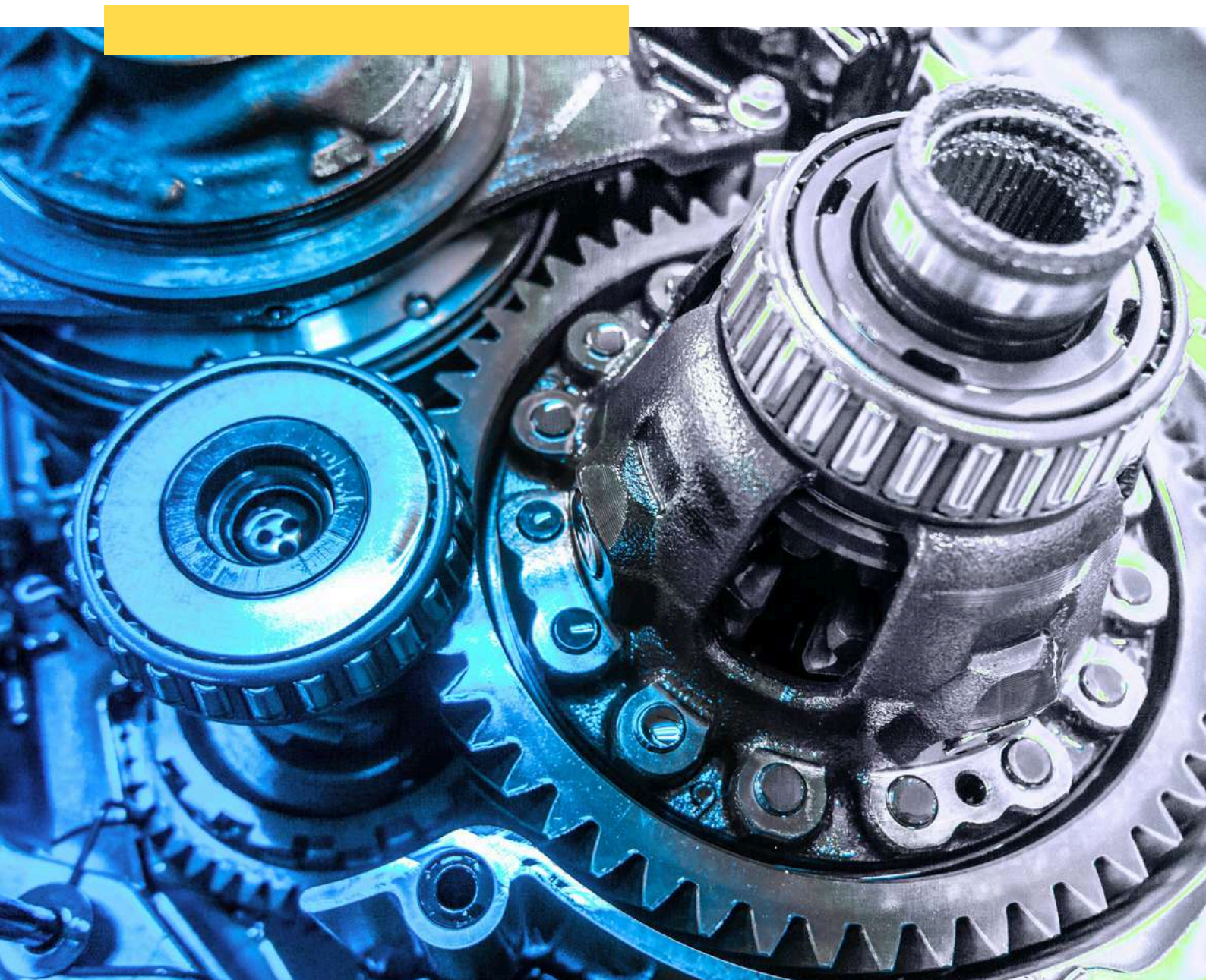


STUDENT STUDY GUIDE

DEPARTMENT OF MECHANICAL ENGINEERING



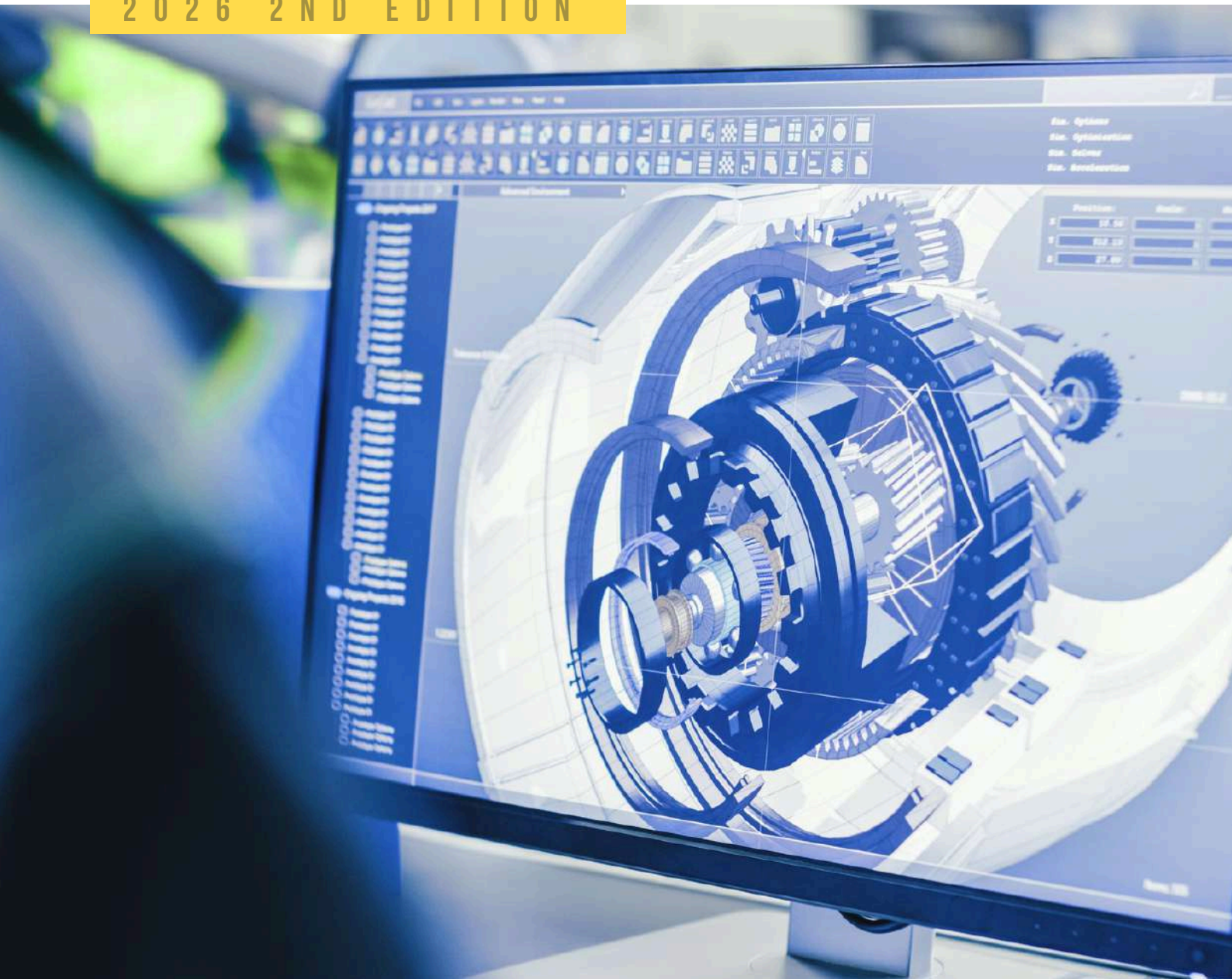
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DEPARTMENT OF MECHANICAL ENGINEERING

2026 2ND EDITION



DEPARTMENT OF MECHANICAL ENGINEERING

POLYTECHNIC OF SULTAN MIZAN ZAINAL ABIDIN

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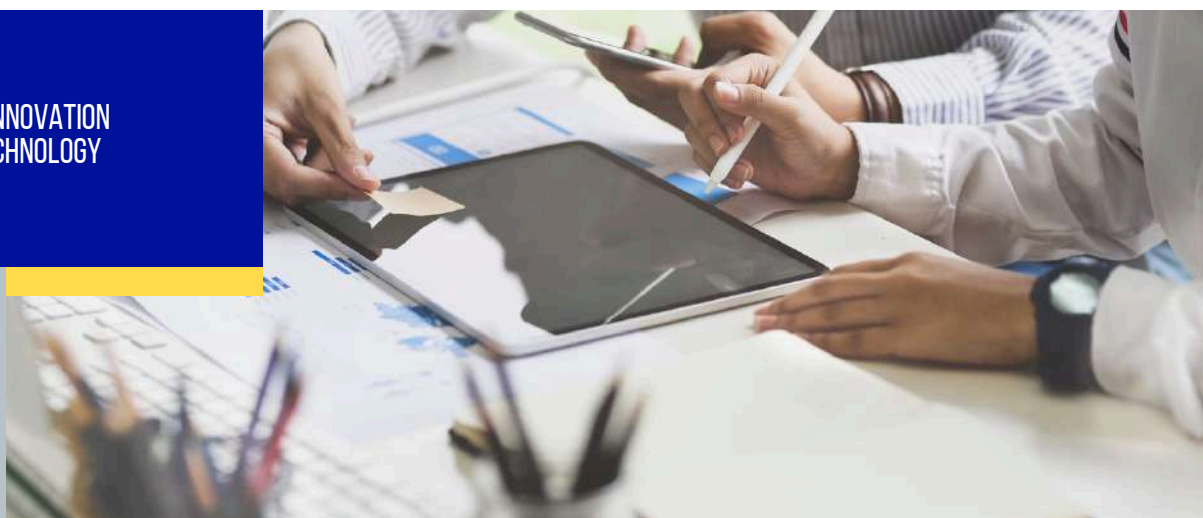
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BRINGING IDEAS AND INNOVATION
TO LIFE THROUGH TECHNOLOGY



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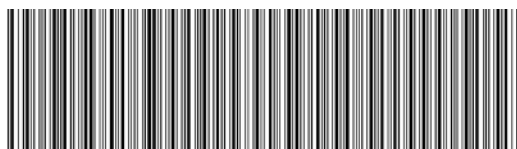
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STUDENT STUDY GUIDE: DEPARTMENT OF MECHANICAL ENGINEERING 2026 2ND EDITION



BRINGING IDEAS AND INNOVATION
TO LIFE THROUGH TECHNOLOGY



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TOGETHER WE UPHOLD



PREFACE

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Assalamualaikum W.B.T

Politeknik Sultan Mizan Zainal Abidin (PSMZA) offers a wide range of programmes designed to meet the evolving needs and demands of today's industries. In fulfilling its role as a leading higher education institution, PSMZA remains committed to ensuring that all programmes are aligned with the mission and vision of the Ministry of Higher Education in developing competent, creative, and innovative human capital.

To enhance the quality of graduates, PSMZA provides state-of-the-art teaching and learning facilities, incorporating advanced technologies that support effective education and lifelong learning. Students are encouraged to explore new frontiers of knowledge and innovation, while gaining valuable experience through active participation in various creative and innovative projects.

The diploma programmes at PSMZA span three (3) years, during which every student is required to undergo Industrial Training in the sixth semester. This practical training aims to expose students to real-world working environments, strengthen their self-confidence, and foster essential teamwork skills.

It is our hope that this Student Study Guide will serve as a comprehensive reference for students throughout their academic journey at PSMZA. It is designed to help students plan their activities, set personal goals, and achieve success both academically and personally.

On behalf of Politeknik Sultan Mizan Zainal Abidin, I warmly welcome all students and wish you the very best in your studies and future endeavors.

Wassalam.

PSMZA STEPPING INTO A NEW ERA



PREFACE



FARIH BIN DERAMAN

Head of Mechanical Engineering Department

Assalamualaikum W.B.T

Welcome to the Mechanical Engineering Department, Politeknik Sultan Mizan Zainal Abidin (PSMZA). I would like to extend my heartfelt congratulations to all new students for being offered admission into our diploma programmes. This opportunity marks the beginning of an exciting journey, and I encourage you to embrace it fully. Make the most of your time here by gaining not only knowledge, but also valuable skills, experience, and exposure that will prepare you to excel in your future career.

The Mechanical Engineering Department offers four dynamic diploma programmes:

- Diploma in Mechanical Engineering
- Diploma in Mechanical Engineering (Automotive)
- Diploma in Mechanical Engineering (Manufacturing)
- Diploma in Mechatronics Engineering

This Student Study Guide has been developed as a practical reference to support you throughout your studies. It provides essential information to help you plan your activities, set goals, and achieve success during your academic journey. Inside, you will find key details about the department's curriculum, programme structure, and syllabus, along with important academic and administrative guidelines. This guide will serve as your primary resource in navigating the programmes offered by the department.

On behalf of the Mechanical Engineering Department, I would like to express my sincere appreciation and gratitude to all who contributed to the preparation and publication of this Student Study Guide. Thank you, and best wishes for all the students and future endeavors.

Wassalam.

J K M F L Y H I G H



ABOUT

POLITEKNIK SULTAN MIZAN ZAINAL ABIDIN

Politeknik Sultan Mizan Zainal Abidin (PSMZA) was inaugurated on July 24, 2006 after obtaining His pleasure Down Royal Highness the Sultan of Terengganu in conjunction with the birthday of His Majesty's 44th. Before the polytechnic is known as the 'Politeknik Dungun Terengganu. PSMZA commenced operations since January 2001 at Sekolah Menengah Teknik Dungun and later moved to the campus from 8 October 2001. PSMZA located at the foot of Bukit Bauk, approximately 8 km from the town, 88 km from Kuala Terengganu Airport and 125 km from Kuantan.



PSMZA area of 76.6 acres includes the development of an academic block, workshops and laboratories, lecture halls, classrooms, seminar rooms, TECC, and kamsis that can accommodate up to 5000 students at a time. The other facilities are the Resource Center, the Islamic Center, sports complex, golf, softball, courts indoor soccer, canteens and cafeterias

PSMZA offers 9 diploma level courses across four main departments: Civil Engineering, Electrical Engineering, Mechanical Engineering, and Information Technology & Communications. These are supported by the Department of Mathematics, Science & Computer and the Department of General Studies. The institution has a total of 4102 staff members, including 296 academic staff and 106 academic support personnel.

VISION



To be the Leading-Edge TVET institution.

MISSION



01 To provide wide access to quality and recognised TVET programmes.

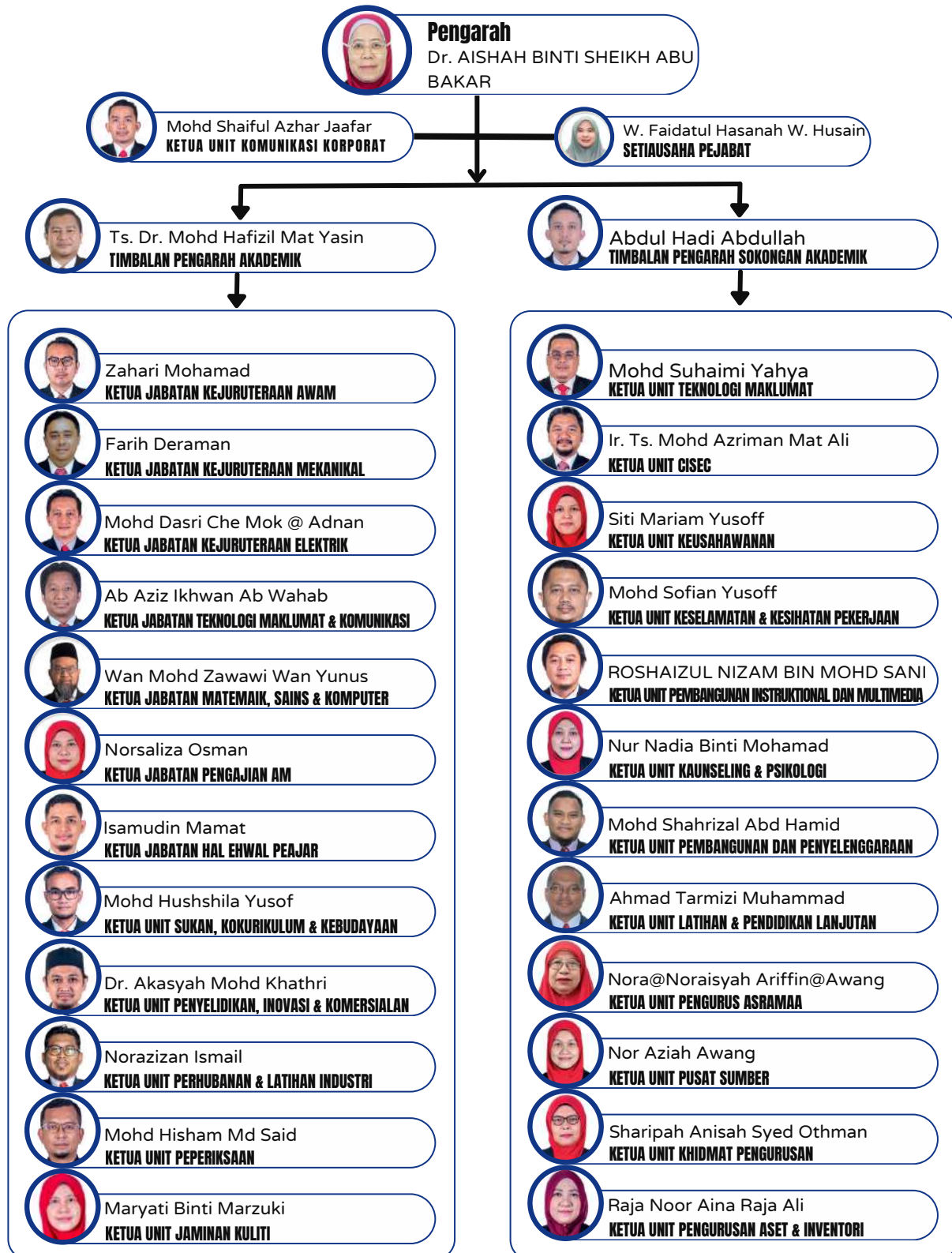
02 To empower communities through lifelong learning.

