ability to analyze AC steady-state analysis, steady-state power analysis and magnetically coupled circuits.
3. Ability to conduct investigation and evaluate the concept of electrical rules by examining AC circuit in the laboratory.
4. Ability to apply appropriate techniques to calibrate and measure basic electrical values using digital osciloscope.

EDJ22103 PENGAWAL LOGIK BOLEH ATURCARA [PROGRAMMABLE LOGIC CONTROLLER]

No of Credits: 3

Course Synopsis:
This course describe the basic operation and characteristics of PLC, PLC information and communication techniques, programming methods and programming techniques. The knowledge is used to design a simple PLC control system especially by using ladder diagram method.

Course Outcomes:
1. Ability to apply knowledge of PLC concept and various type of components in electrical controller.
2. Ability to analyse and interpret data related to the basic concept of PLC and its applications.
3. Ability to design a basic timer/counter and special instruction programming, editing and program observation.
4. Ability to communicate effectively on PLC concepts and its industrial control application through technical report and presentation.

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 apply knowledge for various types of power amplifier classes.
2. Ability to analyze the characteristics of BJTs as multistage amplifiers.
3. Ability to design the operation of BJTs and FETs with the circuit configurations as an amplifier circuits.
4. Ability to apply appropriate techniques to measure characteristics of transistor and amplifier.

EDJ22303 PENGUKURAN ELEKTRIK & INSTRUMENTASI [ELECTRICAL INSTRUMENTATION & MEASUREMENT]

No of Credits: 3

Course Synopsis:
This course objective is to introduce the student the basic concepts of intrumentation and measurement methods, designs of measuring devices, bridge methods and tranducers. 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 knowledge the basic principle of measurement and instrumentation to minimise error.
2. Ability to analyze and differentiate the categorize the sensors and transducer and oscilloscope for measurement of non-electricl quantity and electrical quantity.
3. Ability to design the DC and AC measurement tools using DC meter, DC bridges and AC bridges in the electrical measurement. Abiity to select and apply appropriate technique to DC and AC measurement tools.
4. Abiity to select and apply appropriate technique for DC and AC measurement.

EDJ22403 SISTEM KUASA I [POWER SYSTEM I]

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 system 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 the knowledge of basic principle of power system, electrical power generation and transmission, and faults in the power system to the solution of complex engineering problem.
2. Ability to analyze and interpret data related to basic power system, transmission line parameters, and faults analysis in power system using Matlab and PowerWorld Software.
3. Ability to function effectively in a group/team to demonstrate the working of typical electrical generation plants and their operation concept in electrical power system.
4. Ability to engage in independent and life-long learning on the principle of typical electrical generation plants and their operation concept in electrical power system.

EDJ22503 REKABENTUK PEMASANGAN ELEKTRIK [ELECTRICAL INSTALLATION DESIGN]

No of Credits: 3

Course Synopsis:
This course is designed and structured to provide electrical assistant engineers /technical assistant 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. Able to apply knowledge of an electrical installation design based on IEE, IEC standard and JKR guidelines.
2. Able to design an electrical installation on lighting system, final circuit, and cable of a building based on IEE, IEC standar and JKR guidelines.
3. Able to prepare actual working project based on IEC, IEC standards and JKR guidelines in a group project.
4. Able to design an electrical installation on lighting system, final circuit, and cable for a desired output in a group project.
5. Able to apply economic decision making principles to engineering project.

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 modeling 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 analyze and solve the theoretical, system models and analysis methods in control system.
2. Ability to investigate and analyze operational parameters for control systems, stability analysis, root locus and frequency response method.
3. Ability to engage in independent and life-long learning on the theory and evaluate on the stability of the control system applications.

EDJ22703 MESIN ELEKTRIK & APLIKASI [ELECTRICAL MACHINE & APPLICATIONS]

No of Credits: 3

Course Synopsis:
The course can be divided into five main topics which are single and three phase transformer, 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 and evaluate the behaviour of single phase and three-phase transformers using standard equivalent circuit model .
2. Ability to analyze and evaluate the characteristic of Induction Machines using standard equivalent circuit model .
3. Ability to investigate and analyze the characteristic of electrical machines.
4. Ability to analyze and evaluate the behaviour of various general DC Machines using standard equivalent circuit model.

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 practised by industries. Students are understanding and demonstrate morality and ethics as professional technicians based on ethical code practise. At the end of this course, students are expected to be the best practitioners and professionals in a real industrial environment in safety, quality and ethic.

Course Outcomes:
1. Ability to apply and access knowledge of the societal, health, safety, legal and cultural issues of Industrial Safety and QMS based on Act, Regulation, Standard, or Requirements.
2. Ability to understand 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 apply ethical principles and analyse issues and challenges related to engineering ethics and the Code of Ethics.
4. Ability to engage in independent and life-long learning on the case studies in the context of Industrial Safety, QMS or Ethical issues.

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 log book 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 II [POWER SYSTEM II]

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 system.

Course Outcomes:
1. Ability to analyze and solve the theoretical of transmission line parameters and models,power transfer and protection to the solution of complex engineering problem.
2. Ability to analyse and interpret data related to electrical power system.
3. Ability to function effectively in a group / team 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 converters 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 analyse and solve basic power computations and basic power electronics converter in power electronics.
3. Ability to conduct investigation and evaluate inverters and their performances through theoretical and simulation.

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EDJ32203 ASAS PERTAULIAHAN & PENYELENGGARAAN SISTEM ELEKTRIK [POWER SYSTEM COMMISSIONING & MAINTENANCE PRACTICE]

No of Credits: 3

Course Synopsis:
This course is to provide students with clear understanding of maintenance and`commisioning practice of electrical power system equipment. It will covers both practical and theoritical information on the maintenance and testing of transformer, circuit breaker, protective relay and other electrical equipment. In pratical session students will devided to several groups to carry out laboratory experiments. Student will also gain knowledge regarding standard documentation, policy, investigation technique and data analysis prior to the commisioning. In addition, students will be exposed to standard apparatus and equipment used by utility for commencing maintenance and commisioning work.

Course Outcomes:
1. Ability to apply knowledge on system parameter and testing data on insulation, underground cables and stationary battery.
2. Ability to analyse the performances of system parameter and testing data on system earthing, protective relay, power transformer and current transformer.
3. Ability to apply electrical testing and analyse the testing data on electrical substation component.
4. Ability to identify the regulations regarding safety issues on power system component testing.

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 understand the problems, troubleshooting, identify, solves 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 identify and analyze the relevant engineering principles and theories to solve the engineering problems.
2. Ability to design the appropriate research methodology for the project.
3. Ability to perform investigations/experiments to collect data and evaluate results in order to solve the engineering problems.
4. Ability to apply ethical principles and demonstrate responsibility in completing a project.
5. Ability to communicate effectively on the project through technical report (log book/progress report/ report) and presentation.

EDJ16002 KEMAHIRAN KEJURUTERAAN MEKATRONIK [MECHATRONIC ENGINEERING SKILLS]

No of Credits: 2

Course Synopsis:
This course is an entirely practical coursework and contains four modules which are basic programming, electrical industrial machine wiring & installation, basic electronics & PCB and mechanical machining.

Course Outcomes:
1. Ability to select and apply appropriate basic programming techniques for Mechatronic Applications.
2. Ability to use appropriate basic skills and standard practices of domestic and machine wiring.
3. Ability to employ electronic prototyping basic skills and standard practices of PCB layout design and fabrication process.
4. Ability to apply appropriate basic skills and standard practices of mechanical machines and equipment
5. Ability to demonstrate knowledge of safety and the consequent responsibilities relevant to engineering technician practice and solutions to well-defined engineering problems.

EDJ16102 LUKISAN KEJURUTERAAN [ENGINEERING DRAWING]

No of Credits: 2

Course Synopsis:
This course is designed to provide exposure and skills to Engineering Diploma students in Basic Engineering Drawing and its engineering applications. The course will cover the detail 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 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.

Course Outcomes:
1. Ability to apply basic skills of engineering drawing in mechatronic engineering related problems
2. Ability to apply appropriate engineering drawing by using proper techniques for engineering field application.
3. Ability to function effectively in group/teams to design solution for engineering drawing

EDJ16202 SAINS KEJURUTERAAN [ENGINEERING SCIENCE]

No of Credits: 2

Course Synopsis:
This course contains two major field specifically mechanics and electromagnetism in physic. In mechanics, student will be introduced to the system of units, physical quantities and vector. Student are also expected to acquire knowledge in motion, force, work, power and energy. Electromagnetism covers electric charge, capacitance, dielectric, magnetic field and magnetic force. Theories and principles are covered in each syllabus for better understanding on physic concept that apply in engineering system.

Course Outcomes:
1. Ability to apply knowledge of basic principle in mechanics and electromagnetism
2. Ability to analyse mechanics system to solve the variety of problems
3. Ability to analyse and relate the fundamental concept of electromagnetism in engineering science

EDJ16402 PENGATURCARAAN KOMPUTER [COMPUTER PROGRAMMING]

No of Credits: 2

Course Synopsis:
This course introduces basic programming using C language. The aim of this course is to enable the students to learn the computer system concepts and principles, problems solving and programming concepts including variables, operator, control structure, function, pointer, file operation, array and string. The main objective of this course is to prepare the students with the ability to solve the computer programming problem with appropriate programming techniques and tools such as flowchart and pseudo code in developing C programming coding.

Course Outcomes:
1. Ability to analyse the programming concepts and principles.
2. Ability to solve computer programming problems using programming techniques.
3. Ability to apply appropriate computer programming techniques and tools in solving computer programming problems.

EDJ16602 LUKISAN BERBANTU KOMPUTER [COMPUTER AIDED DRAFTING]

No of Credits: 2

Course Synopsis:
This course is designed to expose students with computer-aided drafting skills as an extension from manual drafting learned in EDJ1612/DNT111 Engineering Drawing into drafting using CAD software such as AutoCAD. This course is 100% coursework focused on creating 2D and 3D drawings.

Course Outcomes:
1. Ability to apply appropriate fundamental concepts of Computer Aided Drafting in mechatronic engineering related problems.
2. Ability to apply appropriate engineering drawing by using proper techniques.
3. Ability to design solutions of Computer Aided Drafting to construct a simple product design and apply to engineering areas.
4. Ability to function effectively in groups to illustrate 2D and 3D modelling drawing

EDJ17303 LITAR ELEKTRIK [ELECTRICAL 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 appropriates modern tools or suitable software to construct and demonstrate the knowledge in electrical circuit application.

Course Outcomes:
1. Ability to apply knowledge of basic concept and basic law for electrical circuit.
2. Ability to analyse and evaluate electrical circuits using variety of circuit analysis method or circuit theorem.
3. Ability to select and apply appropriate tools to construct electrical circuits and demonstrate the knowledge in electrical circuit application.

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 amplifiers. The emphasis will be on the theoretical basis as well as practical implementations. Key components studied in detail are atomic structure, diode analysis, amplifier analysis, Bipolar junction transistor bias analysis, frequency response analysis and operational amplifier.

Course Outcomes:
1. Ability to apply knowledge of semiconductor materials and selected electronic devices.
2. Ability to analyze and solve diode application, transistor circuit and applications as amplifier.
3. Ability to select and apply appropriate tools to construct electronic circuits for analogue electronic circuit application.

EDJ18503 MEKANIK GUNAAN [APPLIED MECHANICS]

No of Credits: 3

Course Synopsis:
This course aims to expose the students to the basic concept of force, moments, moments of Couple and resultant force. As for application to this statics system, students will study the structure's equilibrium and stability such as truss, frame and machine. Students will also acquire an in-depth understanding in friction and distributed forces in the statics system. In dynamics, students will be exposed to kinematics and kinetics for particle solutions which involve forces and acceleration by using resolution of force into components, impulse and momentum, and also work and energy.

Course Outcomes:
1. Ability to identify and analyze the force and moment problems.CO2 - Able to analyze the equilibrium in particle and rigid body problems.
2. Ability to identify and analyze the equilibrium in particle and rigid body problems.
3. Ability to identify and analyze the kinematics and kinetics study for particles.

EDJ18802 KEJURUTERAAN BAHAN [ENGINEERING MATERIALS]

No of Credits: 2

Course Synopsis:
This course is designed to provide students with some fundamentals of materials science and engineering, relationship between structures and properties of materials and phase diagrams. Knowledge on theory acquired in lecture is also enhanced with practical works conducted in the laboratory.

Course Outcomes:
1. Ability to apply knowledge on the fundamental concept of materials science and engineering.
2. Ability to calculate the material characteristics and properties in engineering applications.
3. Ability to conduct investigations on engineering problems through standard tests and measurements related to material characteristics and properties.Able to organize appropriate processes for selected material to use in current engineering applications

EDJ27103 TEKNOLOGI ELEKTRIK [ELECTRICAL TECHNOLOGY]

No of Credits: 3

Course Synopsis:
This course, students will study and apply the fundamental theories and principles which underpin electrical engineering. Students are expected to be able design solution, identify and analyse technical problem related to AC circuit, three-phase system and apply knowledge in magnetic and electromagnetic circuit into AC and DC machine, such as transformers, motors and generators.In addition, students will develop and practice appropriate techniques and methods in solving electrical circuit & electrical machine related technical problems.

Course Outcomes:
1. Ability to apply knowledge of laws and rules of magnetic and electromagnetic circuits into applications.
2. Ability to identify and differentiate transformers and DC/AC electrical machine characteristics.
3. Ability to analyse and evaluate engineering problems of AC response and three-phase systems.
4. Ability to conduct investigation and analyse AC circuit and electrical machine through simulation and practical works.

EDJ27303 SISTEM DIGIT [DIGITAL SYSTEM]

No of Credits: 3

Course Synopsis:
This course is an introduction to the basic principle of digital systems and digital circuit analysis. It covers an introduction to basic digital system, numbering system, logic gates, Boolean algebra, combinational logic circuit, function of combinational logic and latch and flip flops. This requires an in-depth understanding of the basic digital system. The emphasis will be on the theoretical basis as well as practical implementations. Key components studied in detail are boolean simplification, truth table, Karnaugh map and logic circuit analysis and design.

Course Outcomes:
1. Ability to apply knowledge and concept of basic digital system..
2. Ability to analyze the fundamentals of combinational and sequential logic circuits.
3. Ability to design simple circuits and systems of basic digital electronics..
4. Ability to select and apply appropriate tools to construct an electronic circuit for digital systems.

EDJ27602 PENGUKURAN & PENDERIA [SENSORS AND MEASUREMENTS]

No of Credits: 2

Course Synopsis:
This course is designed to provide students with fundamentals of measurement systems. This includes an overview of general measurement systems, errors, statistical analysis and signal characteristics, followed by diverse type of sensors and their applications in measuring electronics signal, temperature, pressure, level, stress and strain and also the flow rate measurement. Knowledge on theory acquired in lecture is also enhanced with practical works conducted in the laboratory.

Course Outcomes:
1. Ability to apply the knowledge and concepts of transducers, sensors and measurement.
2. Ability to suggest and justify the suitable transducers and sensors for various measurement purposes.
3. Ability to apply appropriate techniques / methods in sensors and measurement applications.

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 knowledge and concepts of fluid mechanics, thermodynamics and heat transfer.
2. Ability to identify and analyse engineering problems related to various laws of fluid mechanics, thermodynamics and heat transfer.
3. Ability to conduct investigations on engineering problems through standard tests and measurements related to principles of fluid mechanics, thermodynamics and heat transfer.

EDJ28503 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. Knowledge on theory acquired in lecture is also enhanced with practical works conducted in the laboratory.

Course Outcomes:
1. Ability to apply knowledge on the general types and the characteristics of mechanical drive elements.
2. Ability to calculate the mechanism of mechanical elements and mobility of mechanical system.
3. Ability to conduct investigations on engineering problems through standard tests and measurements related to mechanism of mechanical elements.

EDJ29202 AMALAN BENGKEL MEKATRONIK [MECHATRONICS WORKSHOP PRACTICE]

No of Credits: 2

Course Synopsis:
The objective of the course is to prepare the students with the skills in electrical and electronics practices. The syllabus includes electrical/electronic based mini projects. The course covers knowledge in engineering practices, technical design solution, handling safety at work, teamwork, ethics and communication in completing the electrical/electronic based project. The students obtain a better perspective on the subjects of their studies because they will confront the problems of implementation of what they have learned in their mechatronics courses.

Course Outcomes:
1. Able to apply knowledge of electrical and electronic engineering practices.
2. Able to design and develop a complete system to meet project needs.
3. Able to understand and evaluate project needs to solve the well-defined engineering problems in societal and environmental contexts.
4. Able to understand and commit to professional ethics and responsibility towards finishing the project.
5. Able to function as an individual/member and communicate effectively in completing the Project.

EDJ29403 PNEUMATIK DAN HIDRAULIK [PNEUMATICS AND 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 in practical. Students are expected to acquire knowledge of physical behavior of pneumatics and hydraulics control systems, as well as the pneumatics and hydraulics components and applications. Knowledge on theory acquired during lecture is enhanced with practical work conducted through simulation software.

Course Outcomes:
1. Able to apply knowledge and concepts of Pneumatic and Hydraulic Systems.
2. Able to design solutions for the Pneumatic and Hydraulic Systems related to industrial applications.
3. Able to construct and simulate Pneumatic and Hydraulic solutions using FluidSim software.
4. Able to engage in technical knowledge updates in Pneumatic and Hydraulic Systems through industrial talks, visits or case studies.

EDJ29703 SISTEM TERBENAM DAN PENGANTARAMUKAAN [EMBEDDED SYSTEMS AND INTERFACING]

No of Credits: 3

Course Synopsis:
This course is an introduction to the programming of a microcontroller system using assembly language. It covers an introduction to microcontroller, assembly language programming, timers, analog to digital converter, input and output, delays, interrupts, LCD, arithmetic, safety and IoT applications, logic instructions, serial port and keypad. The emphasis will be on the theoretical basis as well as practical implementations.

Course Outcomes:
1. Able to select and apply appropriate theory and basic architecture of microcontroller.
2. Able to identify and analyze the program using assembly language and interfacing between microcontroller and other I/O devices.
3. Able to design an application based on a microcontroller system.
4. Able to communicate effectively in presenting the group project.

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 integrated 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 practical work conducted in the laboratory.

Course Outcomes:
1. Ability to apply knowledge and concepts of component integrate to PLC.
2. Ability to construct the program in PLC using Ladder diagram and 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.

EDJ30002 KESELAMATAN INDUSTRI, PENGURUSAN KUALITI & 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 practised by industries. Students are understanding and demonstrate morality and ethics as professional technicians based on ethical code practise. At the end of this course, students are expected to be the best practitioners and professionals in a real industrial environment in safety, quality and ethic.

Course Outcomes:
1. Ability to apply and access knowledge of the societal, health, safety, legal and cultural issues of Industrial Safety and QMS based on Act, Regulation, Standard, or Requirements.
2. Ability to understand 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 apply ethical principles and analyse issues and challenges related to engineering ethics and the Code of Ethics.
4. Ability to engage in independent and life-long learning on the case studies in the context of Industrial Safety, QMS or Ethical issues.

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 log book 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.

EDJ38303 PROSES - PROSES PEMBUATAN [MANUFACTURING PROCESS]

No of Credits: 3

Course Synopsis:
This course is an introduction to manufacturing processes and techniques used in industry to convert raw materials into finished or semi-finished parts and smart manufacturing. This includes the study on the characteristics of manufacturing processes such as forming, casting, moulding, rapid prototyping, sustainability, green manufacturing, non-conventional machining (advanced machining) and also the fabrication of electronic devices. The influence of materials and processing parameters in understanding individual processes are also highlighted.

Course Outcomes:

1. Ability to choose the raw materials for manufacturing processes.
2. Ability to design proper machining techniques or methods to complete a particular manufacturing process.
3. Ability to conduct investigation on engineering problems through standard tests and measurements related to machining.
4. Ability to evaluate the sustainability and impact of virtual and rapid prototyping in social and environmental contexts

EDJ39103 AUTOMASI INDUSTRI DAN ROBOTIK [INDUSTRIAL AUTOMATION AND 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 investigate robot programming, forward and inverse kinematics of the industrial robot.
4. Ability to demonstrate knowledge of the 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 knowledge of the dynamic physical systems into mathematical models.
2. Ability to analyse the time domain and frequency domain for specific systems.
3. Ability to conduct investigation and analyse engineering problems.

EDJ39404 FINAL YEAR PROJECT [PROJECT TAHUN AKHIR]

No of Credits: 3

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 identify, analyse and interpret data with engagement of life-long learning to solve engineering problem.
2. Ability to design engineering solution of well-defined engineering problem in societal and environmental context.
3. Ability to understand and commit ethical principles and responsibility in completing the project.
4. Ability to utilize appropriate modern technology/ tools in solving engineering problem.
5. Ability to communicate effectively on the project work through oral presentation by using computers and multimedia technology.

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FACULTY OF ELECTRONIC ENGINEERING TECHNOLOGY (FTKEN)

Programmes Offered:

1. Bachelor of Microelectronic Engineering with Honours
2. Bachelor of Computer Engineering with Honours
3. Bachelor of Biomedical Electronic Engineering with Honours
4. Bachelor of Electronic Engineering with Honours
5. Bachelor of Electronic Engineering Technology (Electronic Systems) with Honours
6. Bachelor of Electronic Engineering Technology (Electronic Telecommunication Design) with Honours
7. Bachelor of Electronic Engineering Technology (Electronic Network Design) with Honours
8. Bachelor of Technology in Industrial Electronic Automation with Honours
9. Diploma in Computer Engineering
10. Diploma in Electronic Engineering

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PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

The Programme Educational Objectives for the entire Diploma in Computer Engineering programme at Universiti Malaysia Perlis (UniMAP) is as follows:

PEO 1
Graduates are competence in computer 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)

PO 1
Knowledge: Apply knowledge of applied mathematics, applied science, engineering fundamentals and an engineering specialization to wide practicalprocedures and practices.

PO 2
Problem analysis: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specificto their field of activity.

PO 3
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, cultural, societal, and environmental considerations.

PO 4
Investigation: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests andmeasurements.

PO 5
Modern Tool Usage: Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations.

PO 6
The Engineer and Society: Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technician practice and solutions to well-defined engineering problems.