03 To develop holistic, entrepreneurial and balanced graduates.

04 To develop holistic, entrepreneurial and balanced graduates.

ORGANIZATIONAL CHART

TOP MANAGEMENT PSMZA



PETUNJUK/LEGEND

A:PENTADBIRAN	G2:BENGKEL JKM	J3:MAKMAL K.BATA,K.KAYU	U:PUSAT ISLAM
B:PLPL	G3:BENGKEL JKM	J4:MAKMAL HIDRAULIK, JALAIRAYA	V:KAFETARIA
C:PLPL(DKU)	G4:BENGKEL AUTOMOTIF	J5:MAKMAL MEKANIK TAAH	W:ASRAMA SISWI
D:JMSK	G5:BENGKEL JKM	K:JAB.PENGAJIAN AM	X1:ASRAMA SISWA
E1:MAKMAL JKE	G6:BENGKEL JKM	L:DEWAH SERBAGUNA	X2:ASRAMA SISWA
E2:MAKMAL JKE	G7:BENGKEL JKM	M:GARA J BAS	Y1:POHOK JAGA
E2A:DEWAH MIH JKE	G8:BENGKEL JKM	I:SETOR PUSAT, UNIT PEMB.& SENGARAAN	Y2a:POHOK JAGA
E4:MAKMAL JKE	G9:BENGKEL JKM	P&Q:KUARTERS JENIS F&H	Y2b:RUMAH PAM
E5:MAKMAL JKE	H:PUSAT SUMBER	R:KUARTERS JENIS D	Y2c:SEKSYEN PAM
F:HHP, LI, KANTIN, KOOP	J1:JKA(PEJABAT)	S1:KUARTERS JENIS C1	Yd:REFUSE COLLECTION
G1:JKM(PEJABAT)	J1A:BILIK KULIAH JKA	S2:KUARTERS JENIS C2	Za,Zb,Zc,Zd,Ze&Zf:
G1A:BILIK KULIAH	J1B:DEWAH MIH JKA	T:PUSAT SUKAI	THB SUB-STATION
G1B:DEWAH MIH JKM	J2:MAKMAL TEK.KONKRIT, UKUR,STRUKTUR,K.PAIP		Z1a,Z1b&Z1c:TAHNAS AWAM

Keluasan Kawasan : 100 Ekar
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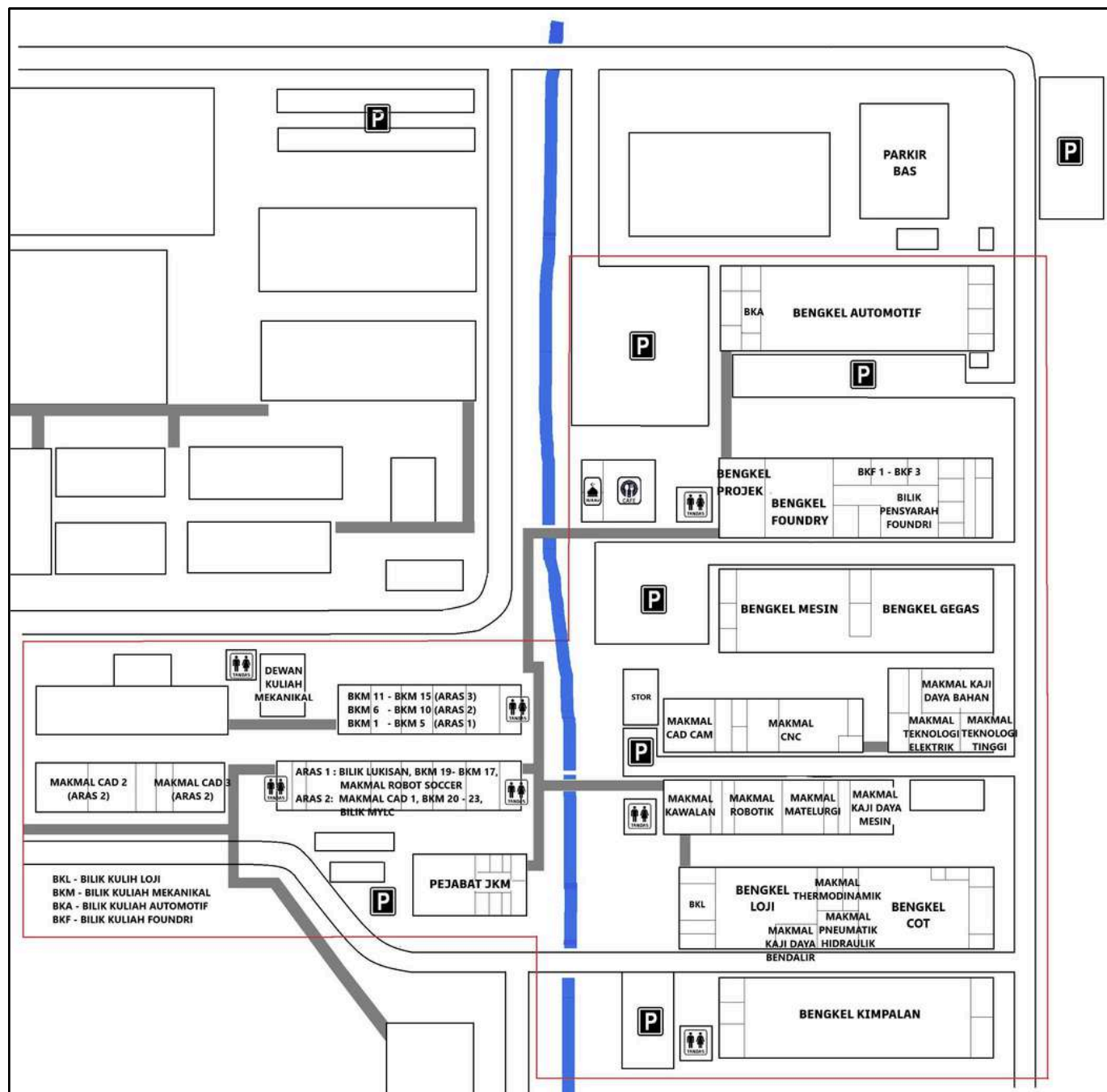
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Dari Kuala Terengganu

Ke Kuantan

FLOOR

MECHANICAL ENGINEERING DEPARTMENT



OUTCOME-BASED EDUCATION (OBE)

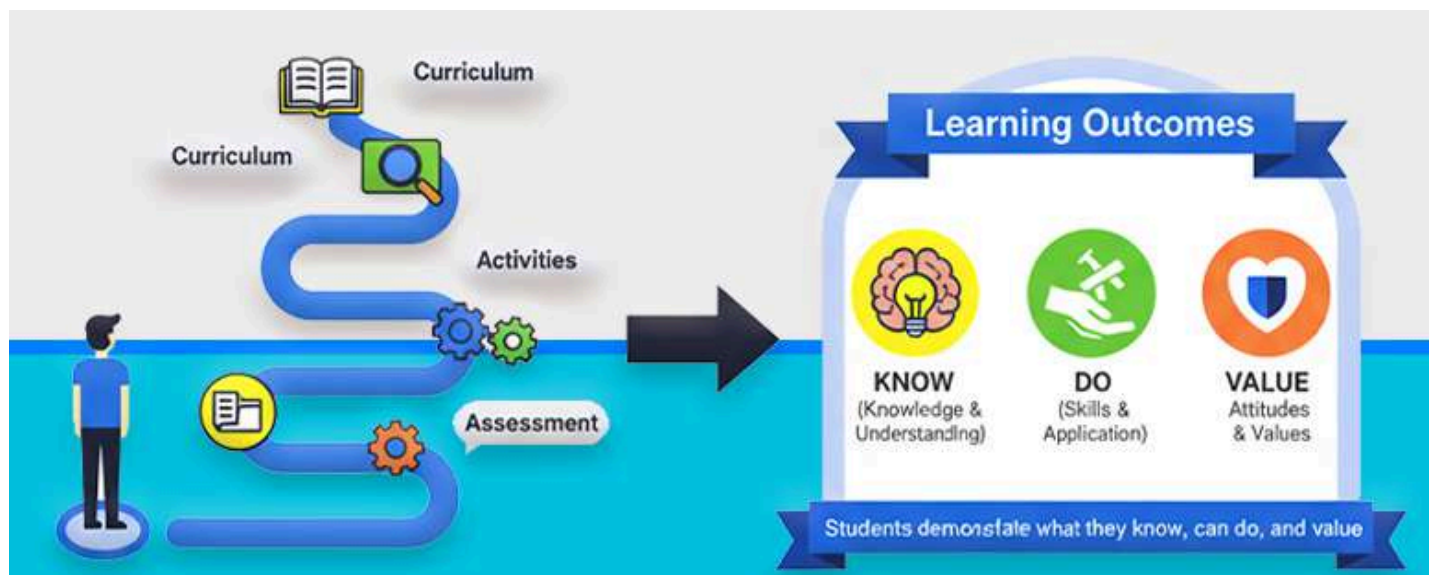


OUTCOME-BASED EDUCATION

INTRODUCTION TO OUTCOME-BASED EDUCATION (OBE)

Politeknik Malaysia adopts the Outcome-Based Education (OBE) system as required by the Engineering Technology Accreditation Council (ETAC) under the Board of Engineers Malaysia (BEM). OBE focuses on achieving clear learning outcomes to ensure graduates are equipped with the right knowledge, technical skills, and professional values needed by the industry. Through continuous assessments and improvement, students not only gain technical expertise but also develop important soft skills such as communication, teamwork, leadership, and ethics. Graduates from ETAC-accredited programmes are recognized locally and internationally, enhancing their career opportunities.

At Politeknik Malaysia, the implementation of OBE can be seen through the alignment of Course Learning Outcomes (CLOs) with Programme Learning Outcomes (PLOs) and Programme Educational Objectives (PEOs). Students' performance is continuously monitored through various assessments such as assignments, projects, laboratory work, and examinations. Feedback from these assessments is used to improve teaching and learning through Continuous Quality Improvement (CQI), ensuring that programmes remain relevant and meet both academic standards and industry expectations.



OUTCOME-BASED EDUCATION

MODEL OF OBE



Programme Educational Objectives (PEO)

Broad statements describing the expected achievements of graduates within 3 to 5 years after graduation, developed with input from stakeholders.



Programme Learning Outcomes (PLO):

Statements of knowledge, skills, and values students are expected to know and demonstrate by the time of graduation



Course Learning Outcomes (CLO):

Specific and measurable statements defining the knowledge, skills, and attitudes students will demonstrate after completing a specific course, which align with the PLOs.



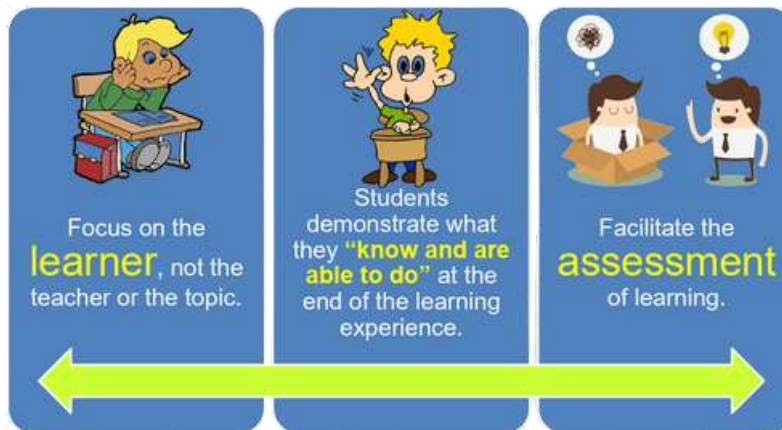
Learning Outcomes (LO):

The core focus of the OBE model, ensuring that education is purposeful and aligned with what graduates are expected to achieve.

OUTCOME-BASED EDUCATION

OBE

Outcome-Based Education (OBE) is a student-centered approach to learning that shifts the focus from what teachers teach to what students are expected to know and be able to do at the end of their educational experience.



It is fundamentally student-centered because the entire educational system—curriculum, instruction, and assessment—is designed backward from the desired student outcomes to meet their individual needs and ensure they achieve the learning goals.



OBE is inherently student-centered and is sometimes referred to as Student-Centred Learning (SCL). This means:

- **Active Engagement:** OBE promotes active student engagement, where students are not passive receivers of information but take an active part in their own learning process.
- **Flexibility and Diversity:** Instructors have the flexibility to tailor lessons, teaching methods, and assessments to accommodate the diverse learning styles and abilities of students.
- **Focus on Learning:** The approach focuses on what students learn and demonstrate (the results), rather than simply what content the teacher covered.
- **Teacher's Role:** The faculty's role adapts from a traditional lecturer to an instructor, trainer, facilitator, or mentor, guiding the students toward the defined outcomes.

OUTCOME-BASED EDUCATION

CONCEPT OF OBE

UNDERSTAND CLOS (COURSE LEARNING OUTCOMES)

To ensure students are well-prepared for the course, they should review the course plan (RPP04) and familiarise themselves with the Course Learning Outcomes (CLOs). This will help them stay focused on their learning goals and make the most out of this course.

ENGAGE IN LEARNING ACTIVITIES

The lecturer will design suitable learning activities that enable students to achieve the desired CLOs. Students should actively participate in these learning activities during the course duration.



PARTICIPATE IN ASSESSMENTS

To ensure the students achieve the intended learning outcomes, the lecturer will design assessments to evaluate their progress. It is important that students actively participate in these assessments to gauge their understanding and identify areas that require improvement. Students should make the most of these assessments by giving their best effort and seeking feedback to enhance their learning experience.

SELF-EVALUATION

Throughout the course, it is imperative to perform regular self-evaluations to determine the extent to which the CLOs have been met.

To ensure continual quality improvement (CQI), students are advised to seek feedback from the lecturer regarding areas that require improvement. It is recommended that this feedback is incorporated into future learning activities to facilitate the achievement of CLOs.

OUTCOME-BASED EDUCATION

ASSESSMENT METHOD

Under Outcome-Based Education (OBE), assessment methods are designed to measure student achievement across all three domains of learning: cognitive (knowledge), affective (attitudes), and psychomotor (skills). This holistic approach ensures that assessment aligns directly with the intended learning outcomes (CLOs)



ETAC

ABOUT

ETAC ENGINEERING TECHNOLOGY ACCREDITATION COUNCIL

WHAT IS ETAC?

- ETAC or the Engineering Technology Accreditation Council is the official body representing the Board of Engineers Malaysia (BEM). ETAC provides a smooth transition in the accreditation of Engineering Technology and Engineering Technician education programs based on the Sydney Accord.
- In 2015, BEM established ETAC, which consists of 7 committees/working groups. It is the only accreditation body recognized for engineering technology degrees, engineering diplomas, and engineering technology programs offered in Malaysia.

OBJECTIVE OF ETAC?

- Graduates from engineering programs that meet the minimum academic requirements for registration as a graduate engineer with BEM.
- Continual Quality Improvement (CQI) is practiced by Higher Education Institutions (HEI). Accreditation can also serve as a benchmarking tool for engineering programs offered by HEIs in Malaysia.



BEM BOARD OF ENGINEERS MALAYSIA

WHAT IS BEM?

The Board of Engineers Malaysia (BEM) is a statutory body found in Malaysia. BEM was established on August 23, 1972. The Board of Engineers Malaysia (BEM) is a statutory body constituted under the Registration of Engineers Act 1967. It has perpetual succession and a common seal, and may sue and be sued. This body aims to elevate the dignity of the engineering field and those involved in the field. The Board is responsible for managing the applications for the registration of Graduate Engineers and Professional Engineers. BEM's primary role is to facilitate the registration of Engineers, Engineering Technologists, Inspectors of Works, Sole Proprietorships, Partnerships, and Bodies Corporate providing professional engineering services. It also regulates the professional conduct and practice of registered persons in order to safeguard the safety and interest of the public.



MECHANICAL ENGINEERING DEPARTMENT



Distinct Eminence



ABOUT

DEPARTMENT OF MECHANICAL ENGINEERING

Department of Mechanical Engineering is the biggest department at Politeknik Sultan Mizan Zainal Abidin with 82 academic staff and 6 non academic staff. Four programme was offered. There are:

- Diploma in Mecahanical Engineering
- Diploma in Mecahanical Engineering (Automotive)
- Diploma in Mecahanical Engineering (Manufacturing)
- Diploma in Mechatronic Engineering

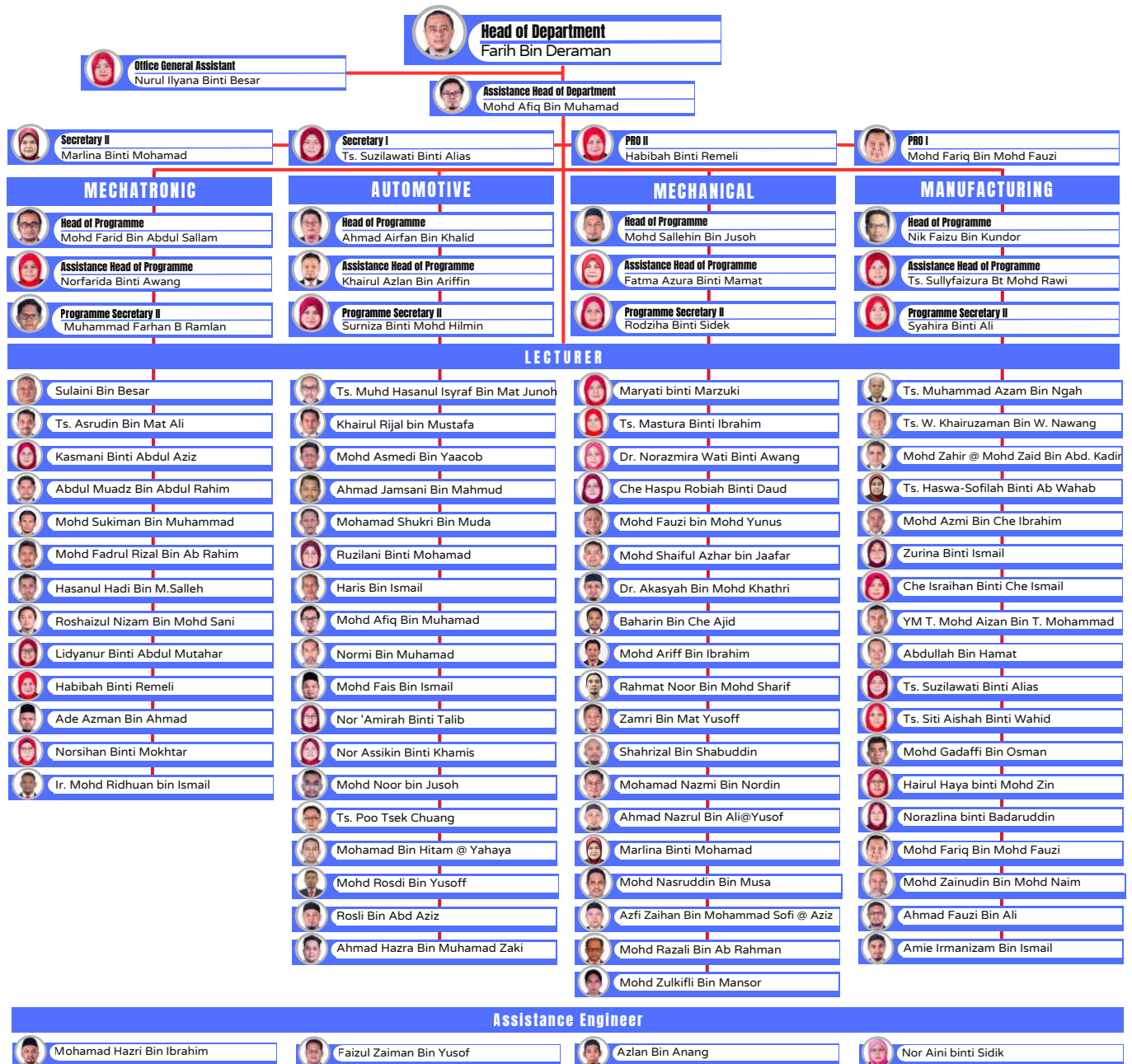


Those programmes cater to four categories of courses or subjects. It means that students have to complete all the courses listed for their programmes in order to graduate. The four categories of courses are the core, elective, compulsory and common courses.

This department provides a vast range of facilities as Fitting and Machining Workshop, Welding Workshop, Foundry Workshop, Strength of Materials Laboratory, CAD/CAM Laboratory, Mechanics of Machines Laboratory, Fluid Mechanics Laboratory, Thermodynamics Laboratory, Drawing Room and etc.

ORGANISATION CHART

DEPARTMENT OF MECHANICAL ENGINEERING



BRINGING IDEAS AND INNOVATION
TO LIFE THROUGH TECHNOLOGY

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LIST OF STAFF

ACADEMIC STAFF (MANUFACTURING PROGRAMME)



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LIST OF STAFF

ACADEMIC STAFF (MANUFACTURING PROGRAMME)



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Name: Abdullah Bin Hamat
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LIST OF STAFF

ACADEMIC STAFF (MANUFACTURING PROGRAMME)



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Name: Mohd Gadaffi Bin Osman
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Name: Mohd Fariq Bin Mohd Fauzi
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LIST OF STAFF

ACADEMIC STAFF (MANUFACTURING PROGRAMME)



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Majoring: Mechanical Engineering

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Name: Amie Irmanizam Bin Ismai

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LIST OF STAFF

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Name: Ts. Asrudin Bin Mat Ali
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LIST OF STAFF

ACADEMIC STAFF (MECHATRONIC PROGRAMME)



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LIST OF STAFF

ACADEMIC STAFF (MECHATRONIC PROGRAMME)



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LIST OF STAFF

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WORKSHOP

MECHANICAL ENGINEERING DEPARTMENT

WELDING WORKSHOP



MACHINING WORKSHOP



AUTOMOTIVE WORKSHOP

FOUNDRY WORKSHOP



FITTING WORKSHOP

LABORATORY

MECHANICAL ENGINEERING DEPARTMENT

1. Robotic Laboratory
2. CNC Laboratory
3. Robot Soccer Laboratory
4. Pneumatic & Hidraulics Laboratory
5. Mechatronic & Control Laboratory
6. Thermodynamics Laboratory
7. CAD/CAM Laboratory
8. Quality Control Laboratory

Robotic Laboratory



Pneumatic & Hidraulics Laboratory



CNC Laboratory



Thermodynamics Laboratory



CAD/CAM Laboratory



Quality Control Laboratory



LABORATORY

MECHANICAL ENGINEERING DEPARTMENT

9. Fluid Mechanics Laboratory
10. Strength of Materials Laboratory
11. Mechanics of Machines Laboratory
12. Electric Technology Laboratory
13. Metallurgy Laboratory
14. High Technology Laboratory
15. Engineering Drawing Room



Fluid Mechanics Laboratory



Strength of Materials Laboratory



Mechanics of Machines Laboratory



Electric Technology Laboratory



Metallurgy Laboratory



High Technology Laboratory

OTHERS FACILITIES

PSMZA

1. Hostel
2. Classrooms
3. Atec Room
4. Resource Center
5. Islamic Centre
6. Canteen and cafeterias
7. Lecture hall
8. Seminar rooms
9. Dewan Dagang
10. Sports complex
11. Softball complex
12. Courts indoor soccer
13. Student common areas

Hostel



Classrooms



Resource Centre



Islamic Centre



Softball Complex



Dewan Dagang



DIPLOMA IN MECHANICAL ENGINEERING



DIPLOMA IN MECHANICAL ENGINEERING

INTRODUCTION

Diploma in Mechanical Engineering for polytechnic is developed to give balance emphasis on theoretical and practical aspects. Thus, to keep abreast with rapid demand in TVET sector, Department of Polytechnic and Community College Education (DPCCE) progressively collaborates with major industry players in the country in developing the curriculum. The Diploma in Mechanical Engineering programme will take six semesters to complete, five academic semesters at their respective polytechnics and one semester of industrial training at relevant industries during the final semester. This programme complies with the Malaysian Qualifications Agency (MQA) and Board of Engineer Malaysia (BEM) /Engineering Technology Accreditation Council (ETAC).

SYNOPSIS

The Diploma in Mechanical Engineering programme is designed to produce holistic graduates that have knowledge and competent skills in the field of mechanical engineering to fulfil the demand of workers in engineering sector. The programme structure focuses on the area of Solid Mechanics, Statics & Dynamics, Thermodynamics, Fluid Mechanics, Materials, Mechanical Design, Workshop Practices, Manufacturing, Instrumentation & Control, Mechanical Maintenance, Electrical & Electronic Technology and Computer Programming.



DIPLOMA IN MECHANICAL ENGINEERING

JOB PROSPECT

This programme provides the knowledge and skills in Mechanical Engineering field that can be applied to a broad range of careers in Mechanical Engineering. The knowledge and skills that the students acquire from the programme will enable them to participate in the job market as:

- a. Assistant Engineer
- b. Technical Assistant
- c. Assistant Service Manager
- d. Service Advisor
- e. Supervisor
- f. Technician
- g. Technical Instructor or Lecturer
- h. Technical Sales Executive / Engineer
- i. Draughter / Designer
- j Adjuster
- k. Product Demonstrator
- l. Fitter
- m. Machinist
- n. Entrepreneur

PROGRAMME AIM

The programme believes that every individual has potential, and the programme aims to develop adaptable and responsible Senior Assistant Engineers to support government aspiration to increase workforce in engineering related field.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

Within a few years after completing Diploma in Mechanical Engineering, graduates are able to:

PEO1: proficient with industry-relevant knowledge and skills in mechanical engineering field

PEO2: engaging on lifelong and continuous learning to enhance knowledge and skills

PEO3: acquire with entrepreneurial skills and mind set in the real working environment

PEO4: establish links with society and players in the industry

DIPLOMA IN MECHANICAL ENGINEERING

PROGRAMME LEARNING OUTCOMES (PLO)

Upon completion of the programme, students should be able to:

PLO 1 : Apply knowledge of applied mathematics, applied science, computer and engineering fundamentals and an engineering specialisation as specified in DK1 to DK4 respectively to wide practical procedures and practices in area of mechanical engineering.

PLO 2 : Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to mechanical engineering field (DK1 to DK4).

PLO 3 : Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety as well as, cultural, societal and environmental considerations in area of mechanical engineering (DK5).

PLO 4 : Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements (DK8)

PLO 5 : apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations (DK2 and DK6)

PLO 6 : Consider sustainable development impacts* to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well- defined engineering problems (DK1,DK5 and DK7).

PLO 7 : Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion (DK9).

PLO 8 : Function effectively as an individual, and as a member in diverse and inclusive teams in multi-disciplinary, face-to-face, remote and distributed settings (DK9).

PLO 9 : Communicate effectively and inclusively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.

PLO 10 : Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments.

PLO 11: Recognise the need for, and have the ability for i) independent and life long learning and ii) critical thinking in the face of specialised technical knowledge (DK8).

DIPLOMA IN MECHANICAL ENGINEERING

KNOWLEDGE PROFILE (DK)

DK 1: A descriptive, formula-based understanding of the natural sciences applicable in a sub-discipline and awareness of directly relevant social sciences.

DK 2: Procedural mathematics, numerical analysis, statistics applicable in a subdiscipline.

DK 3: A coherent procedural formulation of engineering fundamentals required in an accepted sub-discipline.

DK 4: Engineering specialist knowledge that provides the body of knowledge for an accepted sub-discipline.

DK 5: Knowledge that supports engineering design and operations based on the techniques and procedures of a practice area.

DK 6: Codified practical engineering knowledge in recognized practice area.

DK 7: Knowledge of issues and approaches in engineering technician practice, such as public safety and sustainable development.

DK 8: Engagement with the current technological literature of the practice area.

DK 9: Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes.

DIPLOMA IN MECHANICAL ENGINEERING

PROGRAMME STRUCTURE

COURSE TYPE	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PROGRAMME LEARNING OUTCOME (PLO)											PREREQUISITE	
			L	P	T	O		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11		
								Engineering Knowledge	Problem Analysis	Design/Development of Solutions	Investigation	Tool Usage	The Engineer and the World	Ethics	Individual and Collaborative Teamwork	Communications	Project Management and Finance	Life Long Learning		
SEMESTER 1																				
Compulsory	DUE10062	Technical English 1	1	0	2	0	2									A3 A3		A2		
	MPU 24031	Sukan 1																		
	MPU 24041	Kelab / Persatuan 1	0	2	0	0	1								P2		A3			
	MPU 24XX1	Unit Beruniform 1																		
Common Core	DUW10042	Occupational, Safety and Health for Engineering	2	0	0	0	2	C2			A3		A3							
	DBM10163	Engineering Mathematics 1	2	0	2	0	3	C3	C3					A3						
	DBS10042	Engineering Science	2	1	0	0	2	C3			P3		A3							
Discipline Core	DJJ10223	Engineering Drawing	1	3	0	0	3	C3				P3		A3						
	DJJ10232	Mechanical Workshop Practice 1	0	4	0	0	2					P3 P4	A3							
	DJJ10243	Workshop Technology	3	0	0	0	3	C3						C3				A3		
TOTAL			25				18													
SEMESTER 2																				
Compulsory	MPU21072	Penghayatan Etika dan Peradaban	1	0	2	0	2							A2	A2		A3			
	MPU 24051	Sukan 2																	MPU 24031	
	MPU 24061	Kelab / Persatuan 2	0	2	0	0	1								P2		A3		MPU 24041	
	MPU 24XX1	Unit Beruniform 2																	MPU 24XX1	
	MPU22071	Kursus Integriti dan Anti-Rasuah	0	0	2	0	1								A2		A3			
Common Core	DBM20173	Engineering Mathematics 2	2	0	2	0	3	C3	C3					A3					DBM10163	
Discipline Core	DJJ20252	Mechanical Workshop Practice 2	0	4	0	0	2					P3 P4		A3					DJJ10232	
	DJJ20263	Electrical and Electronic Technology	2	1	1	0	3	C3				P4						A3		
	DJJ20273	Fluid Mechanics	2	1	1	0	3	C2 C3				P4								
	DJJ20282	Computer Aided Design	1	2	0	0	2	C3				P4				A3			DJJ10223	
TOTAL			26				17													

DIPLOMA IN MECHANICAL ENGINEERING

PROGRAMME STRUCTURE

COURSE TYPE	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PROGRAMME LEARNING OUTCOME (PLO)											PREREQUISITE	
			L	P	T	O		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11		
								Engineering Knowledge	Problem Analysis	Design/Development of Solutions	Investigation	Tool Usage	The Engineer and the World	Ethics	Individual and Collaborative Teamwork	Communications	Project Management and Finance	Life Long Learning		
SEMESTER 3																				
Compulsory	DUE30072	Technical English 2	1	0	2	0	2										A2 A3		A3	
Common Core	DBM30183	Engineering Mathematics 3	2	0	2	0	3	C3	C3							A3				DBM20173
	DJJ30332	Engineering and Society	2	0	0	0	2						C3	C4		A3				
Discipline Core	DJJ30302	Mechanical Workshop Practice 3	0	4	0	0	2					P4 P5	A3							DJJ20252
	DJJ30313	Engineering Mechanics	2	1	1	0	3	C3	C4			P4								
	DJJ30323	Strength of Materials	2	1	1	0	3	C3			C4	P4								
	DJJ30293	Thermodynamics	2	1	1	0	3	C3	C4			P4								
TOTAL			25				18													
SEMESTER 4																				
Discipline Core	DJJ40343	Material Science and Engineering	2	1	1	0	3	C3				P4			A3					
	DJJ40373	Pneumatic and Hydraulics	2	1	1	0	3	C3		C5		P4								
	DJJ40383	Engineering Design	2	1	1	0	3	C3		C4		P4	A3							DJJ20282
	DJJ40363	Mechanics of Machines	2	1	1	0	3	C3	C4			P4								DJJ30323
	DJJ40392	Project 1	2	0	0	0	2		C4				C4					A3		
Electives	DXXXXXX	Elective					2													
TOTAL			18				16													
SEMESTER 5																				
Compulsory	MPU23182	Sains Teknologi dan Kejuruteraan Islam*	1	0	2	0	2							A3	A2		A4			
	MPU23172	Nilai Masyarakat Malaysia**											A3	A2		A4				
	DUE50082	Technical English 3													A4 A4		A3			
Common Core	DUU10072	Entrepreneurship	1	2	0	0	2					P2				A3	A3			
Discipline Core	DJJ50403	Project 2	1	3	0	0	3			P5	C4					A4	P4			DJJ40392
	DJJ50413	Troubleshooting and Maintenance for Mechanical Components	2	1	1	0	3		C4		P4								P4	
	DJJ50422	Maintenance Engineering and Management	2	0	0	0	2	C3					C4				A3			
TOTAL			19				14													

DIPLOMA IN MECHANICAL ENGINEERING

PROGRAMME STRUCTURE

COURSE TYPE	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PROGRAMME LEARNING OUTCOME (PLO)											PREREQUISITE
			L	P	T	O		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	
								Engineering Knowledge	Problem Analysis	Design/Development of Solutions	Investigation	Tool Usage	The Engineer and the World	Ethics	Individual and Collaborative Teamwork	Communications	Project Management and Finance	Life Long Learning	
SEMESTER 6																			
Industrial Training	DUT600910	Engineering Industrial Training	0	0	0	0	10		C3			P4	A3	A5	P4	A4		P4	
TOTAL			0				10												
ELECTIVES																			
1	DJJ40432	Engineering Plant Technology	2	0	0	0	2		C3					C4		A3			
2	DJJ40442	Industrial Management	2	0	0	0	2		C3					C4		A3			
3	DJJ40462	Railway track system	2	0	0	0	2	C3	C4							A3			
4	DJJ40452	Instrumentation and control	2	0	0	0	2		C3		C4					A3			
5	DJJ40472	Renewable and Sustainable Energy	2	0	0	0	2	C3					C4					A3	
6	DJM40242	Programmable Logic Control	1	2	0	0	2	C2	C5	P6									
7	DJJ40352	Computer Programming	1	2	0	0	2	C3				P4						A3	
8	DJF52092	Quality Control	2	0	0	0	2	C3	C4						A3				
9	DJA20132	Automotive Workshop Practice 1	0	4	0	0	2					P3	P4					A3	
10	DJV20062	Automation Practice	0	4	0	0	2					P3 P4	A3						
11	DJL30092	Plant Engineering Practice 1	0	4	0	0	2					P3 P4		A3					
12	DJB20082	Materials Workshop Practice	0	4	0	0	2			P4		P3			A3				
13	DJP40132	Packaging Workshop Practice 2	0	4	0	0	2					P4, P4	A3						
14	DJX30132	Textile Workshop Practice 1	0	4	0	0	2					P3 P3		A3					
15	DGM50272	Static And Rotating Equipment Workshop Practice	0	4	0	0	2					P4 P5		A4					
16	DJT30132	Automation & Robotic in Agriculture	1	3	0	0	2		C5			P4						A3	
17	DJU20112	Basic Air Conditioning and Refrigeration Workshop	0	4	0	0	2				P2	P4		A3					
18	DJD20092	Product Design	1	3	0	0	2	C3				P4				A3			
19	DJF32052	Manufacturing Workshop Practice 2	0	4	0	0	2					P3 P4	A3						
20	DJI20132	Automotive Technology Practice	0	4	0	0	2					P3 P4			A3				
21	DJC40142	Plastic Workshop Practice 2	0	4	0	0	2					P3 P4			A3				

DIPLOMA IN MECHANICAL ENGINEERING

PROGRAMME STRUCTURE

FREE ELECTIVES																
1	DUD10012	Design Thinking	1	0	0	1	2			C3					A3	

Course Type	Total Credit	Total %
i. Compulsory	13	32%
ii. Common Core	17	
iii. Discipline Core	51	66%
iv. Specialization	0	
v. Industrial Training	10	
vi. Electives	2	2%
Total Credit	93	100%