PO 7
Environment and Sustainability: Understand and evaluate the sustainability and impact of engineering technician work in the solution of well- defined engineering problems in societal and environmental contexts.

PO 8
Ethics: Understand and commit to professional ethics and responsibilities andnorms of technician practice.

PO 9
Individual and Team Work: Function effectively as an individual, and as amember in diverse technical teams.

PO 10
Communications: Communicate effectively 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.

PO 11
Project Management and Finance: Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projectsin multidisciplinary environments.

PO 12
Life-Long Learning: Recognise the need for, and have the ability to engage in independent updating in the context of specialised technical knowledge.

CURRICULUM STRUCTURE
UR4523002 DIPLOMA IN COMPUTER ENGINEERING
INTAKE 2022/2023

YEAR	FIRST		SECOND		THIRD	
SEMESTER	I	II	I	II	I	II
ENGINEERING CORE COURSES (76)	NDJ10002 Kemahiran Kejuruteraan Elektronik [*Electronic Engineering Skills*]	SDQ10103 Matematik I [*Mathematic I*]	SDQ20203 Matematik II [*Mathematic II*]	SDQ20303 Matematik III [*Mathematic III*]	NDJ30403 Kejuruteraan Perisian [*Software Engineering*]	NDJ30508 Latihan Industri [*Industrial Training*]
	NDJ10102 Fizik Kejuruteraan [*Engineering Physics*]	NDJ10303 Sistem Digit I [*Digital System I*]	NDJ20103 Sistem Digit II [*Digital System II*]	NDJ20903 Sistem Komputer [*Computer System*]	NDJ30103 Sistem Kawalan [*Control System*]	
	NDJ10203 Litar Elektrik [*Electrical Circuits*]	NDJ10603 Teknologi Elektrik [*Electrical Technology*]	NDJ20203 Litar Elektronik [*Electronic Circuits*]	NDJ20703 Sistem Pengoperasian [*Operating System*]	NDJ30003 Instrumentasi Elektronik [*Electronics Instrumentation*]	
	NDJ10403 Pengaturcaraan Komputer [*Computer Programming*]	NDJ10503 Peranti Elektronik [*Electronic Devices*]	NDJ20403 Sistem Mikropengawal [*Microcontroller System*]	NDJ21003 Perhubungan Data dan Rangkaian [*Data Communication and Network*]	NDJ30303 Projek TahunAkhir 2 [*Final Year Project 2*]	
		NDJ10703 Pengaturcaraan Berasaskan Objek [*Object-Oriented Programming*]	NDJ20803 Sistem Pengkalan Data [*Database System*]	NDJ20003 Keselamatan Industri, Pengurusan Kualiti Dan Etika [*Quality Management, Industrial Safety and Ethics*]		
				NDJ21201 Projek TahunAkhir 1 [*Final Year Project 1*]		
76	10	15	15	16	12	8
UNIVERSITY REQUIREMENT COURSES (16)	SDU12302 Kemahiran Dan Teknologi Dalam Komunikasi [*Skill & Technology in Communication*]	SDB20102 Bahasa Inggeris Komunikasi 2 [*Communicative English 2*]	SDB30102 Bahasa Inggeris Komunikasi 3 [*Communicative English 3*]	SDU22402 Keusahawanan Kejuruteraan [*Engineering Entrepreneurship*]	SDU12902 Falsafah Dan Isu Semasa [*Philosophy and Current Issues*]	
	SDB10102 Bahasa Inggeris Komunikasi 1 [*Communicative English 1*]	SDZ1XXXX Ko-kurikulum 2 [*Co-Curriculum 2*]				
	SDB41002 Bahasa Melayu [*Malay Language*]					
	SDZ1XXXX Ko-kurikulum 1 [*Co-Curriculum 1*]					
16	7	3	2	2	2	0
92	17	18	17	18	14	8

Note:
SDQ10002 - Preliminary Mathematic for student with grade D Additional Mathematic subject in SPM.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

The Programme Educational Objectives for the entire Diploma in Electronic Engineering programme at Universiti Malaysia Perlis (UniMAP) is as follows:

PEO 1
Graduates are competence in electronic 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)

PO 1
Knowledge: Apply knowledge of applied mathematics, applied science, engineering fundamentals and an engineering specialization to wide practicalprocedures and practices.

PO 2
Problem analysis: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specificto their field of activity.

PO 3
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, cultural, societal, and environmental considerations.

PO 4
Investigation: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests andmeasurements.

PO 5
Modern Tool Usage: Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations.

PO 6
The Engineer and Society: Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technician practice and solutions to well-defined engineering problems.

PO 7
Environment and Sustainability: Understand and evaluate the sustainability and impact of engineering technician work in the solution of well- defined engineering problems in societal and environmental contexts.

PO 8
Ethics: Understand and commit to professional ethics and responsibilities andnorms of technician practice.

PO 9
Individual and Team Work: Function effectively as an individual, and as amember in diverse technical teams.

PO 10
Communications: Communicate effectively 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.

PO 11
Project Management and Finance: Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projectsin multidisciplinary environments.

PO 12
Life-Long Learning: Recognise the need for, and have the ability to engage in independent updating in the context of specialised technical knowledge.

CURRICULUM STRUCTURE
UR4523003 DIPLOMA IN ELECTRONIC ENGINEERING
INTAKE 2022/2023

YEAR	FIRST		SECOND		THIRD	
SEMESTER	I	II	III	IV	V	VI
ENGINEERING CORE COURSES (76)	NDJ10102 Fizik Kejuruteraan [Engineering Physics]	SDQ10103 Matematik I [Mathematics I]	SDQ20203 Matematik II [Mathematics II]	SDQ20303 Matematik III [Mathematics III]	NDJ30303 Projek Tahun Akhir II [Final Year Project II]	NDJ30508 Latihan Industri [Industrial Training]
	NDJ10203 Litar Elektrik [Electric Circuits]	NDJ10503 Peranti Elektronik [Electronic Devices]	NDJ20603 Elektronik Analog [Analogue Electronics]	NDJ21201 Projek Tahun Akhir I [Final Year Project I]	NDJ30003 Instrumentasi Elektronik [Electronic Instrumentation]	
	NDJ10002 Kemahiran Kejuruteraan Elektronik [Electronic Engineering Skills]	NDJ10603 Teknologi Elektrik [Electrical Technology]	NDJ20503 Bentangan Litar Bersepadu [Integrated Circuit Layout]	NDJ21403 Fabrikasi Wafer [Wafer Fabrication]	NDJ30203 Pengawal Logik Boleh Aturcara [Programmable Logic Controller]	
	NDJ10303 Sistem Digit I [Digital System I]	NDJ10403 Pengaturcaraan Komputer [Computer Programming]	NDJ20403 Sistem Mikropengawal [Microcontroller System]	NDJ21103 Pembungkusan Elektronik [Electronic Packaging]	NDJ30103 Sistem Kawalan [Control Systems]	
		NDJ20103 Sistem Digit II [Digital System II]	NDJ20303 Fizik Dan Peranti Semikonduktor [Semiconductor Physics And Devices]	NDJ21303 Analisis Kegagalan [Failure Analysis]		
				NDJ20003 Keselamatan Industri,Pengurusan Kualiti Dan Etika [Quality Management, Industrial Safety And Ethics]		
76	10	15	15	16	12	8
UNIVERSITY REQUIREMENT COURSES (16)	SDU12302 Kemahiran Dan Teknologi Dalam Komunikasi [Skill And Technology In Communication]	SDB20102 Bahasa Inggeris Komunikasi 2 [Communicative English 2]	SDB30102 Bahasa Inggeris Komunikasi 3 [Communicative English 3]	SDU22402 Keusahawanan Kejuruteraan [Engineering Entrepreneurship]	SDU12902 Falsafah Dan Isu Semasa [Philosophy And Current Issues]	
	SDB41002 Bahasa Melayu [Bahasa Melayu]	SDZXXXXX Ko-kurikulum 2 [Co-Curriculum 2]				
	SDB10102 Bahasa Inggeris Komunikasi 1 [Communicative English 1]					
	SDZXXXXX Ko-kurikulum 1 [Co-Curriculum1]					
16	7	3	2	2	2	0
92	17	18	17	18	14	8

Note:
SDQ10002 – Preliminary Mathematics for students with grade D in Additional Mathematics subject in SPM

LIST OF COURSES:

COURSE CODE	COURSE NAME
NDJ10002	Kemahiran Kejuruteraan Elektronik [*Electronic Engineering Skills*]
NDJ10102	Fizik Kejuruteraan [*Engineering Physics*]
NDJ10203	Litar Elektrik [*Electric Circuits*]
NDJ10303	Sistem Digit I [*Digital System* I]
NDJ10403	Pengaturcaraan Komputer [*Computer Programming*]
NDJ10503	Peranti Elektronik [*Electronic Devices*]
NDJ10603	Teknologi Elektrik [*Electrical Technology*]
NDJ10703	Pengaturcaraan Berasaskan Objek [*Object Oriented Programming*]
NDJ20003	Keselamatan Industri,Pengurusan Kualiti Dan Etika [*Quality Management, Industrial Safety And Ethics*]
NDJ20103	Sistem Digit II [*Digital System II*]
NDJ20203	Litar Elektronik [*Electronic Circuits*]
NDJ20303	Fizik & Peranti Semikonduktor [*Semiconductor Physic & Devices*]
NDJ20403	Sistem Mikropengawal [*Microcontroller System*]
NDJ20503	Bentangan Litar Bersepadu [*Integrated Circuit Layout*]
NDJ20603	Elektronik Analog [*Analogue Electronics*]
NDJ20703	Sistem Pengoperasian [*Operating System*]
NDJ20803	Sistem Pangkalan Data [*Database System*]
NDJ20903	Sistem Komputer [*Computer System*]
NDJ21003	Perhubungan Data dan Rangkaian [*Data Communication and Network*]

LIST OF COURSES:

COURSE CODE	COURSE NAME
NDJ21103	Pembungkusan Elektronik [*Electronic Packaging*]
NDJ21201	Projek Tahun Akhir I [*Final Year Project I*]
NDJ21303	Analisis Kegagalan [*Failure Analysis*]
NDJ21403	Fabrikasi Wafer [*Wafer Fabrication*]
NDJ30003	Instrumentasi Elektronik [*Electronic Instrumentation*]
NDJ30103	Sistem Kawalan [*Control Systems*]
NDJ30203	Pengawal Logik Boleh Aturcara [*Programmable Logic Controller*]
NDJ30303	Projek Tahun Akhir II [*Final Year Project II*]
NDJ30403	Kejuruteraan Perisian [*Software Engineering*]
NDJ30508	Latihan Industri [*Industrial Training*]

NDJ10002 KEMAHIRAN KEJURUTERAAN ELEKTRONIK [ELECTRONIC ENGINEERING SKILLS]

No of Credits: 2

Course Synopsis:
This course is designed to provide and expose students to the basics of electronic skill. This includes basic knowledge of computers, design and measurement of electronic circuits and engineering drawing.

Course Outcomes:
1. Ability to recognize basic electronic components, use electronic instruments and reproduce schematic and layout design using Electronic Drawing Software..
2. Ability to recognize basic components of a computer system and able to assemble the computer and do configurations.
3. Ability to solve engineering drawing problems using related technical drawing and CAD software techniques.

NDJ10102 FIZIK KEJURUTERAAN [ENGINEERING PHYSICS]

No of Credits: 2

Course Synopsis:
The purpose of this course is to give the knowledge for students about physics and engineering that involve physical phenomena, which is the basis for engineering. Theories, principles and standard units have been focused for every syllabus so that the student could understand fully about this course. Topics covered in this course are, Units and Dimension, Force and Motion, Linear Momentum and Circular Motion, Oscillation & Wave, Electrostatic, Magnetism and DC Circuit.

Course Outcomes:
1. Able to apply knowledge of basic physics.
2. Able to explain principle concepts of physics in engineering.
3. Able to compare the principle concepts of physics in engineering.

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. Able to apply knowledge of fundamentals for electric circuits.
2. Able to analyse problems related to electrical circuit
3. Able to demonstrate the fundamentals of electric circuits.

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. Able to apply knowledge and concept of the fundamental digital logic design.
2. Able to analyze well defined combinational logic functions.
3. Able 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 understand the concepts of programming and its principles.
2. Ability to use appropriate tools for coding, compiling, executing, and debugging computer programs.
3. Ability to design solutions for engineering-related problems and design systems using computer programming techniques.

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. Able to understand basic theories and operations of semiconductor materials and devices.
2. Able to analyse problems related to semiconductor devices.
3. Able to demonstrate the 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 explain the concept of magnetism, electromagnetism, three-phase system and basic magnetic circuit.
2. Ability to analyze the operation and application of electrical transformers.
3. Ability to analyze the operation and the application of DC machines and AC machines.
4. Ability to demonstrate the fundamentals of electrical technology.

NDJ10703 PENGATURCARAAN BERASASKAN OBJEK [OBJECT ORIENTED PROGRAMMING]

No of Credits: 3

Course Synopsis:
This course introduces the object oriented programming concept. The course details on applying and developing an object oriented program and is able to analyse application development of Graphical User Interface (GUI) using object oriented concept and Object Oriented Design(OOD).

Course Outcomes:
1. Ability to apply the concepts of Object Oriented Programming
2. Ability to analyse Object Oriented concept of Graphical User Interface (GUI) Application for any computational problem descriptions
3. Ability to demonstrate Object Oriented concept in laboratory using Graphical User Interface (GUI) Application.

NDJ20003 KESELAMATAN INDUSTRI, PENGURUSAN KUALITI DAN ETIKA [QUALITY MANAGEMENT, INDUSTRIAL SAFETY AND ETHICS]

No of Credits: 3

Course Synopsis:
This course gives an exposure to students to understand Industrial Safety standards & guidelines, quality management concepts, various quality tools and ethics that allow students to understand the general picture of both areas which are being practiced by industries. At the end of this course, students are expected to be able to identify suitable quality techniques & tools to be implemented in production management & can apply industrial safety standards & ethics in a real working environment.

Course Outcomes:
1. Able to explain and illustrate the fundamentals of Industrial Safety and Quality Management.
2. Able to apply techniques and tools of Quality Management
3. Able to analyze safety issues using Safety standards and tools.
4. Able to judge the issues and challenges of engineering ethics

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. Able to describe the theories of basic storage devices and fundamental operations of sequential circuit application.
2. Able to analyse counters using transition tables and counter application using finite state machine and register transfer language.
3. Able to design sequential circuits using CAD tools and program onto hardware.
4. Able to complete tasks among team members and group projects.

NDJ20203 LITAR ELEKTRONIK [ELECTRONIC CIRCUITS]

No of Credits: 3

Course Synopsis:
This course covers introduction to Operational Amplifier, common Op-amp circuitry, active filtering, voltage regulating and voltage oscillating circuits using Op-amps. 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. Able to apply the fundamentals of op-amp characteristics, parameters, and circuit operations.
2. Able to justify the electronic circuits related to op-amp's applications.
3. Able to demonstrate the electronic circuits related to op-amp's applications.

NDJ20303 PERANTI & SEMIKONDUKTOR FIZIK [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. Able to determine the theory of semiconductor physics and devices.
2. Able to investigate mechanical and electrical properties.
3. Able to explain a problem performance issues in semiconductor processes.
4. Able to analyse and demonstrate semiconductor devices characteristics and behaviors.

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. Able to analyse the concept of microcontroller system.
2. Able to demonstrate fundamental microcontroller system applications

NDJ20503 BENTANGAN LITAR BERSEPADU [INTEGRATED CIRCUIT LAYOUT]

No of Credits: 3

Course Synopsis:
Layout design is a process of creating an accurate physical design 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.

Course Outcomes:
1. Ability to apply knowledge of microelectronic technologies, IC design flow and VLSI design style
2. Ability to analyse CMOS transistor concept, logic circuits design and layout of a circuit.
3. Able to design an IC layout for a circuit using software.

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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. Able to understand and explain basic theories of analogue electronics.
2. Able to analyze and solve operation of Bipolar Junction Transistors (BJTs), Field Effect Transistors (FETs, BJTs multistage and Power amplifier circuits.
3. Able to construct circuits of BJT, FET and Power amplifier circuits experiment.

NDJ20703 SISTEM PENGOPERASIAN [OPERATING SYSTEM]

No of Credits: 3

Course Synopsis:
This course introduces the fundamentals of operating systems. Topics include inter-process communication, process scheduling, memory management, virtual memory and file system. Format principles are illustrated with examples and case studies of one or more contemporary operating systems.

Course Outcomes:
1. Able to define and explain the major concepts which builds up an operating system
2. Able to develop a program in GNU/Linux operating system for coding, compile, execute and test C programming in simulating issues in Operating System.
3. Able to describe the processes, file management, processor scheduler and memory management

NDJ20803 SISTEM PANGKALAN DATA [DATABASE SYSTEM]

No of Credits: 3

Course Synopsis:
The purpose of this course is to give the knowledge for students about database system models and architecture. Data modelling will be based on high level conceptual data models for database design. Topics covered in this course are, Database System Concepts and Architecture, Data Modelling using Entity Relationship (ER) Model, Relational Data Model, SQL, Relational Algebra and Database Programming knowledge.

Course Outcomes:
1. Able to apply knowledge and concept of database system
2. Able to create SQL programs and recognize types of SQL statements by using software tools.
3. Able to design conceptual models of an application domain for database applications
4. Able to complete tasks among team members and group projects.

NDJ20903 SISTEM KOMPUTER [COMPUTER SYSTEM]

No of Credits: 3

Course Synopsis:
This course focuses on learning the hardware design aspect of a computer system's architecture and organization, which includes the data path and control units as well as some advanced topics that support the current computing era. The syllabus covers the theory of basic computer systems, instruction formats, memory structures and also interfacing methods. The practical exposure of using standard industrial computer aided design (CAD) tools and hardware description language as part of their technical skills acquisition.

Course Outcomes:
1. Ability to outline the architecture and organization of the central processing unit.
2. Ability to distinguish the structural and functional concepts of the central processing unit.
3. Ability to build hardware description language programs and relate towards relevant computer systems.

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NDJ21003 PERHUBUNGAN DATA DAN RANGKAIAN [DATA COMMUNICATION AND NETWORK]

No of Credits: 3

Course Synopsis:
This course is to discuss the fundamental concepts of data communication and network, emphasized on application of concept architecture and layer, signal transmission technique, network topologies and connectivity devices. It also discussed multiplexing as well as to give an exposure of network application.

Course Outcomes:
1. Ability to explain the theory and basics of data communication and network.
2. Ability to analyze the industrial application of network connection concept, protocol used, network equipment and instruments
3. Ability to construct and demonstrate the   network setup and perform troubleshooting.

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. Able to explain the semiconductor packaging process flow.
2. Able to analyse and propose the critical parameters and technology trends in the semiconductor packaging process.
3. Able to practice skills and investigate semiconductor packaging process using modern engineering tools.

NDJ21201 PROJEK TAHUN AKHIR I [FINAL YEAR PROJECT I]

No of Credits: 1

Course Synopsis:
This course introduced multiple types of computer and electronic engineering technologies, methodologies of research, and project development through a series of lectures.

Course Outcomes:
1. Ability to apply, identify, research, and formulate the theory and practical knowledge to solve engineering problems.
2. Ability to analyse scenarios and Construct problem statements and objectives to solve engineering problems.
3. Ability to defend and explain the project proposal in written and oral form with efficient communication skills

NDJ21303 ANALISIS 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 define the terms commonly used in failure analysis and explain the failure analysis process flow.
2. Ability to practice skills and analyze the different tools and techniques available in FA, its importance and the details operation principle.
3. Ability to analyze and propose the most suitable FA techniques to be conducted, given a particular failure.

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. Able to explain the fundamentals of semiconductor and process in wafer fabrication.
2. Able to analyze the theoretical background of each process involved in the fabrication process.
3. Able to apply appropriate techniques and develop the structure and important parameters in the fabrication process.

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. Able to explain the basic concept of electronic instrumentation and multiple type of sensor
2. Able to analyze the problem related to instrumentation electronic and Internet of things (IoT)
3. Ability to build design model-based problem related to instrumentation electronic and Internet of things (IoT)

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 use Laplace transform to solve mathematical modelling and outline the characteristics of control system response.
2. Ability to analyze and evaluate the stability of a system's response in time and frequency domain.
3. Ability to reproduce open and closed loop feedback stability conditions of a system 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. Able to apply the knowledge of digital design with PLC and hardware components in the engineering field..
2. Able to investigate PLC system applications using ladder diagram and mnemonic code.
3. Able to design PLC system applications.

NDJ30303 PROJEK TAHUN AKHIR II [FINAL YEAR PROJECT II]

No of Credits: 3

Course Synopsis:
This course offers to fulfil the 4 credits for the final year project for diploma students. This course is the second part of two parts of Final Project.

Course Outcomes:
1. Ability to write and formulate the theory and practical knowledge to solve engineering problems
2. Ability to develop a product whether hardware or software, using appropriate methodology and tools
3. Ability to defend and explain the final report in written and oral form with efficient communication skills

NDJ30403 KEJURUTERAAN PERISIAN [SOFTWARE ENGINEERING]

No of Credits: 3

Course Synopsis:
The subject will focus on the concept and principles of software engineering. It introduces essential concepts in software development activities. This includes theories, techniques, processes and tools for professional software development. The course also emphasizes understanding system requirements, finding appropriate engineering compromises, effective methods of design and software development.

Course Outcomes:
1. Ability to apply the software engineering techniques for engineering problem
2. Ability to build design models based on software engineering problems by using software tools.
3. Ability to decide the suitable software engineering techniques for engineering problem

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 apply theoretical knowledge and practical skills to application in the industry
2. Ability to apply theoretical knowledge and practical skills to application in the industry
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 able to comprehend the works of others, writing reports and present own work

FACULTY OF MECHANICAL ENGINEERING TECHNOLOGY (FTKM)

Programmes Offered:

1. Bachelor of Mechanical Engineering with Honours
2. Bachelor of Manufacturing Engineering with Honours
3. Bachelor of Mechanical Engineering Technology (Machining) with Honours
4. Bachelor of Mechanical Engineering Technology (Agricultural Systems) with Honours
5. Bachelor of Mechanical Engineering Technology (Product Design) with Honours
6. Bachelor of Mechanical Engineering Technology (Materials Processing) with Honours
7. Bachelor of Technology in Industrial Machining with Honours
8. Bachelor of Technology in Automotive with Honours
9. Bachelor of Technology in Welding with Honours
10. Diploma in Manufacturing Engineering

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PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

The Programme Educational Objectives for the entire Diploma in Manufacturing Engineering programme at Universiti Malaysia Perlis (UniMAP) is as follows:

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)

PO 1
Knowledge: Apply knowledge of applied mathematics, applied science, engineering fundamentals and an engineering specialization to wide practicalprocedures and practices.