Engineering and Engineering Technology Courses		
Total Credit (Discipline Core, Specialization, Industrial Training)	63	
	Credit	%
i. Practice - Oriented Components	30	48%
ii. Engineering Technology (Specialization)	0	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	DUV10042 OCCUPATIONAL SAFETY&HEALTH FOR ENGINEERING	Occupational Safety and Health for engineering course is design to impart understanding of the self regulatory concepts and provisions under the Occupational Safety & Health Act (OSHA) in Malaysia. This course presents the responsibilities of workers in implementing and complying with the safety procedures at work. Understanding of notifications of accidents , dangerous occurrences, poisoning and diseases and liability for offences will be imparts to students. This course will also provide an understanding of the key issues in OSH Management, Incident Prevention, Hazard Identification Risk Control and Risk Assessment (HIRARC), Fire Safety and First Aid, Workplace Environment and Ergonomics and guide the students gradually into this multi-disciplinary science.	CLO1 : Explain briefly Occupational Safety and Health (OSH) procedures, regulation and its compliance. CLO2 : Describe hazards, risks and safe work practices in order to maintain health and safe work environment. CLO3 : Justify the factor that can lead to accident in workshop.	1. Quiz (1) - 20% 2. Test (1) - 20% 3. Case Study (1) - 40% 4. Presentation (1) - 20%	0%
1	DUE10062 TECHNICAL ENGLISH 1	TECHNICAL ENGLISH 1 is designed to provide technical students the language input and skills required in technical workplace communication. This course aims to prepare students to use language skills to achieve B2 level which is becoming independent language users. Students will be exposed to skills required for effective participation in group discussions contextualized in workplace safety and health issues. The course also includes input and presentation skills on how to use the language appropriately in describing, comparing, and contrasting objects/products relevant to students' respective engineering disciplines. The course will enable students to make verbal and written enquiries related to objects/products for workplace use. The course is also designed to assist students in achieving at least level B1 of Common European Framework of Reference (CEFR).	CLO1 : Discuss work-related topic using effective communication skills by responding to workplace safety and hazards relevant to engineering technician practice. CLO2 : Explain the features and characteristics of objects/products used in a well-defined technical activity CLO3 : Share effective communication skills in making and responding to enquiries related to a well-defined engineering activity.	1. Discussion (1) - 30% 2. Assignment (1) - 15% 3. Presentation (1) - 30% 4. Simulation (1) - 25%.	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	DBM10163 ENGINEERING MATHEMATICS 1	ENGINEERING MATHEMATICS 1 exposes students to basic algebra including resolving partial fractions. This course also covers the concept of trigonometry and the method to solve trigonometry problems by using basic identities, compound angle and double angle formulae. Students will be introduced to the theory of complex numbers and the concept of vector and scalar. Students will explore advanced matrices involving a 3x3 matrix.	CLO 1: Use mathematical statement to describe relationship between various physical phenomena CLO 2: Show mathematical solutions using the appropriate techniques in mathematics CLO 3: Use mathematical expression in describing real engineering problems precisely, concisely and logically	1. Quiz (2) - 10% 2. Theory Test (3) - 20% 3. Discussion (2) - 15% 4. End of Chapter (3) - 20%.	40%
1	DBS10042 ENGINEERING SCIENCE	ENGINEERING SCIENCE course introduces the physical concepts required in engineering disciplines. Students will learn the knowledge of fundamental physics in order to identify and solve engineering physics problems. Students will be able to perform experiments and activities to mastery physics concepts.	CLO 1: Use basic physics concept to solve engineering physics problems. CLO 2: Use knowledge of fundamental physics in real engineering activities accurately. CLO 3: perform appropriate activities related to physics concept.	1. Theory Test (1) - 15% 2. Mini Project (1) - 25% 3. Practical Work (3) - 20%.	40%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	MPU24031 SUKAN 1	SUKAN 1 adalah aktiviti yang mengandungi latihan kemahiran berguna secara rekreasi dan peraturan-peraturan tertentu dalam mengejar kecemerlangan bagi penguasaan pengetahuan dan kemahiran khusus secara holistik. Ia bertujuan bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO 1: Mempamerkan kemahiran khusus bagi sukan berkaitan. CLO 2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1. Tunjukcara (I) - 60% 2. Mini Project (I) - 40%	0%
1	MPU24041 KELAB/PERSATUAN 1	KELAB/PERSATUAN 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO 1: Mempamerkan kemahiran khusus bagi kelab/ persatuan berkaitan. CLO 2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1. Tunjukcara (I) - 60% 2. Mini Project (I) - 40%	0%
1	MPU24191 UNIT BERUNIFORM 1 (RELASIS 1)	BRIGED RELASIS 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada pengenalan asas Jabatan Sukarelawan Malaysia (RELA) serta penerangan mengenai tugas dan tanggungjawab kepimpinan dalam RELA serta memberikan pendedahan mengenai tugas, peranan dan bidang kuasa RELA bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO 1: Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1. Tunjukcara (I) - 60% 2. Mini Project (I) - 40%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	MPU24151 UNIT BERUNIFORM 1 (PISPA 1)	Pasukan Institusi Pertahanan Awam (PISPA) 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO 1: Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1. Tunjukcara (I) - 60% 2. Mini Project (I) - 40%	0%
1	MPU24211 UNIT BERUNIFORM 1 (BRIGED BOMBA 1)	BRIGED BOMBA 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada pengenalan asas Jabatan Bomba dan Penyelamat Malaysia (JBPM) serta memberikan pendedahan mengenai kemahiran, tugas, peranan dan bidang kuasa JBPM bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO 1: Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1. Tunjukcara (I) - 60% 2. Mini Project (I) - 40%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CAD)	FINAL EXAMINATION
1	DJJT0223 ENGINEERING DRAWING	Engineering Drawing course provides the students with the fundamentals of technical drawings and the application Computer Aided Design (CAD) software. For technical drawing, it emphasizes the practical knowledge of drawing instruments and drawing techniques while for CAD the student will learn to navigate and use the software to create 2D drawing design in engineering. Students shall be able to demonstrate competency in using some standard available features of technical drawing and CAD application to create and manipulate objects or elements in engineering drawing.	CLO1 : Apply the fundamentals of engineering drawing and features of CAD software CLO2 : Construct the 2D CAD drawing according to the engineering drawing standards CLO3 : Propose a project presentation with following engineering norms and practices in engineering drawing.	1. Theoretical Test (I) - 20% 2. Practical Work (4) - 40% 3. Practical Test (I) - 20% 4. Presentation (I) - 20%	0%
1	DJJT0232 MECHANICAL WORKSHOP PRACTICE 1	Mechanical Workshop Practice 1 exposes the students to welding, machining and fitting which involve the use of arc and gas welding machine, lathe machine, drilling machine, grinding, hand tools, marking out tools, measuring and testing tools. Students are also taught to emphasize on safety procedures and cleanliness in the workshop.	CLO1 : Measure product using appropriate measurement instruments CLO2 : Perform fitting, welding and machining works according to Standard Operational Procedure (SOP). CLO3 : Demonstrate an understanding of sustainable development impacts, environment and norms of engineering practices according to the workshop safety and health regulation.	1. Practical Work (I) - 30% 2. Practical Product (3) - 60% 3. Practical Work Generic Skills (I) - 10%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	DJJT0243 WORKSHOP TECHNOLOGY	Workshop Technology provides exposure and knowledge in using hand tools, machine operation such as drilling, lathe, milling and computer numerical control. It also covers on gear measurement and inspection welding process in oxy acetylene, Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW) and Gas Metal Arc Welding (GMAW).	CLO1 : apply the knowledge of basic mechanical components and equipment, hand tools and measuring equipment in workshop technology. CLO2 : apply standard practice in operating mechanical tools and component. CLO3 : demonstrate continuous learning and information management skills to complete assigned task.	1. Quiz (1) - 5% 2. Test (1) - 15% 3. Presentation (1) - 10% 4. Assignment (1) - 10% 5. Case Study (1) - 10%	50%
2	DJJ20252 MECHANICAL WORKSHOP PRACTICE 2	Mechanical Workshop Practice 2 exposes the students to TIG and MIG welding, foundry and machining works. Safety procedure practice and teamwork ability are emphasized throughout this course.	CLO1 : Follow appropriate safety and practical procedure for welding, foundry and lathe machining. CLO2 : perform welding, foundry and lathe machining according to Safety and standard Operating Procedure. CLO3 : Display the ability to work as individual and as a member in diverse technical teams..	1. Practical Product (1) - 20% 2. Practical Work (3) - 60% 3. Practical work (Generic) (1) - 20%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	MPU21072 PENGHAYATAN ETIKA DAN PERADABAN	PENGHAYATAN ETIKA DAN PERADABAN ini menjelaskan tentang konsep etika daripada perspektif peradaban yang berbeza. Ia bertujuan bagi mengenal pasti sistem, tahap perkembangan, kemajuan dan kebudayaan merentas bangsa dalam mengukuhkan kesepaduan sosial. Selain itu, perbincangan dan perbahasan berkaitan isu-isu kontemporari dalam aspek ekonomi, politik, sosial, budaya dan alam sekitar daripada perspektif etika dan peradaban dapat melahirkan pelajar yang bermoral dan profesional. Penerapan amalan pendidikan berimpak tinggi (HIEPs) yang bersesuaian digunakan dalam penyampaian kursus ini.	CLO1 : Membentangkan konsep etika dan peradaban dalam kepelbagaian tamadun. CLO2 : Menganalisis proses pemeraksanaan kesepaduan sosial merentas bangsa di Malaysia. CLO3 : Mencadangkan sikap yang positif terhadap isu dan cabaran kontemporari dari perspektif etika dan peradaban.	1.Pembentangan (1) - 30% 2.e-Folio (1) - 30% 3. Projek (1) - 40%	0%
2	MPU24051 SUKAN 2	SUKAN 2 adalah aktiviti yang mengandungi latihan kemahiran berguna secara rekreasi dan peraturan-peraturan tertentu dalam mengejar kecemerlangan bagi penguasaan pengetahuan dan kemahiran khusus secara holistik. Ia bertujuan bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO1 : Mempamerkan kemahiran khusus bagi sukan berkaitan. CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1.Tunjukcara (1) - 60% 2.Mini Projek (1) - 40%	0%
2	MPU24061 KELAB/PERSATUAN 2	KELAB/ PERSATUAN 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO1 : Mempamerkan kemahiran khusus bagi kelab/ persatuan berkaitan. CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif	1.Tunjukcara (1) - 60% 2.Mini Projek (1) - 40%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	MPU24321 UNIT BERUNIFORM 2 (BOMBA 2)	BRIGED BOMBA 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada pengenalan asas Jabatan Bomba dan Penyelamat Malaysia (JBPM) serta memberikan pendedahan mengenai kemahiran, tugas, peranan dan bidang kuasa JBPM bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO1 : Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1.Tunjukcara (1) - 60% 2.Mini Projek (1) - 40%	0%
2	MPU24261 UNIT BERUNIFORM 2 (PISPA 2)	Pasukan Institusi Pertahanan Awam (PISPA) 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO1 : Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif	1.Tunjukcara (1) - 60% 2.Mini Projek (1) - 40%	0%
2	MPU24301 UNIT BERUNIFORM 2 (RELASIS 2)	BRIGED RELASIS 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada asas Ilmu Kemahiran Medan, Pertahanan Diri,tugas, peranan Crisis Management Team (CMT) serta menerangkan jenis dan kegunaan senjata api RELA serta memberi pendedahan kepada Kawalan Kehormatan Pasukan RELA (KKPR), Kawad Transformasi RELA (KTR) dan Kawad Senjata bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO1 : Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1.Tunjukcara (1) - 60% 2.Mini Projek (1) - 40%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	MPU22071 KURSUS INTEGRITI DAN ANTI RASUAH	KURSUS INTEGRITI DAN ANTI RASUAH (KIAR) merangkumi konsep asas tentang nilai integriti, bentuk perbuatan rasuah dan salah guna kuasa dalam kehidupan seharian serta dalam organisasi dan langkah-langkah pencegahan rasuah.	CLO1 : Membincangkan hubungan nilai integriti dan antirasuah dengan isu semasa. CLO2 : Menilai bentuk pelakuan rasuah dan salah guna kuasa dalam aktiviti seharian dan organisasi.	1. Mini Projek (1) - 50% 2. Pembentangan (1) - 50%	0%
2	DM20173 ENGINEERING MATHEMATICS 2	ENGINEERING MATHEMATICS 2 exposes students to the basic laws of indices and logarithms. This course introduces the basic rules of differentiation concepts to solve problems that relate to maximum, and minimum and calculate the rates of changes. This course discusses integration concepts in order to strengthen students' knowledge for solving area and volume-bounded region problems. In addition, students will learn the application of both techniques of differentiation and integration.	CLO1 : Explain the relationship between various physical phenomena in algebra and calculus. CLO2 : Solve mathematics problems by using appropriate and relevant fundamental calculus techniques CLO3 : Use mathematics language to express mathematics ideas and arguments precisely, concisely and logically in calculus.	1. Theory Test (1) - 15% 2. End Of Chapter (3) - 15% 3. Quiz (2) - 10% 4. Discussion (2) - 20%	40%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	DJJ20263 ELECTRICAL AND ELECTRONIC TECHNOLOGY	Electrical and Electronic Technology exposes students to the basic electrical circuit concept and electronic components, the application of electromagnetism in electrical machine, transformers and usage of renewable energy. The course focuses on the different types of electrical circuit, the relationship between current and voltage including the resistance and function of electronic components. This course also exposes the students to the demonstration of experiments in Electrical and Electronic Engineering.	CLO1 : apply fundamental knowledge in electricity, electronic, electromagnetisms and electrostatics in motor and generator technologies with embedded to automation control systems to solve related problems in electrical technology. CLO2 : organize appropriate experiments in groups according to Standard Operating Procedure. CLO3 : demonstrate commitment and responsibility while conducting electrical devices and components-based practical work, while recognizing the importance of independent and lifelong learning, as well as critical thinking	1. Quiz (1) - 5% 2. Test (2) - 20% 3. Practical Task P (3) - 20% 4. Practical Task A (1) - 5%	50%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CAD)	FINAL EXAMINATION
2	DJJ20273 FLUID MECHANICS	Fluid Mechanics is designed to provide students with the knowledge related to the fundamentals of fluid mechanics. It emphasized on the principles related to the fluid properties and behavior in static and dynamic condition. This course also covers the principle and application of fluid mechanics laboratory techniques including preparation and analysis of fluid properties, Reynold Numbers, Bernoulli Theorem and losses in pipeline system.	CLO1 : explain the fundamental properties of fluids in relation to fluid mechanics. CLO2 : apply fundamental knowledge of fluid mechanics in mechanical engineering applications. CLO3 : organize appropriate experiments in groups according to the standard operating procedure. .	1. Quiz (1) - 5% 2. Test (1) - 10% 3. Practical Task (4) - 25% 4. Assignment (1) - 10%	50%
2	DJJ20282 COMPUTER AIDED DESIGN	Computer Aided Design exposes students to the fundamentals and principles of 3D drawing using 3D CAD software. Students are also equipped with various methods of creating a solid model using extrude, revolve, swept, assembly, simulation, an animation and details drawing. Hands-on exercises drawing of mechanical engineering will also be covered in this course.	CLO1 : Apply CAD commands to produce engineering drawings of mechanical components. CLO2 : Construct 3D models of mechanical components in accordance with technical drawing standards. CLO3 : Demonstrate technical engineering presentations through projects, adhering to standard practices of technical communication.	1. Theoretical Test (1) - 20% 2. Practical Task (2) - 40% 3. Practical Test (1) - 30% 4. Presentation (1) - 10%	0%

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COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
3	DUE30072 TECHNICAL ENGLISH 2	TECHNICAL ENGLISH 2 equips technical students with the required language skills to communicate effectively at the workplace mainly in describing process and procedures as well as giving instructions. It is also designed to develop students' skills in conducting and participating in meetings and responding appropriately to complaints related to specific situations. This content structure reflects the stated course learning outcomes to be achieved by the students in order to develop their interpersonal & communication skills. It will enable them to independently participate in technical discussion in work-context. This course also aims to prepare students to use language skills to achieve B2 of CEFR level.	CLO1: Practice effective oral presentation skills in the context of process, procedure and instruction in workplace situations using appropriate language. CLO2: Demonstrate effective communication and social skills in conducting and participating in meetings in workplace situations. CLO3: Propose appropriate response(s) to complaints related to workplace situations.	1. Presentation (1) - 35% 2. Role Play (1) - 30% 3. Assignment (1) - 35%	0%
3	DBM30183 ENGINEERING MATHEMATICS 3	ENGINEERING MATHEMATICS 3 exposes students to statistical and probability concepts and their applications in interpreting data. The course also introduces the numerical methods concept to solve simultaneous equations by using the Gaussian Elimination method, LU Decomposition using Doolittle and Crout methods, polynomial problems using Simple Fixed-Point Iteration and Newton-Raphson methods. To strengthen the students in solving engineering problems, Ordinary Differential Equation (ODE) is also included. In addition, the course also discusses optimization problems by using Linear Programming. It is designed to build students' teamwork and problem-solving skills.	CLO1: Demonstrate mathematical concepts, formulate methods of solutions and select appropriate techniques for solving routine mathematics problems. CLO2: Apply mathematical methods and concepts to solve engineering problems. CLO3: Express mathematics ideas clearly by using correct mathematical terminology and proper mathematical notation.	1. Quiz (2) - 10% 2. Theory Test (1) - 15% 3. End Of Chapter (3) - 20% 4. Case Study (1) - 15%	40%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
3	DJJ30293 THERMODYNAMICS	Thermodynamics provides knowledge and application of fundamentals concepts to solve problems related to thermodynamics. It emphasizes analyzing the non-flow process, flow process, heat engine, reversed heat engine and vapor power cycle. This course also exposes the students to the demonstration of experiments by using real equipment.	CLO1 : apply the fundamentals concept and properties of pure substances in thermodynamics. CLO2 : analyze the thermodynamics systems using the laws of thermodynamics. CLO3 : organize appropriately experiments according to the Standard Operating Procedures.	1. Quiz (1) - 5% 2. Test (1) - 10% 3. Practical Work (3) - 15% 4. Assignment (2) - 20%	50%
3	DJJ30302 MECHANICAL WORKSHOP PRACTICE 3	Mechanical Workshop Practices 3 course allows students to operate machine tools, extend their experiences in indexing, precision grinding, CAD/CAM Software, CNC machine and able to work in a clean and safe workshop environment.	CLO1 : Perform high precision machining processes for the surface or cylindrical grinding machine and indexing in milling machine. CLO2 : Construct programs for CNC or EDM machining process using ISO codes and any related CAD/CAM Software. CLO3 : Demonstrate awareness of safety procedures in the workshop and create secured environment in an organization while doing practical work.	1. Practical Product (2) - 40% 2. Practical Work (2) - 40% 3. Practical Work (Generic) (1) - 20%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
3	DJJ30313 ENGINEERING MECHANICS	Engineering Mechanics focuses on theoretical knowledge in statics and dynamics. This course provides the students with fundamental understanding of forces and equilibrium, resultants, equilibrium of a particle and structural analysis. This course also covers kinematics and kinetics of particles and exposes the students to the demonstration of experiments in Engineering Mechanics.	CLO1 : solve problems related to statics and dynamics based on the concepts and principle of engineering mechanics. CLO2 : analyze engineering related problems based on fundamentals of statics and dynamics. CLO3 : organize appropriately experiment in groups according Standard Operation Procedure.	1. Quiz (1) - 5% 2. Test (1) - 10% 3. Practical Work (4) - 20% 4. Assignment (1) - 15%	50%
3	DJJ30323 STRENGTH OF MATERIALS	Strength Of Materials provides knowledge on concepts and calculation of forces on materials, thermal stress, shear force and bending moment, bending stress, shear stress and torsion in shafts. It also deals with the experiments conducted on tensile test, bending moment, shearing force and torsion and deflection.	CLO1 : apply the concepts of strength of materials to solve related problems. CLO2 : analyse problems correctly related to strength of materials. CLO3 : organize appropriately experiment in group according to Standard Operation Procedures.	1. Quiz (1) - 5% 2. Test (1) - 15% 3. Practical Work (4) - 20% 4. Assignment (1) 10%	50%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
3	DJJ30332 ENGINEERING AND SOCIETY	Engineering and Society focuses on the introduction to professional ethics, theory and philosophy of ethics, values in professional ethics, engineering by laws and standards, issues in professional ethics and sustainability. It also relates towards IR 4.0 introduction and green engineering.	CLO1 : Implement the roles of engineering profession towards the developing of society and the challenge of globalization with professional ethic CLO2 : Determine the importance of engineering management, professional bodies, sustainability and green technology aspect in the engineering profession CLO3 : Explain the issues of sustainability and green technology in engineering practice	1. Quiz (1) - 15% 2. Test (2) - 40% 3. Presentation (1) - 15% 4. Case study (1) - 30%	0%
4	DJJ40363 MECHANICS OF MACHINES	Mechanics of Machines exposes the students with knowledge and designed to provide students with the knowledge on techniques and concepts of mechanics of machines and analyzing problems related to hoists, simple harmonic motion, velocity and acceleration diagram, and belt drive. This course also exposes the students to demonstrations of experiments in Mechanics of Machines by using real equipment.	CLO1: Apply the fundamentals of mechanics of machines to solve related problems in the theoretical and graphical aspects. CLO2: Analyze problems related to the mechanics of machines in relation to the theoretical aspects. CLO3: Perform experiments in groups according to the Standard Operating Procedures.	1. Quiz (1) - 5% 2. Test (1) - 15% 3. Practical Work (4) - 20% 4. Assignment (1) - 10%	50%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
4	DJJ40343 MATERIALS SCIENCE AND ENGINEERING	Materials Science and Engineering course is an introduction to students to learn the fundamentals of materials science and engineering (structure, properties, design and performance). The key step in engineering process is selection of materials for the applications. In the course, students will learn about different classifications of materials, atomic structure and bonding, materials properties, phase diagram and processes involved to produce a final product. This includes advanced techniques in metal fabrications such as powder metallurgy and 3D printing technology. Students will also learn to analyze the materials failure in the structure, applications and environments. Laboratory work will be used to perform the testing techniques employed by materials engineers to determine the properties and evaluate the materials tested. In order to cater for Industry 4.0 technology, students will be given case study and examples based on the current trends in materials and applications.	CLO1 : Apply the knowledge of materials science in engineering applications. CLO2 : Perform the appropriate material testing according to Operating Procedure. CLO3 : Work individually and collaboratively in group to complete the assigned tasks.	1. Test (1) - 15% 2. Quiz(1) - 10% 3. Practical Work (4) - 20% 4. Practical Work (Generic) (1) - 5%	50%
4	DJJ40392 PROJECT 1	PROJECT 1 provides students with solid foundation on knowledge and skills in formulating project proposal preparation, writing and presentation.	CLO1: Identify engineering problems in mechanical engineering fields. CLO2: Analyze the sustainable development impacts in engineering problem. CLO3: Demonstrate engineering management in a technical team.	1. Presentation (1) - 20% 2. Report (1) - 40% 3. Log Book (1) - 10%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
4	DJJ40383 ENGINEERING DESIGN	Engineering Design course offers a comprehensive coverage of basic concept engineering design. Student will learn the fundamental concepts for designing process, designing consideration, ergonomic, materials selection and emphasizes on mathematical analysis for simple components designs in engineering. It also provides knowledge on reverse engineering and practical on 3D printing.	CLO1: Apply the concept of design process, stress analysis and mechanical joint in an engineering product. CLO2: Analyze engineering design process in project design while considering design, ergonomic factors and material selection. CLO3: perform project design concept in 3D printing. CLO4: Demonstrate project design concept that considers safety and health issues.	1. Test (1) - 40% 2. Case Study(1) - 20% 3. Practical Work (1) - 30% 4. Presentation (1) - 10%	0%
4	DJJ40373 PNEUMATIC AND HYDRAULICS	Pneumatic and Hydraulics provides knowledge and understanding to the importance of pneumatics and hydraulics circuits, equipment, and design along with its usage in the industry.	CLO1: Apply the basic concept and function of pneumatics and hydraulics system. CLO2: Evaluate the pneumatic, electro-pneumatic and hydraulic circuit according to assigned tasks. CLO3: Perform experiment on pneumatic, electro-pneumatic and hydraulic circuit during practical session.	1. Quiz (1) - 5% 2. Test (1) - 15% 3. Assignment (1) - 10% 4. Practical Work (4) - 20%	50%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
5	DUU10072 ENTREPRENEURSHIP	ENTREPRENEURSHIP focuses on the fundamentals and concept of entrepreneurship in order to inculcate the value and interest in students to choose entrepreneurship as a career. This course can help students to initiate creative and innovative entrepreneurial ideas. It also emphasizes on online and offline business learning in line with the changing needs of current market.	CLO 1: Demonstrate application on entrepreneurship concept, competencies, importance and social responsibilities of entrepreneurship. CLO 2: Propose sustainable business idea using Business Model Canvas (BMC) for entrepreneurial project. CLO 3: Organize online business using various cyber social tools.	1. Mini Project (1) - 20% 2. Business Pitching (1) - 30% 3. Business Portfolio Presentation (1) - 20% 4. Business Portfolio (1) - 30%	0%
5	MPU23182 SAINS TEKNOLOGI DAN KEJURUTERAAN ISLAM	SAINS, TEKNOLOGI DAN KEJURUTERAAN DALAM ISLAM memberi pengetahuan tentang konsep Islam sebagai al-Din dan seterusnya membincangkan konsep sains, teknologi dan kejuruteraan dalam Islam serta impaknya, pencapaiannya dalam tamadun Islam, prinsip serta peranan syariah dan etika Islam, peranan kaedah fiqh serta aplikasinya.	CCLO 1: Melaksanakan amalan Islam dengan betul dalam kehidupan seharian CLO 2: Menerangkan etika dan profesionalisme berkaitan sains teknologi dan kejuruteraan dalam Islam CLO 3: Menghubungkan minda ingin tahu dengan prinsip syariah, etika dan kaedah fiqh dalam bidang sains, teknologi dan kejuruteraan menurut perspektif Islam	1. Tunjukcara (2) - 40% 2. Tugas Berdasarkan Masalah (2) - 40% 3. e-Folio (1) - 20%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
5	MPU23172 NILAI MASYARAKAT MALAYSIA	NILAI MASYARAKAT MALAYSIA disediakan untuk membincangkan aspek sejarah pembentukan masyarakat, nilai-nilai agama, adat resam dan budaya masyarakat di Malaysia. Selain itu, pelajar dapat mempelajari tentang tanggungjawab sebagai individu dan nilai perpaduan dalam kehidupan di samping cabaran-cabaran dalam membentuk masyarakat Malaysia yang bersatu padu dan penyayang.	CLO 1: Membincangkan sejarah dan nilai dalam pembentukan masyarakat di Malaysia CLO 2: Menerangkan etika dan profesionalisme terhadap konsep perpaduan bagi meningkatkan semangat patriotisme masyarakat Malaysia CLO 3: Menghubunkait minda ingin tahu dengan cabaran-cabaran dalam membentuk masyarakat Malaysia	1. Tunjukcara (2) - 40% 2. Tugas Berdasarkan Masalah (2) - 40% 3. e-Folio (1) - 20%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
5	DUE50082 TECHNICAL ENGLISH 3	DUE50082TECHNICAL ENGLISH 3 aims to prepare students to use language skills (listening, reading, speaking and writing) to achieve B2 level in Common European Framework of Reference (CEFR) which is becoming independent language users. It covers skills which are needed by students focusing on self-assessment, job-search strategies, writing and explaining technical text (s) on wide range of technical subjects. Students will be able to select jobs or positions which match their qualifications, retrieve relevant information regarding the positions available and request for a job interview. This course also aims to prepare students with skills to write effective resumes with accompanying cover letters. This second part of this course is divided into three stages which focuses on students' abilities to study different types of technical text (s), plan and prepare clear and detailed technical text (s) and explain the content of technical text (s) using effective presentation skills.	CLO 1: Prepare appropriate types of oral and written communication modes that meet employer's requirements (A4, PLO9) CLO 2: Demonstrate effective language-based skills in interpersonal communication, ethics and workplace related contexts (A3, PLO11) CLO 3: Organize texts on a wide range of technical subjects to pass information as well as to give reasons in support of or against particular points of views. (A4, PLO9)	1. Presentation (I) - 35% 2. Role Play (I) - 30% 3. Assignment (I) - 35%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
5	DJJ50403 PROJECT 2	Project 2 is a continuation of Project 1 focusing on project planning, development, project report and presentation. This course introduces the students with abilities and skills in conducting project planning, development and management based on their project design. It also provides the students with practical product, report writing and presentation skills. The project will be implemented in a group and each group will work on a project under lecturer(s) supervision. Project title will be based on specialization and students will be assessed individually.	CLO1 : Organize project outcomes in progress report based on standard format CLO2 : Construct design solutions to meet specified needs of the project with appropriate consideration. CLO3 : Analyze the project results and write the project report to achieve proposed objectives CLO4 : Explain the project work and defend project outcomes effectively with good communication skills	1. Practical Product (1) - 40% 2. Presentation (1) - 20% 3. Log Book (1) - 20% 2. Project Report (1) - 20%	0%
5	DJJ50413 TROUBLESHOOTING AND MAINTENANCE FOR MECHANICAL COMPONENTS	Troubleshooting and Maintenance for Mechanical Components course covers necessary mechanical components needed in Industries. The topics include maintenance and troubleshooting principles and procedures, power transmission, bearing and pump. This course provides knowledge and skills on maintenance and troubleshooting lubrication, bearing, power transmission and pump.	CLO1: Analyze the concept of mechanical components to solve related problems. CLO2: Organize appropriately experiments in groups according to Standard Operating Procedure. CLO3: Perform the troubleshooting on mechanical component failure and damage.	1. Quiz (1) - 10% 2. Test (2) - 30% 3. Practical Work (2) - 40% 4. Practical Test (1) - 20%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
5	DJJ50422 MAINTENANCE ENGINEERING AND MANAGEMENT	Maintenance Engineering and Management covers topic such as maintenance organization, maintenance strategies system, system approach to maintenance, maintenance planning and scheduling and computerized maintenance management system (CMMS).	CLO1: Apply the concepts of maintenance organization and strategies to solve related problem. CLO2: Analyze maintenance strategies and system approach which adhere to legal, ethical and professional guidelines. CLO3: Organize project management and finance by group in actual workplace related to maintenance management.	1. Quiz (2) - 20% 2. Test (2) - 40% 3. Presentation (1) - 15% 4. Case Study (1) - 25%	0%
ELECTIVE	DJJ40352 COMPUTER PROGRAMMING	Computer Programming course introduces program design and development. Students will learn to design, code, debug, test, and document well-structured programs based on technical and engineering problem. Topic covered software development principle, programming language basic, data types, input and output operation, the use of selection, loops, arrays, internet of things and Arduino in industries.	CLO1: Apply C Programming commands to solve given problem using an appropriate data type. CLO2: Construct a high-level programming language in solving variety of engineering and scientific problems. CLO3: Demonstrate a solution for assigned project based on programming which relates to current or upcoming technologies and peripherals	1. Theoretical Test (1) - 20% 2. Practical Work (2) - 40% 3. Practical Test (1) - 30% 4. Presentation (1) - 10%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
ELECTIVE	DJF52092 QUALITY CONTROL	Quality Control provides knowledge on basic principle and concept of quality including statistical method in controlling products quality or services. This course also emphasizes on the application of control chart and quality control tools and explains the quality improvement technique.	CLO1: Apply the basic quality principles, management system and tools related to manufacturing industry. CLO2: Analyze manufacturing process and its issues using the quality tools and technique for process improvement in quality. CLO3: Demonstrate ability to work in a team to solve quality problem in manufacturing.	1. Quiz (2) - 5% 2. Test (1) - 20% 3. Presentation (1) - 15% 4. Case Study (1) - 10%	50%
ELECTIVE	DJJ40442 INDUSTRIAL MANAGEMENT	Industrial Management provides students with a strong fundamental understanding of industrial management prospects and production system planning such as inventory, scheduling, production system operation, facilities, plan location, layout and line balancing. This course also provides knowledge in quality control, and human resource management.	CLO1: Apply the basic concept of industrial management system to solve related problem. CLO2: Analyze problems related to industrial management. CLO3: Demonstrate communication skill in group to explain plant location and layout.	1. Quiz (2) - 20% 2. Test (2) - 50% 3. Presentation (1) - 10% 4. Case Study (1) - 20%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
ELECTIVE	DJF32052 MANUFACTURING WORKSHOP PRACTICE 2	Manufacturing Workshop Practice 2 exposes the students to the fundamental of manufacturing processes, industrial environment, cultural issues and hands-on experiences. This course enables students to apply knowledge and develop required technical skills on Computer Numerical Control (CNC) and Electrical Discharge Machining (EDM) machines, conventional machining and surface grinding machine. The workshop practice helps the students to practice appropriate safety procedures and standard operations when completing practical work and practical projects. The practical skills also cover the organizational and housekeeping activities, schedule maintenance, planning skills, supervising designs, inspecting and testing in order to meet the quality requirements.	CLO1: Build a project using CNC and EDM machine based on standard operational procedures and safety CLO2: Perform contouring cutting operation using rotary table attachment in milling machine processes. CLO3: Demonstrate an understanding of the responsibilities regarding societal, health, safety, legal and cultural issues during practical work sessions	1. Practical Work (2) - 60% 2. Practical Product (1) - 30% 3. Practical Work (Generic) (1) - 10%	0%
ELECTIVE	DJM40242 PROGRAMMABLE LOGIC CONTROLLER	Programmable Logic Controller is a course designed to provide knowledge regarding the fundamental concept and principle in PLC. This course emphasizes the relationship between conventional/ hardwired/ relay ladder logic (RLL) and PLC system application of various industrial input and output devices of PLC, designing process, programming, constructing and PLC maintenance method. This course also provides knowledge and skills in designing environmentally friendly of automation control system based on conventional/ hardwired/ relay ladder logic (RLL) and PLC students with hardware adaptation and programming skills by employing a PLC for an automation system in the industry.	CLO1: Evaluate environmental-friendly automation control system using PLC. CLO2: Integrate PLC systems by employing the proper tools to programme, build, diagnose, and troubleshoot systems. CLO3: Demonstrate the environmentally-conscious inbuilt system of the PLC by showcasing its dedication to sustainability and energy efficiency.	1. Quiz (1) - 10% 2. Test (1) - 20% 3. Practical Task (2) - 40% 4. Case Study (Generic) (1) - 30%.	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
ELECTIVE	DJJ40432 ENGINEERING PLANT TECHNOLOGY	Engineering Plant Technology introduces power plant technology industry such as steam power plant, gas turbine power plant, combine cycle plant, diesel power plant and water treatment.	CLO1: Organize the concepts and technology of power plant system and components; and suggest solution. CLO2: Classify the professional ethics and responsibility and norms in power plant. CLO3: Demonstrate skill of effective communication on well-defined engineering problems.	1. Quiz (1) - 10% 2. Test (2) - 40% 3. Presentation (1) - 20% 4. Case Study (1) - 30%	0%
ELECTIVE	DJJ40462 RAILWAY TRACK SYSTEM	Railway Track System provides knowledge regarding to railway track engineering concepts including track component and system design, construction, evaluation, maintenance, load distribution and wheel/rail interaction. Topics covered include: track layout and geometry; ballast and subgrade; ties; rail and fastenings; track analysis and design; special trackwork; grade crossings; track standards and inspection, condition assessment and asset management.	CLO1: Organize the concept of railway track system. CLO2: Analyze the railway engineering and give respond in work application CLO3: Describe the effectiveness of railway track system through engineering issue in group.	1. Quiz (2) - 30% 2. Test (2) - 50% 3. Presentation (1) - 20%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
ELECTIVE	DJJ40452 INSTRUMENTATION AND CONTROL	Instrumentation & Control exposes the students to the basic principles in control system and its usage in industrial sector is the main focus in this course. Instrumentation and control also provide knowledge to the students in components measurement in control systems that are normally used in industries.	CLO1: Apply the fundamental of instrumentation and control systems in engineering. CLO2: Explore the measurement and process control system in engineering. CLO3: Demonstrate good communication skill in presentation on assigned topics.	1. Quiz (1) - 10% 2. Test (2) - 30% 3. Case study (1) - 50% 4. Presentation (1) - 10%	0%
ELECTIVE	DJJ40472 RENEWABLE AND SUSTAINABLE ENERGY	Renewable and Sustainable Energy focuses on the principles of renewable energy and the sustainability of energy in terms of climate change and the implications of renewable energy to the economy, society, and the environment. This includes possible renewable energy technologies such as biomass, ocean, hydropower, geothermal, wind and solar energy. Students should be able to describe the new perspective of renewable energy and its sustainability for widespread applications such as electricity generation, heating and cooling, transportation and industrial processes.	CLO1: show the applications, principle operation and process of various types of renewable energy and non-renewable energy CLO2: Determine the environmental and social issues of renewable and non renewable energy with appropriate consideration for sustainability, economic, and environmental considerations CLO3: Organize continuous learning while engaging in the new knowledge of renewable and sustainable energy	1. Quiz (1) - 10% 2. Test (2) - 30% 3. Case study (1) - 50% 4. Presentation (1) - 10%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
ELECTIVE	DJA20132 AUTOMOTIVE WORKSHOP PRACTICE 1	Automotive Workshop Practice 1 provides automotive troubleshooting and servicing skill of automotive systems. The course covers the topics of complete overhauling of petrol engine, tyre and suspension systems, brake system, automobile electrical wiring system, starting system and charging system.	CLO1: Follow skill for servicing automotive system. CLO2: Perform troubleshooting method of automotive systems CLO3: Demonstrate awareness of social responsibility and safety procedure in the workshop according to the workshop safety regulations to create a secured environment in an organization while doing practical work	1. Practical Work (4) - 80% 2. Practical Work (Generic) (1) - 20%	0%