PO 2
Problem analysis: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specificto their field of activity.

PO 3
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, cultural, societal, and environmental considerations.

PO 4
Investigation: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests andmeasurements.

PO 5
Modern Tool Usage: Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations.

PO 6
The Engineer and Society: Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technician practice and solutions to well-defined engineering problems.

PO 7
Environment and Sustainability: Understand and evaluate the sustainability and impact of engineering technician work in the solution of well- defined engineering problems in societal and environmental contexts.

PO 8
Ethics: Understand and commit to professional ethics and responsibilities andnorms of technician practice.

PO 9
Individual and Team Work: Function effectively as an individual, and as amember in diverse technical teams.

PO 10
Communications: Communicate effectively 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.

PO 11
Project Management and Finance: Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projectsin multidisciplinary environments.

PO 12
Life-Long Learning: Recognise the need for, and have the ability to engage in independent updating in the context of specialised technical knowledge.

CURRICULUM STRUCTURE
UR4540001 DIPLOMA IN MANUFACTURING ENGINEERING
INTAKE 2022/2023

YEAR	FIRST		SECOND		THIRD	
SEMESTER	I	II	I	II	I	II
ENGINEERING CORE COURSES (77)	SDQ10002 Matematik Awalan [Preliminary Mathematics]	SDQ10103 Matematik I [Mathematics I]	SDQ20203 Matematik II [Mathematics II]	SDQ20303 Matematik III [Mathematics III]	MDJ34104 Projek Tahun Akhir [Final Year Project]	MDJ39908 Latihan Industri [Industrial Training]
	MDJ12103 Bahan [Material]	MDJ10103 Statik dan Dinamik [Statics and Dynamics]	MDJ20103 Mekanik Bahan [Mechanic of Materials]	MDJ20203 Themo-Bendalir [Thermo-Fluid]	MDJ35102 Keselamatan dan Etika [Safety and Ethics]	
	MDJ13103 Teknologi dan Amalan Kerja Tangan [Technology and Handwork Practice]	MDJ13203 Teknologi dan Amalan Pemesinan [Technology and Machining Practice]		MDJ20303 Sistem Pneumatik dan Hidraulik [Pneumatic And Hydraulic System]		
	MDJ12202 Lukisan Kejuruteraan dan Lukisan Berbantu Komputer [Engineering Drawing and Computer Aided Drawing (CAD)]	MDJ13303 Proses Pembuatan 1 [Manufacturing Process 1]	MDJ23103 Proses Pembuatan 2 [Manufacturing Process 2]	MDJ23202 Pembuatan Berbantu Komputer [Computer Aided Manufacturing]	MDJ33202 Kawalan kualiti [Quality Control]	
	MDJ11103 Pengatucaraan Komputer [Computer Programming]	MDJ12302 Permodelan 3D CAD [3D CAD Modeling]	MDJ22102 Rekabentuk 1 [Design 1]	MDJ22203 Rekabentuk 2 [Design 2]	MDJ33102 Perancangan dan Kawalan Pengeluaran [Production Planning and Control]	
			MDJ21103 Teknologi Elektrik [Electrical Technology]	MDJ21203 Elektronik [Electronic]	MDJ31103 Automasi Pembuatan dan Internet Pelbagai Benda [Manufacturing Automation And Internet Of Things]	
77	11	14	14	17	13	8
UNIVERSITY REQUIREMENT COURSES (16)	SDU12302 Kemahiran dan Teknologi dalam Komunikasi [Skill and Technology In Communication]	SDB20102 Bahasa Inggeris Komunikasi 2 [Communicative English 2]	SDU12902 Falsafah dan Isu Semasa [Philosophy and Current Issues]		SDU22402 Keusahawanan Kejuruteraan [Engineering Entrepreneurship	
	SDB41002 Bahasa Melayu [Malay Language]	SDZXXX01 Ko-kurikulum 2 [Co-curriculum 2]	SDB30102 Bahasa Inggeris Komunikasi 3 [Communicative English 3]			
	SDB10102 Bahasa Inggeris Komunikasi 1 [Communicative English 1]					
	SDZXXX01 Ko-kurikulum I [Co-curriculum I]					
16	7	3	4	0	2	0
93	18	17	18	17	15	8

TOTAL UNIT BERGRADUASI : 93 UNIT

Nota : SDQ10002 Matematik Awalan : Pra-Syarat Matematik 1 (SDQ10103) yang mendapat gred D untuk Matematik Tambahan Peringkat SPM.

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LIST OF COURSES:

COURSE CODE	COURSE NAME
MDJ10103	Statik dan Dinamik [Statics and Dynamics]
MDJ11103	Pengatucaraan Komputer [Computer Programming]
MDJ12103	Bahan [Materials]
MDJ12202	Lukisan Kejuruteraan dan Lukisan Berbantu Komputer [Engineering Drawing and Computer Aided Drafting]
MDJ12302	Permodelan 3D CAD [3D CAD Modeling]
MDJ13103	Teknologi dan Amalan Kerja Tangan [Technology and Handwork Practice]
MDJ13203	Teknologi dan Amalan Pemesinan [Technology and Machining Practice]
MDJ13303	Proses Pembuatan 1 [Manufacturing Process 1]
MDJ20103	Mekanik Bahan [Machanics of Material]
MDJ20203	Themo-Bendalir [Thermo-Fluid]
MDJ20303	Sistem Pneumatik dan Hidraulik [Pneumatic and Hydraulic System]
MDJ21103	Teknologi Elektrik [Electrical Technology]
MDJ21203	Elektronik [Electronics]
MDJ22102	Rekabentuk 1 [Design 1]
MDJ22203	Rekabentuk 2 [Design 2]
MDJ23103	Proses Pembuatan 2 [Manufacturing Process 2]
MDJ23202	Pembuatan Berbantu Komputer [Computer Aided Manufacturing]
MDJ31103	Automasi Pembuatan dan Internet Pelbagai Benda [Manufacturing Automation and Internet of Things]
MDJ33102	Perancangan dan Kawalan Pengeluaran [Production Planning and Control]

LIST OF COURSES:

COURSE CODE	COURSE NAME
MDJ33202	Kawalan kualiti [Quality Control]
MDJ34104	Projek Tahun Akhir [Final Year Project]
MDJ35102	Keselamatan dan Etika [Safety and Ethics]
MDJ39908	Latihan Industri [Industrial Training]

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 describe principles of physics for static: force, moment, Newton's First Law, Newton Third Law, trusses, frame and machine.
2. Ability to apply principles in describing, sketching and/or drawing free body diagram and solving static problems.
3. Ability to describe principles of physics for dynamics: kinematics, kinetics, Newton Second Law, position, velocity, acceleration, work, energy, impulse and momentum.
4. Ability to apply principles in creating, sketching and/or drawing free body diagram and solving dynamic problems.

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 selection statements and loops.
3. Ability to construct C programs with function, numeric arrays and pointer.

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 explain 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 analyze advanced materials and sustainable materials

MDJ12202 LUKISAN KEJURUTERAAN DAN LUKISAN BERBANTU KOMPUTER [ENGINEERING DRAWING AND COMPUTER AIDED DRAFTING]

No of Credits: 2

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 apply basic skills of engineering drawing.
2. Ability to use AutoCAD to produce engineering drawings.

MDJ12302 PERMODELAN 3D CAD [3D CAD MODELING]

No of Credits: 2

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 design 3D model of components by using 3D modelling software.
2. Ability to apply and produce technical/2D drawing using 3D modelling software.
3. Ability to apply and produce assembly drawing and exploded drawing using 3D modelling software.
4. Ability to apply and produce 3D animation and rendering for the components using 3D modelling software.

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. filling, 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 different types of craftsmanship in engineering practice.
2. Ability to use various types of hand tools and equipment according to procedure and safety regulations to produce a product in engineering practice.
3. Ability to work effectively as an individual, and as a member in technical teams.

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 different type of conventional machining operation such as milling, turning and grinding.
2. Ability to interpret engineering drawings, and then convert raw materials to finished products by following methodology of machining process and safety regulation.
3. Ability to work effectively as an individual, and as a member in technical teams.

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 select different types of manufacturing processes to produce various product.
3. Ability to operate the machines according to procedure and safety regulations.
4. Ability to work effectively as an individual, and as a member in technical teams.

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 evaluate the mechanics of materials principles related to various engineering problems.

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.

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.

MDJ22102 REKABENTUK 1 [DESIGN 1]

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 generate product design specifications to describe principle concept and procedures of engineering design process.
2. Ability to generate design solution to produce prototype by following methodology of engineering design process.
3. Ability to demonstrate knowledge to present the project through effective teamwork and project management.

MDJ22203 REKABENTUK 2 [DESIGN 2]

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 apply fundamental components in designing machine elements: gears, belts, motors, jigs and fixtures.
2. Ability to construct simple design problems by using basic mechanical analysis.
3. Ability to analyze simple design problems using CAE software.

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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.

MDJ23202 PEMBUATAN BERBANTU KOMPUTER [COMPUTER AIDED MANUFACTURING]

No of Credits: 2

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.

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 analyze cases or problems on Production Planning Systems by applying principles of Forecasting, Capacity Planning, Aggregate Planning and Process and Facility Layout..
2. Ability to analyze cases or problems on Production Management Systems by applying the principle of inventory management, material requirement planning (MRP) and scheduling methods.

MDJ33202 KAWALAN KUALITI [QUALITY CONTROL]

No of Credits: 2

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 improve quality include cost, tools and technique based on Quality System ISO 9000 series.

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.

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 professinal 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.

FACULTY OF CHEMICAL ENGINEERING TECHNOLOGY (FTKK)

Programmes Offered:

1. Bachelor of Materials Engineering with Honours
2. Bachelor of Chemical Engineering with Honours
3. Bachelor of Polymer Engineering with Honours
4. Bachelor of Agricultural Engineering with Honours
5. Bachelor of Chemical Engineering Technology (Food Technology) with Honours
6. Bachelor of Chemical Engineering Technology (Industrial Chemical Process) with Honours
7. Bachelor of Chemical Engineering Technology (Industrial Biotechnology) with Honours
8. Diploma in Metallurgical Engineering

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PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

The Programme Educational Objectives for the entire Diploma in Metallurgical Engineering programme at Universiti Malaysia Perlis (UniMAP) is as follows:

PEO 1
Graduates are competence in metallurgy 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)

PO 1
Knowledge: Apply knowledge of applied mathematics, applied science, engineering fundamentals and an engineering specialization to wide practicalprocedures and practices.

PO 2
Problem analysis: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specificto their field of activity.

PO 3
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, cultural, societal, and environmental considerations.

PO 4
Investigation: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests andmeasurements.

PO 5
Modern Tool Usage: Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations.