DIPLOMA IN MECHANICAL ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
6	DUT600910 ENGINEERING INDUSTRIAL TRAINING	The Engineering Industrial Training course would provide students with first-hand experience in an engineering-practice environment outside the institution. Students would put into practice prior knowledge and skills, strengthened through industry supervision to acquire higher mastery of engineering essentials and craft skills. Students would also be able to enhance their understanding of the respective job scope requirements, roles in a diversified work environment, professional ethics, and responsibilities, as well as to improve their communication aptitude in performing the tasks, while developing the necessary lifelong learning skills at the workplace.	CLO1 : Perform the assigned task according to the requirements of the job scope. CLO2: Explain tasks assigned in the workplace utilizing effective communication skills. CLO3: Display ability to work collaboratively and individually based on the given task. CLO4: Practice professional ethics and fulfill responsibilities as an engineering technician. Initiate responsibilities as an engineering CLO5: technician while adhering to policies, rules, and safety. CLO6: Write a report based on the given task, adhering to technical practices. CLO7: Demonstrate lifelong learning skills in completing the given task.	1. Performance Appraisal (1) - 65% 2. Logbook (1) - 5% 3. Observation (1)- 10 % 4. Industrial Training Report (1) - 15% 5. Presentation (1) - 5%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)



DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

INTRODUCTION

Diploma in Mechanical Engineering (Automotive) is a three-year full-time programme comprising of five semesters coursework with one full semester of industrial training. Mechanical Engineering is the field of study which generally deals with the application of automotive towards designing, testing and troubleshooting of equipment for well-defined engineering activities. It requires the application of scientific and engineering knowledge and methods combined with practical skills in supporting well-defined engineering activities to prepare students for their future role in the industry.

SYNOPSIS

The Diploma in Mechanical Engineering (Automotive) programme is designed to produce holistic graduates that have knowledge and competent skills in the field of mechanical engineering with added specialization subjects in the automotive engineering to fulfil the demand of workers in engineering sector. The programme structure focusses on the area of Solid Mechanics, Statics & Dynamics, Thermodynamics & Heat Transfer, Fluid Mechanics, Materials, Mechanical Design, Workshop Practices, Mechanical Maintenance, Electrical & Electronic Technology, Vehicle system, Vehicle Technology and Workshop Practice & Management.



DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

JOB PROSPECT

This programme provides the knowledge and skills in Mechanical Engineering (Automotive) field that can be applied to a broad range of careers in Mechanical Engineering and Automotive Engineering. The knowledge and skills that the students acquire from the programme will enable them to participate in the job market as:

1. Assistant Engineer
2. Service Advisor
3. Technical Assistant
4. Quality Officer
5. After Sales Service Officer
6. Sales Executive
7. Technical Instructor or Lecturer
8. Technical Specialist
9. Workshop supervisor
10. Factory Supervisor
11. Team Leader Service Advisor
12. Service Assistant Manager
13. Service Manager
14. Entrepreneur

PROGRAMME AIM

This programme believes that all individuals have potential to be a resourceful and adaptable technician to support the nation aspiration in providing engineering talent.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

Within a few years after completing Diploma in Mechanical Engineering (Automotive), graduates are able to:

- PEO1: Proficient with industry-relevant knowledge and skills in mechanical engineering (automotive) field
- PEO2: Engaging on lifelong and continuous learning to enhance knowledge and skills
- PEO3: Acquire with entrepreneurial skills and mindset in the real working environment
- PEO4: Establish links with society and players in the industry

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

PROGRAMME LEARNING OUTCOMES (PLO)

Upon completion of the programme, students should be able to:

PLO 1 : Apply knowledge of applied mathematics, applied science, computer and engineering fundamentals and an engineering specialisation as specified in DK1 to DK4 respectively to wide practical procedures and practices in area of mechanical engineering (automotive).

PLO 2 : Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to mechanical engineering (automotive) field (DK1 to DK4).

PLO 3 : Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety as well as, cultural, societal and environmental considerations in area of mechanical engineering (automotive) (DK5).

PLO 4 : Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements (DK8)

PLO 5 : Apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations (DK2 and DK6).

PLO 6 : Consider sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well- defined engineering problems. (DK1,DK5 and DK7)

PLO 7 : Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion. (DK9)

PLO 8 : Function effectively as an individual, and as a member in diverse and inclusive teams in multi-disciplinary, face-to-face, remote and distributed settings (DK9)

PLO 9 : Communicate effectively and inclusively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions

PLO 10 : Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments.

PLO 11: Recognise the need for, and have the ability for independent and life long learning and critical thinking in the face of specialised technical knowledge.(DK8).

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

KNOWLEDGE PROFILE (DK)

DK 1: A descriptive, formula-based understanding of the natural sciences applicable in a sub-discipline and awareness of directly relevant social sciences.

DK 2: Procedural mathematics, numerical analysis, statistics applicable in a subdiscipline.

DK 3: A coherent procedural formulation of engineering fundamentals required in an accepted sub-discipline.

DK 4: Engineering specialist knowledge that provides the body of knowledge for an accepted sub-discipline.

DK 5: Knowledge that supports engineering design and operations based on the techniques and procedures of a practice area.

DK 6: Codified practical engineering knowledge in recognized practice area.

DK 7: Knowledge of issues and approaches in engineering technician practice, such as public safety and sustainable development.

DK 8: Engagement with the current technological literature of the practice area.

DK 9: Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

PROGRAMME STRUCTURE

COURSE TYPE	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PROGRAMME LEARNING OUTCOME (PLO)											PREREQUISITE			
			L	P	T	O		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11				
								Engineering Knowledge	Problem Analysis	Design/Development of Solutions	Investigation	Tool Usage	The Engineer and the World	Ethics	Individual and Collaborative Teamwork	Communications	Project Management and Finance	Life Long Learning				
SEMESTER 1																						
Compulsory	DUE10062	Technical English 1	1	0	2	0	2										A3 A3		A2			
	MPU 24031	Sukan 1																				
	MPU 24041	Kelab / Persatuan 1	0	2	0	0	1						P2					A3				
	MPU 24XX1	Unit Beruniform 1																				
Common Core	DUW10042	Occupational, Safety and Health for Engineering	2	0	0	0	2	C2			A3		A3									
	DBM10163	Engineering Mathematics 1	2	0	2	0	3	C3	C3						A3							
	DBS10042	Engineering Science	2	1	0	0	2	C3	P3				A3									
Discipline Core	DJJ10223	Engineering Drawing	1	3	0	0	3	C3					P3		A3							
	DJJ10232	Mechanical Workshop Practice 1	0	4	0	0	2						P3 P4	A3								
	DJJ10243	Workshop Technology	3	0	0	0	3	C3							C3				A3			
TOTAL			25				18															
SEMESTER 2																						
Compulsory	MPU21072	Penghayatan Etika dan Peradaban	1	0	2	0	2								A2	A2		A3				
	MPU 24051	Sukan 2																		MPU 24031		
	MPU 24061	Kelab / Persatuan 2	0	2	0	0	1						P2					A3		MPU 24041		
	MPU 24XX1	Unit Beruniform 2																		MPU 24XX1		
Common Core	DBM20173	Engineering Mathematics 2	2	0	2	0	3	C3	C3							A3				DBM10163		
Discipline Core	DJJ30293	Thermodynamics	2	1	1	0	3	C3	C4				P4									
Specialization	DJA20132	Automotive Workshop Practice 1	0	4	0	0	2						P3	P4					A3			
	DJA20103	Automotive Electrical and Electronics	3	1	0	0	3	C2	C3				P3									
	DJA20113	Automotive Technology 1	3	0	0	0	3	C2	C3								A3					
TOTAL			24				17															

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

PROGRAMME STRUCTURE

COURSE TYPE	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PROGRAMME LEARNING OUTCOME (PLO)											PREREQUISITE	
			L	P	T	O		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11		
								Engineering Knowledge	Problem Analysis	Design/Development of Solutions	Investigation	Tool Usage	The Engineer and the World	Ethics	Individual and Collaborative Teamwork	Communications	Project Management and Finance	Life Long Learning		
SEMESTER 3																				
Compulsory	DUE30072	Technical English 2	1	0	2	0	2									A2 A3		A3		
Common Core	DBM30183	Engineering Mathematics 3	2	0	2	0	3	C3	C3						A3				DBM20173	
	DJJ30332	Engineering and Society	2	0	0	0	2						C3	C4		A3				
Discipline Core	DJJ30313	Engineering Mechanics	2	1	1	0	3	C3	C4			P4								
	DJJ20282	Computer Aided Design	1	2	0	0	2	C3				P4				A3			DJJ10223	
Specialization	DJA30123	Automotive Technology 2	3	0	0	0	3	C2	C3							A3			DJA20113	
	DJA30132	Automotive Workshop Practice 2	0	4	0	0	2					P3	P4					A3	DJA20132	
TOTAL			23				17													
SEMESTER 4																				
Discipline Core	DJJ20273	Fluid Mechanics	2	1	1	0	3	C2 C3				P4								
	DJJ40392	Project 1	2	0	0	0	2		C4				C4				A3			
	DJJ30323	Strength of Materials	2	1	1	0	3	C3			C4	P4								
Specialization	DJA40192	Electric and Hybrid Vehicle	2	1	0	0	2	C2 C3										A3		
	DJA40143	Internal Combustion Engine	3	0	1	0	3		C3		C4							A3	DJJ30293	
	DJA40152	Automotive Workshop Practice 3	0	4	0	0	2					P3	P4					A3	DJA30132	
Electives	DJJXXXX	Elective					2													
TOTAL			21				17													

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

PROGRAMME STRUCTURE

COURSE TYPE	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PROGRAMME LEARNING OUTCOME (PLO)											PREREQUISITE
			L	P	T	O		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	
								Engineering Knowledge	Problem Analysis	Design/Development of Solutions	Investigation	Tool Usage	The Engineer and the World	Ethics	Individual and Collaborative Teamwork	Communications	Project Management and Finance	Life Long Learning	
SEMESTER 5																			
Compulsory	MPU23182	Sains Teknologi dan Kejuruteraan Islam*	1	0	2	0	2							A3	A2		A4		
	MPU23172	Nilai Masyarakat Malaysia**											A3	A2		A4			
	DUE50082	Technical English 3	1	0	2	0	2								A4 A4		A3		
	MPU22071	Kursus Integriti dan Anti-Rasuah	0	0	2	0	1							A2		A3			
Common Core	DUU10072	Entrepreneurship	1	2	0	0	2				P2				A3	A3			
Discipline Core	DJJ50403	Project 2	1	3	0	0	3			P5	C4				A4	P4	DJJ40392		
Specialization	DJA50162	Vehicle Dynamics	3	0	0	0	2		C3		C4				A3		DJJ30313		
	DJA50172	Automotive Workshop Service Management	1	2	0	0	2		C4	P3							A3		
TOTAL			21				14												
SEMESTER 6																			
Industrial Training	DUT600910	Engineering Industrial Training	0	0	0	0	10		C3			P4	A3	A5	P4	A4		P4	
TOTAL			0				10												
ELECTIVES																			
1	DJA40182	Mobile Hydraulic	2	0	0	0	2		C2			P3				A3			
2	DJJ40352	Computer Programming	1	2	0	0	2	C3				P4					A3		
2	DJM50302	Autonomous Vehicles System	2	0	0	0	2	C2				P4				A3			
4	DJF52092	Quality Control	2	0	0	0	2	C3	C4						A3				
5	DJI30142	Automotive Product Design 1	0	4	0	0	2					P3, P4		A3					
FREE ELECTIVES																			
1	DUD10012	Design Thinking	1	0	0	1	2			C3						A3			

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

PROGRAMME STRUCTURE

Course Type	Total Credit	Total %
i. Compulsory	13	32%
ii. Common Core	17	
iii. Discipline Core	27	66%
iv. Specialization	24	
v. Industrial Training	10	
vi. Electives	2	2%
Total Credit	93	100%