PO 6
The Engineer and Society: Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technician practice and solutions to well-defined engineering problems.

PO 7
Environment and Sustainability: Understand and evaluate the sustainability and impact of engineering technician work in the solution of well- defined engineering problems in societal and environmental contexts.

PO 8
Ethics: Understand and commit to professional ethics and responsibilities andnorms of technician practice.

PO 9
Individual and Team Work: Function effectively as an individual, and as amember in diverse technical teams.

PO 10
Communications: Communicate effectively 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.

PO 11
Project Management and Finance: Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projectsin multidisciplinary environments.

PO 12
Life-Long Learning: Recognise the need for, and have the ability to engage in independent updating in the context of specialised technical knowledge.

CURRICULUM STRUCTURE
UR4521001 DIPLOMA IN METALLURGICAL ENGINEERING
INTAKE 2022/2023

YEAR	FIRST		SECOND		THIRD	
SEMESTER	**I**	**II**	**III**	**IV**	**V**	**VI**
ENGINEERING CORE COURSES (77)	SDQ10002 Matematik Awalan [Preliminary Mathematics]	SDQ10103 Matematik I [Mathematics I]	SDQ20203 Matematik II [Mathematics II]	SDQ20303 Matematik III [Mathematics III]	KDJ30103 Metalurgi Serbuk [Powder Metallurgy]	KDJ39908 Latihan Industri [Industrial Training]
	KDJ10103 Sains Kejuruteraan [Engineering Science]	KDJ10603 Logam Ferus dan Bukan Ferus [Ferrous & Non-Ferrous Metal]	KDJ20103 Teknologi Pengekstrakan Logam [Metal Extractive Technology]	KDJ20403 Teknologi Foundri [Foundry Technology]	KDJ30203 Rawatan Haba [Heat Treatment]	
	KDJ10203 Pengenalan kepada Bahan Kejuruteraan [Introduction to Engineering Materials]	KDJ10703 Asas Statik dan Dinamik [Basic Static and Dynamic]	KDJ20203 Teknologi Kimpalan Logam [Technology of Metal Welding]	KDJ20503 Pengujian Logam [Metal Testing]	KDJ30303 Perlindungan Logam [Metals Protection]	
	KDJ10302 Asas Bengkel Logam [Basic Metal Workshop]	KDJ10803 Kimia Termodinamik [Chemical Thermodynamics]	KDJ20303 Asas Teknologi Elektrik [Basic Electrical Technology]	KDJ20603 Kekuatan Bahan [Strength of Materials]	KDJ30403 Keselamatan Pekerjaan dan Pengurusan Kualiti [Occupational Safety and Quality Management]	
	KDJ10403 Lukisan Kejuruteraan dan Lukisan Terbantu Komputer [Engineering Drawing and Computer Aided Drafting]			KDJ20703 Asas Pemesinan Logam [Basic Machining of Metals]	KDJ30604 Projek Tahun Akhir [Final Year Project]	
	KDJ10503 Asas Pengaturcaraan Komputer [Basic Computer Programming]					
77	14	12	12	15	16	8
UNIVERSITY REQUIREMENT COURSES (16)	SDB10102 Bahasa Inggeris Komunikasi 1 [Communicative English 1]	SDU12302 Kemahiran dan Teknologi Dalam Komunikasi [Skill and Technology in Communication]	SDB30102 Bahasa Inggeris Komunikasi 3 [Communicative English 3]	SDB41002 Bahasa Melayu [Malay Language]	SDU22402 Keusahawanan Kejuruteraan [Engineering Entrepreneurship]	
	SDZXXX01 Ko-kurikulum 1 [Co-curriculum1]	SDB20102 Bahasa Inggeris Komunikasi 2 [Communicative English 2]	SDU12902 Falsafah Dan Isu Semasa [Philosophy and Current Issues]			
		SDZXXX01 Ko-kurikulum 2 [Co-curriculum 2]				
16	3	5	4	2	2	
93	17	17	16	17	18	8

Note: SDQ10002 Preliminary Mathematics: Pre-requisite for SPM-level Additional Mathematics with grade D

LIST OF COURSES:

COURSE CODE	COURSE NAME
KDJ10103	Sains Kejuruteraan [Engineering Science]
KDJ10203	Pengenalan Kepada Bahan Kejuruteraan [Introduction to Engineering Materials]
KDJ10302	Asas Bengkel Logam [Basic Metal Workshop]
KDJ10403	Lukisan Kejuruteraan Dan Lukisan Terbantu Komputer [Engineering Drawing and Computer Aided Drafting]
KDJ10503	Asas Pengaturcaraan Komputer [Basic Computer Programming]
KDJ10603	Logam Ferus Dan Bukan Ferus [Ferrous and Non-Ferrous Metals]
KDJ10703	Asas Statik Dan Dinamik [Basic Static & Dynamic]
KDJ10803	Termodinamik Kimia [Chemical Thermodynamics]
KDJ20103	Teknologi Pengekstrakan Logam [Metal Extractive Technology]
KDJ20203	Teknologi Kimpalan Logam [Technology of Metal Welding]
KDJ20303	Asas Teknologi Elektrik [Basic Electrical Technology]
KDJ20403	Teknologi Foundri [Foundry Technology]
KDJ20503	Pengujian Logam [Metals Testing]
KDJ20603	Kekuatan Bahan [Strength of Materials]
KDJ20703	Asas Pemesinan Logam [Basic Machining of Metals]
KDJ30103	Metalurgi Serbuk [Powder Metallurgy]

LIST OF COURSES:

COURSE CODE	COURSE NAME
KDJ30203	Rawatan Haba [Heat Treatment]
KDJ30303	Perlindungan Logam [Metals Protection]
KDJ30403	Keselamatan Pekerjaan Dan Pengurusan Kualiti [Occupational Safety and Quality Management]
KDJ30604	Projek Tahun Akhir [Final Year Project]
KDJ39908	Latihan Industri [Industrial Training]

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. Able to describe the fundamentals of material's chemistry.
2. Able to calculate force, momentum, and wave.
3. Able to solve problems on the basics of electrostatic, electromagnetism and simple DC circuit.

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:
1. Able to describe classes, properties and applications of basic and advanced materials.
2. Able to analyse atomic and molecular structure, crystalline and non-crystalline material structures, Miller index, lattice coordinate, direction and plane in unit cell.

KDJ10302 ASAS BENGKEL LOGAM [BASIC METAL WORKSHOP]

No of Credits: 2

Course Synopsis:
The subject covers the basic techniques of measurement of geometrically defined dimensions. It also covers the corrective processes of errors and deviations which occur during measurement. Students will perform various hand and machine tool operations under staff supervision. It includes introduction to engineering materials, and selected practices on laying-out and setting out a job, using measuring devices. At the end of the training students will be required to complete a report regarding their training.

Course Outcomes:
1. Able to describe and apply fundamental and safety procedure of basic metal workshop.
2. Able to apply fundamental of metrology according to its characteristic and features in the workshop.
3. Able to apply fundamental of hand tools according to its characteristic and features in the workshop.

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:
1. Able to apply basic skills of engineering drawing.
2. Able to use AutoCAD to produce engineering drawings.

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:
1. Able to discuss programming concept and principle.
2. Able to analyse, design and write computer programming using programming techniques and tools.

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. Able to describe ferrous and non-ferrous metals, their properties and applications.
2. Able to apply the microstructure analysis of ferrous and non-ferrous metals and relate with their properties.

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. Able to analyse and apply 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. Able to analyse and apply basic problems of kinematics and kinetics of a particle.

KDJ10803 KIMIA TERMODINAMIK [CHEMICAL THERMODYNAMICS]

No of Credits: 3

Course Synopsis:
Topics which will be covered in this course are as follow: Theory of atoms, molecules, and ions, first law of thermodynamics, second law of thermodynamic, Hess law methods, chemical equilibrium and reaction kinetics

Course Outcomes:
1. Able to describe knowledge and fundamental of the first two laws of thermodynamics principles.
2. Able to calculate and analyse the study of chemical equations and spontaneity of processes.

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 explain the principle of extractive metallurgy.
2. Ability to apply fundamental of extractive metallurgy in hydrometallurgy process.
3. Ability to compare between pyrometallurgy and electrometallurgy process

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 describe the fundamental principles, equipment, and application of welding.
2. Ability to apply and perform SMAW, GMAW, and GTAW techniques.

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 motors which include DC motor, single phase induction motor, stepper motor and DC/AC servo motor.

Course Outcomes:
1. Able to determine the basic concept of electric circuit and magnetic circuit.
2. Able to describe the concept of active and reactive powers, the power triangle and per unit quantities to solve electrical engineering problems.
3. Able to apply the operational principles and application of electrical machines and transformer.
4. Able to compare the different types of electrical machines for equivalent circuit.

KDJ20403 TEKNOLOGI FOUNDRI [FOUNDRY TECHNOLOGY]

No of Credits: 3

Course Synopsis:
This course is developed to expose the students to the fundamentals, step-by-step processes involved in castings and aspects that affect the quality of the castings. The topics which will be covered in this course are as follows; introduction to foundry technology, metallurgy in casting, technology of pattern making, technology of molding and coremaking, gating system of casting, technology of melting and casting, technology of molding and casting, defects in castings, casting evaluations and tests.

Course Outcomes:
1. Able to analyse the technology of foundry and the processes of casting.
2. Able to assemble pattern making process, mold making, melting and casting, and casting finishing.
3. Able to analyse casting defects, causes and remedies

KDJ20503 PENGUJIAN LOGAM [METAL TESTING]

No of Credits: 3

Course Synopsis:
This subject will introduce the students to the theory and practical aspects of conducting the destructive and non-destructive tests such as compression test, Charpy impact testing, hardness test, magnetic particle test and liquid penetration test. The students are also exposed to the specific uses and operation of each test.

Course Outcomes:
1. Able to describe the important of metal testing and defects.
2. Able to identify and operate the destructive metal testing machine.
3. Able to analyse several types of non-destructive testing.

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. Able to define and describe the basic concept of stresses.
2. Able to define and describe stress-strain diagram, allowable stresses, factor of safety, centroid of gravity and moment of inertia.
3. Able to identify and calculate stress distribution and the angle of twist subjected to torsional loads.
4. Able to identify the types of beams and evaluate the loadings and flexure formula for a beam, shear force and moment diagrams.

KDJ20703 ASAS PEMESINAN LOGAM [BASIC MACHINING OF METALS]

No of Credits: 3

Course Synopsis:
The subject covers the principles and theories of material removal and applications for both the conventional and nonconventional machining processes. The students are expected to the concepts of main classifications of metal manufacturing, theoretically and practically. They can identify the problems occurred during machining process and handle them precisely.

Course Outcomes:
1. Able to describe the principles of metal machining technology.
2. Ability to perform basic machining processes.
3. Ability to describe advanced machining processes.

KDJ30103 METALURGI SERBUK [POWDER METALLURGY]

No of Credits: 3

Course Synopsis:
The course focuses on the understanding the basic principles of powder metallurgy technology and the practical skills of metalworking techniques. The students will be taught on the basic theory and principles of powder characterization and fabrication, pre-compaction powder handling, compaction, sintering and compact characterizations. In the laboratory projects, students will be exposed to the powder metallurgy techniques such as powder characterization analysis, powder mixing and blending, powder compaction, sintering process, microstructural features, pore characteristics, and mechanical properties.

Course Outcomes:
1. Able to describe the basic of powder metallurgy principles and technology.
2. Ability to practice the techniques involves and produce powder metallurgy products.
3. Ability to construct the microstructure, pore characteristics and mechanical properties of powder metallurgy products.

KDJ30203 RAWATAN HABA [HEAT TREATMENT]

No of Credits: 3

Course Synopsis:
This course is offered to deliver the knowledge of phase diagram, microstructure and composition in metals and alloys, develop ability to describe the principles and applications of heat treatment and to relate the properties of metals after the heat treatment processes. The topics which will be covered in this course are as follows; Introduction of Solidification Process; Phase Diagram for Pure Elements, The Gibbs Phase Rule, Cooling Curve; Binary Phase Diagram; Lever Rule; Non-equilibrium Solidification of Alloy; Heat Treatment and Application; Principles of Heat Treatment for steel and non-ferrous metal; and Solution Treatment.

Course Outcomes:
1. Able to interpret phase diagrams, microstructure and composition in metals and alloys.
2. Able to propose different heat treatment process for different application.
3. Able to evaluate the properties of metals after heat treatment process.

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 Outcomes:
1. Able to analyse the theory, principles, and processes of metals corrosion.
2. Able to analyse the types of metals corrosion and their causes.
3. Able to construct corrosion prevention and metals protection methods.

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 Outcomes:
1. Able to explain the fundamentals of Industrial Safety.
2. Able to develop safety issues using Safety standards and tools.
3. Able to explain the fundamentals of Quality Management and apply techniques and tools of Quality Management.
4. Able to apply professional ethics and norms of technician practice.

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 Outcomes:
1. Ability to identify solution based on problem study.
2. Ability to design engineering solution utilizing an engineering practice.
3. Ability to perform an engineering project.
4. Ability to propose a technical report and communicate in oral presentation

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 Outcomes:
1. Ability to apply theoretical knowledge and practical skills to 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 to complete the given task, writing reports and present their own work

FACULTY OF CIVIL ENGINEERING TECHNOLOGY (FTKA)

Programmes Offered:

1. Bachelor of Civil Engineering with Honours
2. Bachelor of Enviromental Engineering with Honours
3. Bachelor of Civil Engineering Technology (Construction) with Honours
4. Bachelor of Technology in Building Construction with Honours

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Programmes Offered:

1. Bachelor of New Media Communication with Honours
2. Bachelor of Business (International Business) with Honours
3. Bachelor of Business (Engineering Entrepreneurship) with Honours

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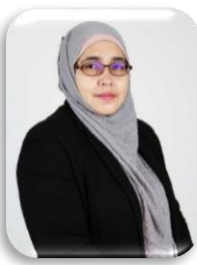Email: rezal@unimap.edu.my

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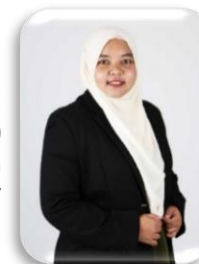
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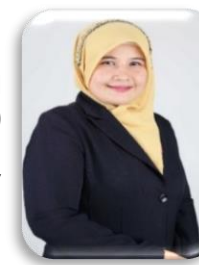
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LIST OF COURSES:

COURSE CODE	COURSE NAME
SDQ10002	Matematik Awalan [Preliminary Mathematics]
SDQ10103	Matematik I [Mathematics I]
SDQ20203	Matematik II [Mathematics II]
SDQ20303	Matematik III [Mathematics III]
SDB10102	Bahasa Inggeris Komunikasi 1 [Communicative English 1]
SDB20102	Bahasa Inggeris Komunikasi 2 [Communicative English 2]
SDB30102	Bahasa Inggeris Komunikasi 3 [Communicative English 3]
SDB41002	Bahasa Melayu [Malay Language]
SDU12302	Kemahiran Dan Teknologi Dalam Komunikasi [Skill And Technology In Communication]
SDU22402	Keusahawanan Kejuruteraan [Engineering Entrepreneurship]
SDU12902	Falsafah Dan Isu Semasa [Philosophy And Current Issues]
SDZ11101	Kumpulan Latihan Kelanasiswa Malaysia I (KLKM I) [Malaysian Universiti Rover Training Group I (MURTG I)]
SDZ11201	Kumpulan Latihan Kelanasiswa Malaysia II (KLKM II)[Malaysian Universiti Rover Training Group II (MURTG II)]
SDZ11301	Briged Bomba Dan Penyelamat I [Fire And Rescue Bridged I]
SDZ11401	Briged Bomba Dan Penyelamat II [Fire And Rescue Bridged II]
SDZ11501	Bulan Sabit Merah Malaysia I (BSMM I) [Malaysian Red Crescent I (BSSM I)]
SDZ11601	Bulan Sabit Merah Malaysia II (BSMM II) [Malaysian Red CrescenT I (BSSM II)]
SDZ11701	Pertahanan Awam I [CIVIL DEFENSE I]

LIST OF COURSES:

COURSE CODE	COURSE NAME
SDZ11801	Pertahanan Awam II [CIVIL DEFENSE II]
SDZ11901	Pandu Puteri Klover I [CLOVER I]
SDZ12001	Pandu Puteri Klover II [CLOVER II]
SDZ12101	St. John Ambulans Malaysia I [Malaysian St. John Ambulance I]
SDZ12201	St. John Ambulans Malaysia II [Malaysian St. John Ambulance II]
SDZ12301	Pancaragam I [Brass Band I]
SDZ12401	Pancaragam II [Brass Band II]

SDQ10002 PRELIMINARY MATHEMATICS

No of Credits: 2

Course Synopsis:
This course contains an introduction to the basic of algebra and basic of calculus. Students will be exposed to type of number systems and functions in algebra, including real numbers, polynomial, rational functions and transcendental functions (logarithmic, exponent, etc) and system of equations and inequalities. Students also will be exposed with the basic calculus including limit, differentiation and integration.

Course Outcomes:
1. Ability to explain and apply the basic concept of algebra.
2. Ability to explain and apply the basic concept of calculus.

SDQ10103 MATHEMATICS I

No of Credits: 3

Course Synopsis:
This course introduces the fundamental principles and concepts of algebra. Particularly, the topics that will be discussed in this course includes trigonometric, complex numbers, matrices and vectors. Students will be exposed to the principles, formula and identities of trigonometric ratio, functions and solutions; types and solutions of complex numbers; types, component and properties of matrices, including several solutions involving matrices and introduction to vectors, its properties, operations and applications.

Course Outcomes:
1. Ability to express the concepts of trigonometric and solve the problems involving trigonometric functions.
2. Ability to express the operations and solve the problems involving complex numbers.
3. Ability to identify the properties and solve the operations involving matrices.
4. Ability to identify and apply the concepts of vectors; and solve the problems involving vectors.

SDQ20203 MATHEMATICS II

No of Credits: 3

Course Synopsis:
This course contains the concepts of calculus consisting limit, differentiation, integration and the basic concepts of statistics and probability. Students also will be introduced to some applications involving limit, differentiation and integration. Furthermore, students will be introduced to the basic analytical data using statistics and understanding the concept of probability.

Course Outcomes:
1. Ability to understand and solve the concepts of limits and continuity.
2. Ability to understand and solve the concept and applications of differentiation by using appropriate methods.
3. Ability to understand and solve the concepts and applications of integration by using appropriate methods.
4. Ability to understand and use the basic concept of statistics and probability.

SDQ20303 MATHEMATICS III

No of Credits: 3

Course Synopsis:
This course introduces to ordinary differential equations (ODE). The topic begins with an introduction to the first order differential equations where the students will be able to solve using various techniques of ODE such as separable variables, homogeneous, linear and exact equations. Application to initial and boundary value problem are also included. It proceeds with the second order linear differential equations, topics on homogeneous linear equations and non-homogeneous linear equations are also discussed. Finally, students will learn the basic concept of Laplace transform as a solution for solving the second order differential equations.

Course Outcomes:
1. Ability to define and solve the first order differential equations using various methods.
2. Ability to use and solve the applications of the first order differential equations.
3. Ability to define and solve the second order linear differential equations using various methods.
4. Ability to express the basic concept and applications of Laplace transforms and solve second order linear differential equations.

SDB10102 COMMUNICATIVE ENGISH I

No of Credits: 2

Course Synopsis:
The course uses communicative-based approach to improve the students' proficiency level. The course alligns 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. Demonstrate comprehension of simple informational materials and short simple descriptions from everyday materials.
2. Expressing comprehension of simple day-to-day informational audio and speech.
3. Write simple connected texts on familiar topics covering formal and less formal issues.

SDB20102 COMMUNICATIVE ENGISH 2

No of Credits: 2

Course Synopsis:
This course is aligned with the Common European Framework of Reference for Languages (CEFR) in exposing students to a variety of authentic materials. It adopts a 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 and in academic context. Emphasis is given more on productive skills particularly speaking and writing

Course Outcomes:
1. Write short, detailed descriptions on familiar topics covering formal and less formal issues.
2. Construct explanations and arguments on topics covering formal and less formal issues.
3. Demonstrate analytical comprehension skills on information covering familiar topics.

SDB30102 COMMUNICATIVE ENGISH 3

No of Credits: 2

Course Synopsis:
This course is alligned 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 contexts. Emphasis is given more on productive skills particularly speaking and writing.

Course Outcomes:
1. Demonstrate analytical comprehension skills on straightforward texts covering formal and less formal issues.
2. Prepare, plan and organize a discussion covering formal and less formal issues.
3. Write clear coherent writing on topics covering formal and less formal issues.

SDB40102 BAHASA MELAYU

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 (mendegar, membaca, menulis dan bertutur) dengan memberi tumpuan kepada kemahiran bertutur dan menulis. Komponen menulis difokuskan kepada ketepatan penggunaan aspek tatabahasa, struktur dan semantik (makna) dan dikukuhkan dengan tajuk-tajuk penulisan esei yang akan memberi peluang kepada pelajar untuk mempelajari proses-proses tatabahasa seperti penggunaan kata, analisis kesalahan bahasa 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. Mengetahui dan memahami sejarah dan perkembangan bahasa Melayu.
2. Memahami dan menguasai konsep-konsep asas tatabahasa dalam aspek morfologi dan sintaksis.
3. Menganalisis bahasa yang betul dari aspek tatabahasa dan struktur ayat dalam pelbagai jenis laras penulisan.
4. Berhujah dengan menggunakan bahasa yang betul dan berkesan dalam penulisan dan lisan.

SDU12302 SKILL AND TECHNOLOGY IN COMMUNICATION

No of Credits: 2

Course Synopsis:
This course introduces students to the basic aspects of human communication and technology in communication. The first part of the course about human communication discusses the elements of human communication, listening skills, verbal communication, nonverbal communication, intercultural communication, small group communication, organizational communication and public speaking. Where the second part of the course about technology in communication discusses the technology and new media communication and multimedia presentation for communication.

Course Outcomes:
1. Ability to remember and understand the concept of communication and technology in communication.
2. Ability to apply and analyze the communication skills in various context.

SDU12902 PHILOSOPHY AND CURRENT ISSUES

No of Credits: 2

Course Synopsis:
This course focuses on basic ideas and questions in philosophy related to human moral and intellectual life. Discussions are done to give students a way to think more maturely in dealing with a problem and issue. Through reading and discussion, students are guided to understand more clearly about philosophy and its importance in building identity, moral responsibility, human relations and human relationship with nature with the formation of the value system of Malaysian society.

Course Outcomes:
1. Ability to explain current issues based on philosophical knowledge, National Education Philosophy and Rukunegara.
2. Ability to explain current issues based on the main thought in various philosophical streams.
3. Ability to elaborate on current issues through philosophical comparison perspective as the basis for establishing a dialogue between cultures.

SDU22402 ENGINEERING ENTREPRENEURSHIP

No of Credits: 2

Course Synopsis:
This course aims to equip students with basic knowledge in entrepreneurship. Apart from that, students will also be taught to use business management tools such as Business Model Canvas, Value Proposition Canvas, Ansoff Matrix and Business Plan. This course aims for student to have a foundation if they want to become entrepreneurs.

Course Outcomes:
1. Ability to remember and understand basic concepts and fundamentals in entrepreneurial knowledge.
2. Ability to describe creative elements and concepts; innovations; business plans and business management tools such as BMC; Ansoff and in being a good entrepreneur.
3. Able to relate entrepreneurial knowledge to current issues in the era of globalization

SDZ11101 MALAYSIAN UNIVERSITI ROVER TRAINING GROUP I (MURTG I)

No of Credits: 1

Course Synopsis:
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 persetiaan pengakap, latihan lencana kemahiran asas, latihan lencana wajib, latihan lencana pilihan dan latihan lencana Baden Powell. Pelajar akan didedahkan dengan pelbagai jenis ikatan dan simpulan dan khidmat masyarakat.

Course Outcomes:
1. Keupayaan untuk menunjukkan kemahiran kepimpinan dalam aktiviti pengangkap.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kaedah yang bersesuaian dalam aktiviti pengakap.

SDZ11201 MALAYSIAN UNIVERSITI ROVER TRAINING GROUP I (MURTG II)

No of Credits: 1

Course Synopsis:
KLKM merupakan badan beruniform bersifat antarabangsa yang membincangkan mengenai ilmu kemahiran hidup dan ikhtiar hidup berdasarkan latihan Baden Powell. Para pelajar juga akan didedahkan dengan tatacara kehidupan yang beretika, saling bantu membantu, hormat menghormati, kasih sesama manusia dan alam sekitar melalui penghayatan persetiaan dan undang-undang Pengakap serta penganjuran program pengakap bersama komuniti.

Course Outcomes:
1. Keupayaan untuk menunjuk cara kemahiran kepimpinan dalam aktiviti pengangkap
2. Keupayaan untuk berkomunikasi dengan berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasi aktiviti perkhemahan dan pengembaraan bersama komuniti.

SDZ11301 FIRE AND RESCUE BRIGADE I

No of Credits: 1

Course Synopsis:
Tujuan utama kursus ini untuk memupuk semangat setia kepada organisasi (UniMAP & Briged Bomba) serta Negara. Memupuk berdisiplin serta sedia memberi perkhidmatan sukarela pada setiap masa dan di mana jua diperlukan. Kursus ini juga memberi nilai "soft skill" dalam kalangan mahasiswa UniMAP kerana kebakaran merupakan ancaman yang terdapat dalam masa aman justeru, kursus ini diharap dapat memupuk serta memberi kesedaran yang tinggi kepada mahasiswa tentang bahaya kebakaran.

Course Outcomes:
1. Keupayaan untuk menunjukkan kemahiran kepimpinan dalam aktiviti kebombaan.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi dengan berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kaedah dan langkah-langkah asas sesuatu aktiviti kebombaan yang bersesuaian dalam komuniti.

SDZ11401 FIRE AND RESCUE BRIGADE II

No of Credits: 1

Course Synopsis:
Tujuan ini lanjutan daripada Kursus SDZ11301Briged Bomba dan Penyelamat. 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 menunjuk cara kaedah dan langkah-langkah aktiviti menyelamat kebakaran dalam kumpulan kecil.
2. Keupayaan untuk mempraktik kemahiran berkomunikasi dengan berkesan dalam aktiviti berkumpulan.
3. Berkeupayaan untuk mempamerkan kemahiran teknikal dalam sesuatu aktiviti kebombaan yang bersesuaian dalam komuniti.

SDZ11501 MALAYSIAN RED CRESCENT I (BSSM I)

No of Credits: 1

Course Synopsis:
Kursus BSMM 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 menyelamat secara pantas apabila sesuatu ancaman kecemasan nyawa berlaku.

Course Outcomes:
1. Keupayaan untuk menunjukkan kemahiran asas pertolongan cemas BSMM dalam aktiviti kumpulan kecil.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Berkeupayaan untuk mempamerkan kaedah dan langkah-langkah aktiviti menyelamat dan pertolongan cemas yang bersesuaian dalam komuniti.

SDZ11601 MALAYSIAN RED CRESCENT II (BSSM II)

No of Credits: 1

Course Synopsis:
Kursus Lanjutan dari kursus SDZ11501 BSMM I ini pelajar akan didedahkan dengan prinsip-prinsip asas serta matlamat pertolongan cemas. Pelajar akan didedahkan dengan konsep dan kemahiran aktiviti menyelamat dan pertolongan cemas secara beretika. Amalan keselamatan dan kesihatan, operasi pengurusan bencana dan operasi menyelamat dalam situasi-situasi yang berbeza juga ditekankan berdasarkan modul bulan sabit merah Malaysia.

Course Outcomes:
1. Keupayaan untuk menunjuk cara aktiviti pertolongan cemas dalam kumpulan kecil.
2. Keupayaan untuk mempraktik komunikasi berkesan dalam aktiviti berkumpulan.
3. Berkeupayaan untuk mempamerkan kaedah bantuan dan operasi menyelamat yang bersesuaian dalam komuniti.

SDZ11701 CIVIL DEFENSE I

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 menyelamat dan pertolongan cemas semasa 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 kemahiran kepimpinan pertahanan awam dalam aktiviti kumpulan kecil.
2. Keupayaan untuk mempraktik komunikasi berkesan dalam aktiviti berkumpulan.
3. Berkeupayaan untuk mempamerkan kaedah dan kemahiran teknikal dalam melaksanakan aktiviti menyelamat dalam komuniti.

SDZ11801 CIVIL DEFENSE II

No of Credits: 1

Course Synopsis:
Kursus ini menawarkan pengetahuan dan kemahiran asas kawad kaki, asas pertolongan cemas, sistem pendarahan tubuh manusia, rawatan lecur kebakaran, rawatan kecederaan tulang, sendi dan otot, rawatan gigitan serangga dan binatang berbisa, resusitasi kardio pulmonari dan teknik ekstraksi. Para pelajar akan diajar secara teori dan praktikal berkenaan operasi menyelamat dan pertolongan cemas semasa kemalangan bagi meningkatkan pemahaman dan kesediaan mental dan fizikal semasa menghadapi sebarang isu kecemasan.

Course Outcomes:
1. Keupayaan untuk menunjuk cara langkah-langkah aktiviti menyelamat dan pertolongan cemas dalam kumpulan kecil.
2. Keupayaan untuk mepraktik komunikasi berkesan dalam aktiviti berkumpulan.
3. Berkeupayaan untuk mengorganisasi sesuatu aktiviti bantuan dan operasi menyelamat yang bersesuaian dalam komuniti.

SDZ11901 CLOVER I

No of Credits: 1

Course Synopsis:
Kursus ini merangkumi latar belakang dan prinsip asas gerakan kepanduan dan Pandu Puteri yang bertujuan melahirkan graduan yang mempunyai kemahiran insaniah melalui Program Pandu Puteri terutamanya dari aspek pengetahuan dan kemahiran asas Pandu Puteri berteraskan kerja berpasukan yang boleh diaplikasikan dalam kerjaya yang diceburi.

Course Outcomes:
1. Keupayaan untuk menunjukkan kemahiran kepimpinan dalam aktiviti Pandu Puteri.
2. Keupayaan untuk mempraktik komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan kemahiran asas dalam aktiviti kepanduan dengan komuniti.

SDZ12001 CLOVER II

No of Credits: 1

Course Synopsis:
Kursus Pandu Puteri Klover II 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). Pengapllikasian konsep kerja secara berpasukan yang boleh dalam program-program perkhemahan dan istiadat-istiadat tertentu pandu puteri Malaysia.

Course Outcomes:
1. Keupayaan untuk menyertai aktiviti kerja sosial yang memberi sumbangan kepada komuniti.
2. Keupayaan untuk mempraktik komunikasi berkesan dalam aktiviti berkumpulan.
3. Berkeupayaan untuk mengorganisasi sesuatu aktiviti kepanduan/pandu puteri yang bersesuaian dalam komuniti.

SDZ12101 MALAYSIAN ST. JOHN AMBULANCE I

No of Credits: 1

Course Synopsis:
Kursus ini bertujuan memperkenalkan prinsip-prinsip asas serta matlamat pertolongan cemas. Pelajar akan didedahkan bagaimana memberi bantuan dalam sesuatu kecemasan. Mereka akan belajar kaedah pembalutan dan pembebatan, serta cara mengendalikan pendarahan luaran dan keadaan renjatan. Pelajar juga akan mengenali kepatahan tulang, terseliuh, dislokasi dan cara memberi rawatan kecemasan ke atas kes-kes tersebut.

Course Outcomes:
1. Keupayaan untuk menunjukkan kemahiran kepimpinan dalam aktiviti pertolongan cemas.
2. Keupayaan untuk mempraktik kemahiran berkomunikasi dengan berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk menunjukkan langkah-langkah pertolongan cemas dalam aktiviti menyelamat dengan komuniti.

SDZ12201 MALAYSIAN ST. JOHN AMBULANCE II

No of Credits: 1

Course Synopsis:
Kursus ini sebagai 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 menunjuk cara pertolongan cemas dalam aktiviti kumpulan kecil.
2. Keupayaan untuk mempraktik kemahiran berkomunikasi dengan berkesan dalam aktiviti berkumpulan.
3. Berkeupayaan untuk mempamerkan kaedah dan langkah-langkah aktiviti menyelamat dan pertolongan cemas yang bersesuaian dalam komuniti.

SDZ12301 BRASS BAND I

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 sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan pancaragam. 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 menunjukkan kemahiran kepimpinan dalam permainan muzik secara berkumpulan
2. Keupayaan untuk mempraktik komunikasi berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mempamerkan alunan muzik melalui persembahan pancaragam.

SDZ12401 BRASS BAND II

No of Credits: 1

Course Synopsis:
Kursus kokurikulum ini bertujuan mendedahkan pelajar-pelajar kepada ilmu pancaragam dari kemahiran teori dan teknikal. Dari segi teori, kursus ini lebih menjurus kepada sejarah, latar belakang, terminologi, pengurusan diri dan lain-lain yang berkaitan dengan pancaragam. 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 menunjuk cara sikap profesional dan beretika dalam persembahan pancaragam.
2. Keupayaan untuk mempraktikkan kemahiran berkomunikasi yang berkesan dalam aktiviti berkumpulan.
3. Keupayaan untuk mengorganisasi alunan muzik melalui aktiviti persembahan pancaragam dengan komuniti.

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