Engineering and Engineering Technology Courses		
Total Credit (Discipline Core, Specialization, Industrial Training)	63	
	Credit	%
i. Practice - Oriented Components	30	48%
ii. Engineering Technology (Specialization)	24	38%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	DUE10062 TECHNICAL ENGLISH 1	TECHNICAL ENGLISH 1 is designed to provide technical students the language input and skills required in technical workplace communication. This course aims to prepare students to use language skills to achieve B2 level which is becoming independent language users. Students will be exposed to skills required for effective participation in group discussions contextualized in workplace safety and health issues. The course also includes input and presentation skills on how to use the language appropriately in describing, comparing, and contrasting objects/products relevant to students' respective engineering disciplines. The course will enable students to make verbal and written enquiries related to objects/products for workplace use. The course is also designed to assist students in achieving at least level B1 of Common European Framework of Reference (CEFR).	CLO1 : Discuss work-related topic using effective communication skills by responding to workplace safety and hazards relevant to engineering technician practice. CLO2 : Explain the features and characteristics of objects/products used in a well-defined technical activity CLO3 : Share effective communication skills in making and responding to enquiries related to a well-defined engineering activity.	1. Discussion (1) - 30% 2. Assignment (1) - 15% 3. Presentation (1) - 30% 4. Simulation (1) - 25%.	0%
1	MPU24031 SUKAN 1	SUKAN 1 adalah aktiviti yang mengandungi latihan kemahiran berguna secara rekreasi dan peraturan-peraturan tertentu dalam mengejar kecemerlangan bagi penguasaan pengetahuan dan kemahiran khusus secara holistik. Ia bertujuan bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO 1: Mempamerkan kemahiran khusus bagi sukan berkaitan. CLO 2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan arnalan positif.	1. Tunjukcara (1) - 60% 2. Mini Project (1) - 40%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	MPU24041 KELAB/PERSATUAN 1	KELAB/PERSATUAN 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO 1: Mempamerkan kemahiran khusus bagi kelab/ persatuan berkaitan. CLO 2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1. Tunjukcara (1) - 60% 2. Mini Project (1) - 40%	0%
1	MPU24191 UNIT BERUNIFORM 1 (RELASIS 1)	BRIGED RELASIS 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada pengenalan asas Jabatan Sukarelawan Malaysia (RELA) serta penerangan mengenai tugas dan tanggungjawab kepimpinan dalam RELA serta memberikan pendedahan mengenai tugas, peranan dan bidang kuasa RELA bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO 1: Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1. Tunjukcara (1) - 60% 2. Mini Project (1) - 40%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	MPU24151 UNIT BERUNIFORM 1 (PISPA 1)	Pasukan Institusi Pertahanan Awam (PISPA) 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO 1: Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1. Tunjukcara (I) - 60% 2. Mini Project (I) - 40%	0%
1	MPU24211 UNIT BERUNIFORM 1 (BRIGED BOMBA 1)	BRIGED BOMBA 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada pengenalan asas Jabatan Bomba dan Penyelamat Malaysia (JBPM) serta memberikan pendedahan mengenai kemahiran, tugas, peranan dan bidang kuasa JBPM bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO 1: Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1. Tunjukcara (I) - 60% 2. Mini Project (I) - 40%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	DUW10042 OCCUPATIONAL SAFETY&HEALTH FOR ENGINEERING	Occupational Safety and Health for engineering course is design to impart understanding of the self regulatory concepts and provisions under the Occupational Safety & Health Act (OSHA) in Malaysia. This course presents the responsibilities of workers in implementing and complying with the safety procedures at work. Understanding of notifications of accidents , dangerous occurrences, poisoning and diseases and liability for offences will be imparts to students. This course will also provide an understanding of the key issues in OSH Management, Incident Prevention, Hazard Identification Risk Control and Risk Assessment (HIRARC), Fire Safety and First Aid, Workplace Environment and Ergonomics and guide the students gradually into this multi-disciplinary science.	CLO1 : Explain briefly Occupational Safety and Health (OSH) procedures, regulation and its compliance. CLO2 : Describe hazards, risks and safe work practices in order to maintain health and safe work environment. CLO3 : Justify the factor that can lead to accident in workshop.	1. Quiz t (1) - 20% 2. Test (1) - 20% 3. Case Study (1) - 40% 4. Presentation (1) - 20%	0%
1	DBM10163 ENGINEERING MATHEMATICS 1	ENGINEERING MATHEMATICS 1 exposes students to basic algebra including resolving partial fractions. This course also covers the concept of trigonometry and the method to solve trigonometry problems by using basic identities, compound angle and double angle formulae. Students will be introduced to the theory of complex numbers and the concept of vector and scalar. Students will explore advanced matrices involving a 3x3 matrix.	CLO 1: Use mathematical statement to describe relationship between various physical phenomena CLO 2: Show mathematical solutions using the appropriate techniques in mathematics CLO 3: Use mathematical expression in describing real engineering problems precisely, concisely and logically	1. Quiz (2) - 10% 2. Theory Test (3) - 20% 3. Discussion (2) - 15% 4. End of Chapter (3) - 20%.	40%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	DBS10042 ENGINEERING SCIENCE	ENGINEERING SCIENCE course introduces the physical concepts required in engineering disciplines. Students will learn the knowledge of fundamental physics in order to identify and solve engineering physics problems. Students will be able to perform experiments and activities to mastery physics concepts.	CLO 1: Use basic physics concept to solve engineering physics problems. CLO 2: Use knowledge of fundamental physics in real engineering activities accurately. CLO 3: perform appropriate activities related to physics concept.	1. Theory Test (1) - 15% 2. Mini Project (1) - 25% 3. Practical Work (3) - 20%.	40%
1	DJJ10223 ENGINEERING DRAWING	Engineering Drawing course provides the students with the fundamentals of technical drawings and the application Computer Aided Design (CAD) software. For technical drawing, it emphasizes the practical knowledge of drawing instruments and drawing techniques while for CAD the student will learn to navigate and use the software to create 2D drawing design in engineering. Students shall be able to demonstrate competency in using some standard available features of technical drawing and CAD application to create and manipulate objects or elements in engineering drawing.	CLO1 : apply the fundamentals of engineering drawing and features of CAD software CLO2 : construct the 2D CAD drawing according to the engineering drawing standards CLO3 : Propose a project presentation with following engineering norms and practices in engineering drawing.	1. Theoretical Test (1) - 20% 2. Practical Work (4) - 40% 3. Practical Test (1) - 20% 4. Presentation (1) - 20%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	DJJ10232 MECHANICAL WORKSHOP PRACTICE 1	Mechanical Workshop Practice 1 exposes the students to welding, machining and fitting which involve the use of arc and gas welding machine, lathe machine, drilling machine, grinding, hand tools, marking out tools, measuring and testing tools. Students are also taught to emphasize on safety procedures and cleanliness in the workshop.	CLO1 : Measure product using appropriate measurement instruments CLO2 : Perform fitting, welding and machining works according to Standard Operational Procedure (SOP). CLO3 : Demonstrate an understanding of sustainable development impacts, environment and norms of engineering practices according to the workshop safety and health regulation.	1. Practical Work (1) - 30% 2. Practical Product (3) - 60% 3. Practical Work Generic Skills (1) - 10%	0%
1	DJJ10243 WORKSHOP TECHNOLOGY	Workshop Technology provides exposure and knowledge in using hand tools, machine operation such as drilling, lathe, milling and computer numerical control. It also covers on gear measurement and inspection welding process in oxy acetylene, Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW) and Gas Metal Arc Welding (GMAW).	CLO1 : apply the knowledge of basic mechanical components and equipment, hand tools and measuring equipment in workshop technology. CLO2 : apply standard practice in operating mechanical tools and component. CLO3 : demonstrate continuous learning and information management skills to complete assigned task.	1. Quiz (1) - 5% 2. Test (1) - 15% 3. Presentation (1) - 10% 4. Assignment (1) - 10% 5. Case Study (1) - 10%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CAJ)	FINAL EXAMINATION
2	MPU21072 PENGHAYATAN ETIKA DAN PERADABAN	PENGHAYATAN ETIKA DAN PERADABAN ini menjelaskan tentang konsep etika daripada perspektif peradaban yang berbeza. Ia bertujuan bagi mengenal pasti sistem, tahap perkembangan, kemajuan dan kebudayaan merentas bangsa dalam mengukuhkan kesepaduan sosial. Selain itu, perbincangan dan perbincangan berkaitan isu-isu kontemporari dalam aspek ekonomi, politik, sosial, budaya dan alam sekitar daripada perspektif etika dan peradaban dapat melahirkan pelajar yang bermoral dan profesional. Penerapan amalan pendidikan berimpak tinggi (HIEPs) yang bersesuaian digunakan dalam penyampaian kursus ini.	CLO1 : Membentangkan konsep etika dan peradaban dalam kepelbagaian tamadun. CLO2 : Menganalisis proses pemeraksanaan kesepaduan sosial merentas bangsa di Malaysia. CLO3 : Mencadangkan sikap yang positif terhadap isu dan cabaran kontemporari dari perspektif etika dan peradaban.	1. Pembentangan (1) - 30% 2. e-Folio (1) - 30% 3. Projek (1) - 40%	0%
2	MPU24051 SUKAN 2	SUKAN 2 adalah aktiviti yang mengandungi latihan kemahiran berguna secara rekreasi dan peraturan-peraturan tertentu dalam mengejar kecemerlangan bagi penguasaan pengetahuan dan kemahiran khusus secara holistik. Ia bertujuan bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO1 : Mempamerkan kemahiran khusus bagi sukan berkaitan. CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1. Tunjukcara (1) - 60% 2. Mini Projek (1) - 40%	0%
2	MPU24061 KELAB/PERSATUAN 2	KELAB/ PERSATUAN 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO1 : Mempamerkan kemahiran khusus bagi kelab/ persatuan berkaitan. CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif	1. Tunjukcara (1) - 60% 2. Mini Projek (1) - 40%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	MPU24321 UNIT BERUNIFORM 2 (BOMBA 2)	BRIGED BOMBA 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada pengenalan asas Jabatan Bomba dan Penyelamat Malaysia (JBPM) serta memberikan pendedahan mengenai kemahiran, tugas, peranan dan bidang kuasa JBPM bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO1 : Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1.Tunjukcara (I) - 60% 2.Mini Projek (I) - 40%	0%
2	MPU24261 UNIT BERUNIFORM 2 (PISPA 2)	Pasukan Institusi Pertahanan Awam (PISPA) 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO1 : Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif	1.Tunjukcara (I) - 60% 2.Mini Projek (I) - 40%	0%
2	MPU24301 UNIT BERUNIFORM 2 (RELASIS 2)	BRIGED RELASIS 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada asas Ilmu Kemahiran Medan, Pertahanan Diri,tugas, peranan Crisis Management Team (CMT) serta menerangkanjenis dan kegunaan senjata api RELA serta memberi pendedahan kepada Kawalan Kehormatan Pasukan RELA (KKPR), Kawad Transformasi RELA (KTR) dan Kawad Senjata bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO1 : Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1.Tunjukcara (I) - 60% 2.Mini Projek (I) - 40%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	DJJ30293 THERMODYNAMICS	Thermodynamics provides knowledge and application of fundamentals concepts to solve problems related to thermodynamics. It emphasizes analyzing the non-flow process, flow process, heat engine, reversed heat engine and vapor power cycle. This course also exposes the students to the demonstration of experiments by using real equipment.	CLO1 : apply the fundamentals concept and properties of pure substances in thermodynamics. CLO2 : analyze the thermodynamics systems using the laws of thermodynamics. CLO3 : organize appropriately experiments according to the Standard Operating Procedures.	1. Quiz (1) - 5% 2. Test (1) - 10% 3. Practical Work (3) - 15% 4. Assignment (2) - 20%	50%
2	DBM20173 ENGINEERING MATHEMATICS 2	ENGINEERING MATHEMATICS 2 exposes students to the basic laws of indices and logarithms. This course introduces the basic rules of differentiation concepts to solve problems that relate to maximum, and minimum and calculate the rates of changes. This course discusses integration concepts in order to strengthen students' knowledge for solving area and volume-bounded region problems. In addition, students will learn the application of both techniques of differentiation and integration.	CLO1 : Explain the relationship between various physical phenomena in algebra and calculus. CLO2 : Solve mathematics problems by using appropriate and relevant fundamental calculus techniques CLO3 : Use mathematics language to express mathematics ideas and arguments precisely, concisely and logically in calculus.	1. Theory Test (1) - 15% 2. End Of Chapter (3) - 15% 3. Quiz (2) - 10% 4. Discussion (2) - 20%	40%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	DJA20132 AUTOMOTIVE WORKSHOP PRACTICE 1	Automotive Workshop Practice 1 provides automotive troubleshooting and servicing skill of automotive systems. The course covers the topics of complete overhauling of petrol engine, tyre and suspension systems, brake system, automobile electrical wiring system, starting system and charging system.	CLO1 : Follow skill for servicing automotive system CLO2 : Perform troubleshooting method of automotive systems (CLO3 : Demonstrate awareness of social responsibility and safety procedure in the workshop according to the workshop safety regulations to create a secured environment in an organization while doing practical work environment in an organization while doing practical work	1. Practical Work (4) - 80% 2. Practical Work (Generic) (1) 20%	0%
2	DJA20103 AUTOMOTIVE ELECTRICAL AND ELECTRONIC	Automotive Electrical And Electronics covers the basic concepts and application of automotive electrical and electronic systems. Students will learn the fundamental concepts of electricity, electrical circuits, principles of magnetism, tools and test equipment, automotive electrical systems and circuits as well as comfort and safety.	CLO1 : Explain the principles of electrical circuits, electromagnetism, electronic and automotive electrical circuit to solve related problems. CLO2 : Expose the working principles of electric and electronic of automotive system. CLO3 : Organize continuous learning while using tool and skills.	Quiz (2) - 10% 2. Test (1) - 15% 3. Practical Task (1) - 15% 4. Case Study (2) 15% 5. Assignment (1) - 10%	50%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	DJA20113 AUTOMOTIVE TECHNOLOGY 1	Automotive Technology 1 covers automotive configurations, basic operation of automotive system such as engine and vehicle classification, engine maintenance (cooling, lubrication and ignition system), steering and suspension system, manual transmission and clutch systems as well as tyre, wheel alignment and brake system. It provides a foundation for students in engine construction, categories and working principles of those systems.	CLO1 : Identify the evolving technology trends in automotive systems. CLO2 : Apply the working principles of automotive systems. CLO3 : Demonstrate continuous learning while engaging in the new knowledge and skill.	1. Quiz (2) - 10% 2. Test (1) - 10% 3. Presentation (1) - 10% 4. Case Study (1) 10% 5. Assignment (1) - 10%	50%
3	DUE30072 TECHNICAL ENGLISH 2	TECHNICAL ENGLISH 2 equips technical students with the required language skills to communicate effectively at the workplace mainly in describing process and procedures as well as giving instructions. It is also designed to develop students' skills in conducting and participating in meetings and responding appropriately to complaints related to specific situations. This content structure reflects the stated course learning outcomes to be achieved by the students in order to develop their interpersonal & communication skills. It will enable them to independently participate in technical discussion in work-context. This course also aims to prepare students to use language skills to achieve B2 of CEFR level.	CLO1: Practice effective oral presentation skills in the context of process, procedure and instruction in workplace situations using appropriate language. CLO2: Demonstrate effective communication and social skills in conducting and participating in meetings in workplace situations. CLO3: Propose appropriate response(s) to complaints related to workplace situations.	1. Presentation (1) - 35% 2. Role Play (1) - 30% 3. Assignment (1) - 35%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
3	DBM30183 ENGINEERING MATHEMATICS 3	ENGINEERING MATHEMATICS 3 exposes students to statistical and probability concepts and their applications in interpreting data. The course also introduces the numerical methods concept to solve simultaneous equations by using the Gaussian Elimination method, LU Decomposition using Doolittle and Crout methods, polynomial problems using Simple Fixed-Point Iteration and Newton-Raphson methods. To strengthen the students in solving engineering problems, Ordinary Differential Equation (ODE) is also included. In addition, the course also discusses optimization problems by using Linear Programming. It is designed to build students' teamwork and problem-solving skills.	CLO1: Demonstrate mathematical concepts, formulate methods of solutions and select appropriate techniques for solving routine mathematics problems. CLO2: Apply mathematical methods and concepts to solve engineering problems. CLO3: Express mathematics ideas clearly by using correct mathematical terminology and proper mathematical notation.	1. Quiz (2) - 10% 2. Theory Test (1) - 15% 3. End Of Chapter (3) - 20% 4. Case Study (1) - 15%	40%
3	DJJ30332 ENGINEERING AND SOCIETY	Engineering and Society focuses on the introduction to professional ethics, theory and philosophy of ethics, values in professional ethics, engineering by laws and standards, issues in professional ethics and sustainability. It also relates towards IR 4.0 introduction and green engineering.	CLO1: Implement the roles of engineering profession towards the developing of society and the challenge of globalization with professional ethic CLO2: Determine the importance of engineering management, professional bodies, sustainability and green technology aspect in the engineering profession CLO3: Explain the issues of sustainability and green technology in engineering practice	1. Quiz (1) - 15% 2. Test (2) - 40% 3. Presentation (1) - 15% 4. Case study (1) - 30%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
3	DJJ30313 ENGINEERING MECHANICS	Engineering Mechanics focuses on theoretical knowledge in statics and dynamics. This course provides the students with fundamental understanding of forces and equilibrium, resultants, equilibrium of a particle and structural analysis. This course also covers kinematics and kinetics of particles and exposes the students to the demonstration of experiments in Engineering Mechanics.	CLO1 : solve problems related to statics and dynamics based on the concepts and principle of engineering mechanics. CLO2 : analyze engineering related problems based on fundamentals of statics and dynamics. CLO3 : organize appropriately experiment in groups according Standard Operation Procedure.	1. Quiz (1) - 5% 2. Test (1) - 10% 3. Practical Work (4) - 20% 4. Assignment (1) - 15%	50%
3	DJJ20282 COMPUTER AIDED DESIGN	Computer Aided Design exposes students to the fundamentals and principles of 3D drawing using 3D CAD software. Students are also equipped with various methods of creating a solid model using extrude, revolve, swept, assembly, simulation, an animation and details drawing. Hands-on exercises drawing of mechanical engineering will also be covered in this course.	CLO1 : Apply CAD commands to produce engineering drawings of mechanical components. CLO2 : Construct 3D models of mechanical components in accordance with technical drawing standards. CLO3 : Demonstrate technical engineering presentations through projects, adhering to standard practices of technical communication.	1. Theoretical Test (1) - 20% 2. Practical Task (2) - 40% 3. Practical Test (1) - 30% 4. Presentation (1) - 10%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
3	DJA30132 AUTOMOTIVE WORKSHOP PRACTICE 2	Automotive Workshop Practice 2 provides automotive troubleshooting and servicing skill of automotive systems. The course covers fuel delivery system for EFI petrol engine, throttle body servicing, turbocharger servicing, diagnose fuel delivery system for diesel engine, and perform diesel common rail, manual and automatic transmission service, differential unit service, basic engine diagnosis, EFI system diagnosis and troubleshooting, power window system, windshield washer and wiper system.	CLO1 : Organize troubleshooting method of automotive systems. CLO2 : Perform skill for servicing automotive systems. CLO3 : Demonstrate awareness of social responsibility and safety procedures in the workshop according to the workshop safety regulations to create a secured environment in an organization while doing practical work.	1. Practical Work (4) - 80% 2. Practical Work (Generic) (1) 20%	0%
3	DJA30123 AUTOMOTIVE TECHNOLOGY 2	Automotive Technology 2 provides knowledge on the concept and basic principles of engine management system, air induction system, forced induction system, emissions control system, automatic transmission, power train units and modern technology in automotive.	CLO1 : Explain the evolving technology trends in automotive systems. CLO2 : Expose the working principles of automotive systems. CLO3 : Demonstrate the analytical skills that are related to the automotive systems.	Quiz (2) - 10% 2. Test (1) - 10% 3. Presentation (1) - 10% 4. Case Study (1) 10% 5. Assignment (1) - 10%	50%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
4	DJJ20273 FLUID MECHANICS	Fluid Mechanics is designed to provide students with the knowledge related to the fundamentals of fluid mechanics. It emphasized on the principles related to the fluid properties and behavior in static and dynamic condition. This course also covers the principle and application of fluid mechanics laboratory techniques including preparation and analysis of fluid properties, Reynold Numbers, Bernoulli Theorem and losses in pipeline system.	CLO1 : explain the fundamental properties of fluids in relation to fluid mechanics. CLO2 : apply fundamental knowledge of fluid mechanics in mechanical engineering applications. CLO3 : organize appropriate experiments in groups according to the standard operating procedure. .	1. Quiz (1) - 5% 2. Test (1) - 10% 3. Practical Task (4) - 25% 4. Assignment (1) - 10%	50%
4	DJJ40392 PROJECT 1	PROJECT 1 provides students with solid foundation on knowledge and skills in formulating project proposal preparation, writing and presentation.	CLO1: Identify engineering problems in mechanical engineering fields. CLO2: Analyze the sustainable development impacts in engineering problem. CLO3: Demonstrate engineering management in a technical team.	1. Presentation (1) - 20% 2. Report (1) - 40% 3. Log Book (1) - 10%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
4	DJJ30323 STRENGTH OF MATERIALS	Strength Of Materials provides knowledge on concepts and calculation of forces on materials, thermal stress, shear force and bending moment, bending stress, shear stress and torsion in shafts. It also deals with the experiments conducted on tensile test, bending moment, shearing force and torsion and deflection.	CLO1 : apply the concepts of strength of materials to solve related problems. CLO2 : analyse problems correctly related to strength of materials. CLO3 : organize appropriately experiment in group according to Standard Operation Procedures.	1. Quiz (1) - 5% 2. Test (1) - 15% 3. Practical Work (4) - 20% 4. Assignment (1) 10%	50%
4	DJA40192 ELECTRIC AND HYBRID VEHICLES	The Electric And Hybrid Vehicles course is designed to provide a comprehensive understanding of electric and hybrid vehicle technologies, their components, operation, and their role in the future of sustainable transportation. The course aims to equip students with the necessary knowledge and skills to work with and contribute to the development and maintenance of electric and hybrid vehicles.	CLO1 : Explain the awareness, principles, construction and components of electric and hybrid vehicle technology CLO2 : Employ the hazard,safety and risk management procedures for electric vehicles according to electrical vehicle standards and methods. CLO3 : Demonstrate routine maintainance for Electric/ Hybrid Vehicle according to vehicle manufacturers manual.	1. Quiz (2) - 30% 2. Test (1) - 30% 3. Presentation (1) - 20% 4. Assignment (1) 20%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
4	DJA40143 INTERNAL COMBUSTION ENGINE	Internal Combustion Engine covers various types of engines, piston engine process analysis, combustion process, fuel characteristics, engines criteria and comparison, as well as various engine parts and their functions.	CLO1 : Exhibit the classifications and terms in internal combustion engine. CLO2 : Analyze the problem in internal combustion engine. CLO3 : Demonstrate continuous learning while engaging in the new knowledge and skill.	Quiz (2) - 10% 2. Test (2) - 20% 3. Presentation (1) - 10% 4. Case Study (1) 10%	50%
4	DJA40152 AUTOMOTIVE WORKSHOP PRACTICE 3	Automotive Workshop Practice 3 provides basic automotive related skills which focus on follow troubleshooting and servicing of Natural Gas Vehicle (NGV), Diesel Common Rail System, Hybrid Car System/Electric Vehicle System, Antilock Brake System (ABS), Electronic Stability Program (ESP), air conditioning system, Continuously Variable Transmission (CVT), and Supplemental Restraint System (SRS) by using OBD II and inspection and testing of actuators.	CLO1 : Organize troubleshooting method of automotive systems. CLO2 : Perform skill for servicing automotive systems. CLO3 : Demonstrate awareness of social responsibility and safety procedures in the workshop according to the workshop safety regulations to create a secured a secured environment in an organization while doing practical work	1. Practical Work (4) - 80% 2. Practical Work (Generic) (1) 20%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
5	MPU23182 SAINS TEKNOLOGI DAN KEJURUTERAAN ISLAM	SAINS, TEKNOLOGI DAN KEJURUTERAAN DALAM ISLAM memberi pengetahuan tentang konsep Islam sebagai al-Din dan seterusnya membincangkan konsep sains, teknologi dan kejuruteraan dalam Islam serta impaknya, pencapaiannya dalam tamadun Islam, prinsip serta peranan syariah dan etika Islam, peranan kaedah fiqh serta aplikasinya.	CCLO 1: Melaksanakan amalan Islam dengan betul dalam kehidupan seharian CLO 2: Menerangkan etika dan profesionalisme berkaitan sains teknologi dan kejuruteraan dalam Islam CLO 3: Menghubunkait minda ingin tahu dengan prinsip syariah, etika dan kaedah fiqh dalam bidang sains, teknologi dan kejuruteraan menurut perspektif Islam	1. Tunjukcara (2) - 40% 2. Tugas Berdasarkan Masalah (2) - 40% 3. e-Folio (1) - 20%	0%
5	MPU23172 NILAI MASYARAKAT MALAYSIA	NILAI MASYARAKAT MALAYSIA disediakan untuk membincangkan aspek sejarah pembentukan masyarakat, nilai-nilai agama, adat resam dan budaya masyarakat di Malaysia. Selain itu, pelajar dapat mempelajari tentang tanggungjawab sebagai individu dan nilai perpaduan dalam kehidupan di samping cabaran-cabaran dalam membentuk masyarakat Malaysia yang bersatu padu dan penyayang.	CLO1: Membincangkan sejarah dan nilai dalam pembentukan masyarakat di Malaysia. (A2, PLO8) CLO2: Menerangkan etika dan profesionalisme terhadap konsep perpaduan bagi meningkatkan semangat patriotisme masyarakat Malaysia. (A3, PLO7) CLO3: Menghubunkait minda ingin tahun dengan cabarancabaran dalam membentuk masyarakat Malaysia. (A4, PLO10)	1. Tunjukcara (2) - 40% 2. Tugas Berdasarkan Masalah (2) - 40% 3. e-Folio (1) - 20%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
5	DUE50082 TECHNICAL ENGLISH 3	TECHNICAL ENGLISH 3 aims to prepare students to use language skills (listening, reading, speaking and writing) to achieve B2 level in Common European Framework of Reference (CEFR) which is becoming independent language users. It covers skills which are needed by students focusing on selfassessment, job-search strategies, writing and explaining technical text (s) on wide range of technical subjects. Students will be able to select jobs or positions which match their qualifications, retrieve relevant information regarding the positions available and request for a job interview. This course also aims to prepare students with skills to write effective resumes with accompanying cover letters. The second part of this course is divided into three stages which focuses on students' abilities to study different types of technical text (s), plan and prepare clear and detailed technical text (s) and explain the content of technical text (s) using effective presentation skills.	CLO1: Prepare appropriate types of oral and written communication modes that meet employer's requirements (A4, PLO9) CLO2: Demonstrate effective language-based skills in interpersonal communication, ethics and workplace related contexts. (A3, PLO11) CLO3: Organize texts on a wide range of technical subjects to pass information as well as to give reasons in support of or against particular points of views. A4, PLO9)	1. Presentation (I) - 35% 2. Role Play (I) - 30% 3. Assignment (I) - 35%	0%
5	MPU22071 KURSUS INTEGRITI DAN ANTI-RASUAH	KURSUS INTEGRITI DAN ANTI RASUAH (KIAR) merangkumi konsep asas tentang nilai integriti, bentuk perbuatan rasuah dan salah guna kuasa dalam kehidupan seharian serta dalam organisasi dan langkah-langkah pencegahan rasuah.	CLO1 : Membincangkan hubungan nilai integriti dan antirasuah dengan isu semasa. CLO2 : Menilai bentuk pelakuan rasuah dan salah guna kuasa dalam aktiviti seharian dan organisasi.	1. Mini Projek (I) - 50% 2. Pembentangan (I) - 50%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
5	DUU10072 ENTREPRENEURSHIP	ENTREPRENEURSHIP focuses on the fundamentals and concept of entrepreneurship in order to inculcate the value and interest in students to choose entrepreneurship as a career. This course can help students to initiate creative and innovative entrepreneurial ideas. It also emphasizes on online and offline business learning in line with the changing needs of current market.	CLO 1: Demonstrate application on entrepreneurship concept, competencies, importance and social responsibilities of entrepreneurship. CLO 2: Propose sustainable business idea using Business Model Canvas (BMC) for entrepreneurial project. CLO 3: Organize online business using various cyber social tools.	1. Mini Project (I) - 20% 2. Business Pitching (I) - 30% 3. Business Portfolio Presentation (I) - 20% 4. Business Portfolio (I) - 30%	0%
5	DJJ50403 PROJECT 2	Project 2 is a continuation of Project 1 focusing on project planning, development, project report and presentation. This course introduces the students with abilities and skills in conducting project planning, development and management based on their project design. It also provides the students with practical product, report writing and presentation skills. The project will be implemented in a group and each group will work on a project under lecturer(s) supervision. Project title will be based on specialization and students will be assessed individually.	CLO1 : Organize project outcomes in progress report based on standard format CLO2 : Construct design solutions to meet specified needs of the project with appropriate consideration. CLO3 : Analyze the project results and write the project report to achieve proposed objectives CLO4 : Explain the project work and defend project outcomes effectively with good communication skills	1. Practical Product (I) - 40% 2. Presentation (I) - 20% 3. Log Book (I) - 20% 2. Project Report (I) - 20%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
5	DJA50162 VEHICLE DYNAMICS	Vehicle Dynamics course enables the students to embark on the study regarding on forces acting on vehicles propelled by engines. Forces and moments acting on pneumatic tires are also studied. It is important to understand the dynamics of road vehicles. The principals involved dynamics for various types of vehicles, etc. Therefore, this course focuses on the dynamics and the basic operations of the vehicle related to dynamics. Most of the discussion and examples will focus on passenger cars, although these principles are equally applicable to large and small trucks and buses.	CLO1 : Apply the knowledge of Vehicle Dynamics to solve related problems. CLO2 : Analyze the forces acting on vehicles. CLO3 : Display phenomenon involving vehicle dynamics as individual and as a team to complete assigned tasks	1. Test (1) -10% 2. Quiz (2) -10% 3. Presentation (1) -10% 4. Case study (1) -10%	50%
5	DJA50172 AUTOMOTIVE WORKSHOP SERVICE MANAGEMENT	Automotive Workshop Service Management discusses the principles and practices related to Workshop/Service Centre Management covering the topics on Introduction to Workshop Management, Building and Facilities, Personnel Management, Management Control, Marketing and Service Selling, Customer Relations and Advertising.	CLO1 : Analyze market potential and related service operation and procedure automotive workshop/service center. CLO2 : Display skills for resource management and management control of automotive workshop/service center. CLO3 : Demonstrate management and entrepreneurial Skills of Automotive Workshop Marketing and Service Selling.	1. Test (1) -10% 2. Quiz (1) -5% 3. Practical Task (1) -40% 4. Practical Work (Generic) (1) -20% 5. Mini Project (1) - 25%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINALEXAMINATION
6	DUT600910 ENGINEERING INDUSTRIAL TRAINING	The Engineering Industrial Training course would provide students with first-hand experience in an engineering-practice environment outside the institution. Students would put into practice prior knowledge and skills, strengthened through industry supervision to acquire higher mastery of engineering essentials and craft skills. Students would also be able to enhance their understanding of the respective job scope requirements, roles in a diversified work environment, professional ethics, and responsibilities, as well as to improve their communication aptitude in performing the tasks, while developing the necessary lifelong learning skills at the workplace.	CLO1 : Perform the assigned task according to the requirements of the job scope. CLO2: Explain tasks assigned in the workplace utilizing effective communication skills. CLO3: Display ability to work collaboratively and individually based on the given task. CLO4: Practice professional ethics and fulfill responsibilities as an engineering technician. Initiate responsibilities as an engineering CLO5: technician while adhering to policies, rules, and safety. CLO6: Write a report based on the given task, adhering to technical practices. CLO7: Demonstrate lifelong learning skills in completing the given task.	1. Performance Appraisal (1) - 65% 2. Logbook (1) - 5% 3. Observation (1)- 10 % 4. Industrial Training Report (1) - 15% 5. Presentation (1) - 5%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
ELECTIVE	DJA40182 MOBILE HYDRAULIC	Mobile Hydraulic provides knowledge and understanding on the concept and basic principles of hydraulic system. The course also identifies the main components and build circuit of hydraulic system.	CLO1 : Explain the basic concept and functions of Hydraulic System. CLO2 : Construct the main components and build a circuit of Hydraulic System for a particular purpose. CLO3 : Demonstrate team work skill in Hydraulic System experiments.	1. Test (1) - 30% 2. Quiz (1) - 10% 3. Practical Twork (2) - 40% 4. Practical Twork Generic (1) - 20%	0%
ELECTIVE	DJJ40352 COMPUTER PROGRAMMING	Computer Programming course introduces program design and development. Students will learn to design, code, debug, test, and document well-structured programs based on technical and engineering problem. Topic covered software development principle, programming language basic, data types, input and output operation, the use of selection, loops, arrays, internet of things and Arduino in industries.	CLO1: Apply C Programming commands to solve given problem using an appropriate data type. CLO2: Construct a high-level programming language in solving variety of engineering and scientific problems. CLO3: Demonstrate a solution for assigned project based on programming which relates to current or upcoming technologies and peripherals	1. Theoretical Test (1) - 20% 2. Practical Work (2) - 40% 3. Practical Test (1) - 30% 4. Presentation (1) - 10%	0%

DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
ELECTIVE	DJM50302 AUTONOMOUS VEHICLES SYSTEM	Autonomous Vehicles System course introduces the basic concept, driving regulation and standards of the autonomous vehicle. The course includes practical work related to the autonomous vehicle sensing system and operation. It also covers environment representation such as Autoware Installation, mapping, object detection, localization and path planning to complete the autonomous vehicle task	CLO1: expose the basic concept, driving regulation and standards of the autonomous vehicle system CLO2: perform the practical work on autonomous vehicle sensing, actuator and autonomous software operation CLO3: demonstrate the environment representation of autonomous vehicle as a team to complete assigned task	1. Quiz (1) - 10% 2. Test (1) - 25% 3. Practical Work (2) - 40% 4. Presentation (Generic) (1) - 25%	0%
ELECTIVE	DJF52092 QUALITY CONTROL	Quality Control provides knowledge on basic principle and concept of quality including statistical method in controlling products quality or services. This course also emphasizes on the application of control chart and quality control tools and explains the quality improvement technique.	CLO1: Apply the basic quality principles, management system and tools related to manufacturing industry. CLO2: Analyze manufacturing process and its issues using the quality tools and technique for process improvement in quality. CLO3: Demonstrate ability to work in a team to solve quality problem in manufacturing.	1. Quiz (2) - 5% 2. Test (1) - 20% 3. Presentation (1) - 15% 4. Case Study (1) - 10%	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)



DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

INTRODUCTION

Diploma in Mechanical Engineering (Manufacturing) for polytechnic is developed to give balance emphasis on theoretical and practical aspects. Thus, to keep abreast with rapid demand in TVET sector, Department of Polytechnic and Community College Education (DPCCE) progressively collaborates with major industry players in the country in developing the curriculum. The Diploma in Mechanical Engineering (Manufacturing) programme will take six semesters to complete, five academic semesters at their respective polytechnics and one semester of industrial training at relevant industries during the final semester. This programme complies Malaysian Qualifications Agency (MQA) and Board of Engineer Malaysia (BEM) /Engineering Technology Accreditation Council (ETAC).

SYNOPSIS

The Diploma in Mechanical Engineering (Manufacturing) programme is designed to produce holistic graduates that have knowledge and competent skills in the field of mechanical engineering and manufacturing field to fulfil the demand of workers in engineering sector. The programme structure focusses on the area of Solid Mechanics, Statics & Dynamics, Thermodynamics, Fluid Mechanics, Materials, Electrical & Electronic Technology, Manufacturing Workshop Practices, CAD CAM, Jig, Fixture, Tool Design, Quality Control and Manufacturing System and Control.



DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

JOB PROSPECT

This programme provides the knowledge and skills in Mechanical Engineering in Manufacturing field that can be applied to a broad range of careers in mechanical industries. The knowledge and skills that the students acquire from the programme will enable them to participate in the job market as:

- a. Assistant Engineer
- b. Technical Assistant
- c. Production/ Process Supervisor
- d. Technician
- e. Product Designer
- f. Quality Officer
- g. CNC Programmer Technical Assistant
- h. Precision Machinist
- i. Production / Process Executive
- j. Procurement Executive
- k. Technical Specialist
- l. Technical Instructor or Lecturer
- m. Entrepreneur

PROGRAMME AIM

The programme believes that every individual has potential, and the programme aims to develop adaptable and responsible Senior Assistant Engineers to support government aspiration to increase workforce in engineering related field.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

Within a few years after completing Diploma in Mechanical Engineering (Manufacturing), graduates are able to:

- PEO1: Proficient with industry-relevant knowledge and skills in mechanical and manufacturing engineering field.
- PEO2: Engaging on lifelong and continuous learning to enhance knowledge and skills.
- PEO3: Acquire with entrepreneurial skills and mind set in the real working environment.
- PEO4: Established links with society and players in the industry.

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

PROGRAMME LEARNING OUTCOMES (PLO)

Upon completion of the programme, students should be able to:

PLO 1 : Apply knowledge of applied mathematics, applied science, computer and engineering fundamentals and an engineering specialisation as specified in DK1 to DK4 respectively to wide practical procedures and practices in area of mechanical engineering specialized in manufacturing.

PLO 2 : Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to mechanical engineering specialized in manufacturing (DK1 to DK4).

PLO 3 : Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety as well as, cultural, societal and environmental considerations in area of mechanical engineering specialized in manufacturing (DK5).

PLO 4 : Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements (DK8).

PLO 5 : Apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations (DK2 and DK6).

PLO 6 : Consider sustainable development impacts* to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well-defined engineering problems (DK1, DK5 and DK7).

PLO 7 : Understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion (DK9).

PLO 8 : Function effectively as an individual, and as a member in diverse and inclusive teams in multi-disciplinary, face-to-face, remote and distributed settings (DK9).

PLO 9 : Communicate effectively and inclusively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions (NA).

PLO 10 : Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments.

PLO 11 : Recognise the need for, and have the ability for i) independent and lifelong learning and ii) critical thinking in the face of specialised technical knowledge (DK8).

*Represented by the 17 UN Sustainable Development Goals (UN-SDG)

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

KNOWLEDGE PROFILE (DK)

DK 1 : A descriptive, formula-based understanding of the natural sciences applicable in a sub-discipline and awareness of directly relevant social sciences.

DK 2 : Procedural mathematics, numerical analysis, statistics applicable in a subdiscipline.

DK 3 : A coherent procedural formulation of engineering fundamentals required in an accepted sub-discipline.

DK 4 : Engineering specialist knowledge that provides the body of knowledge for an accepted sub-discipline.

DK 5 : Knowledge that supports engineering design and operations based on the techniques and procedures of a practice area.

DK 6 : Codified practical engineering knowledge in recognized practice area.

DK 7 : Knowledge of issues and approaches in engineering technician practice, such as public safety and sustainable development.

DK 8 : Engagement with the current technological literature of the practice area.

DK 9 : Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes.

DK: Knowledge Profile

Dublin Knowledge refers to the Knowledge Profile as listed in the Manual of Engineering Technician Education Programme Accreditation Standard (ETAC) for diploma programmes.

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

PROGRAMME STRUCTURE

COURSE TYPE	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PROGRAMME LEARNING OUTCOME (PLO)											PREREQUISITE		
			L	P	T	O		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11			
								Engineering Knowledge	Problem Analysis	Design/Development of Solutions	Investigation	Tool Usage	The Engineer and the World	Ethics	Individual and Collaborative Teamwork	Communications	Project Management and Finance	Life Long Learning			
SEMESTER 1																					
Compulsory	DUE10062	Technical English 1	1	0	2	0	2										A3 A3		A2		
	MPU24031	Sukan 1																			
	MPU24041	Kelab / Persatuan 1	0	2	0	0	1					P2					A3				
	MPU24XX1	Unit Beruniform 1																			
Common Core	DUW10042	Occupational, Safety and Health for Engineering	2	0	0	0	2	C2			A3		A3								
	DBM10163	Engineering Mathematics 1	2	0	2	0	3	C3	C3						A3						
	DBS10042	Engineering Science	2	1	0	0	2	C3			P3		A3								
Discipline Core	DJJ10223	Engineering Drawing	1	3	0	0	3	C3				P3		A3							
	DJJ10232	Mechanical Workshop Practice 1	0	4	0	0	2					P3 P4	A3								
	DJJ10243	Workshop Technology	3	0	0	0	3	C3						C3					A3		
TOTAL			25				18														
SEMESTER 2																					
Compulsory	MPU21072	Penghayatan Etika dan Peradaban	1	0	2	0	2							A2	A2		A3				
	MPU24051	Sukan 2																	MPU24031		
	MPU24061	Kelab / Persatuan 2	0	2	0	0	1					P2					A3		MPU24041		
	MPU24XX1	Unit Beruniform 2																	MPU24XX1		
Common Core	DBM20173	Engineering Mathematics 2	2	0	2	0	3	C3	C3						A3				DBM10163		
Specialization	DJF22042	Manufacturing Workshop Practice 1	0	4	0	0	2					P3 P4	A3								
Discipline Core	DJJ20263	Electrical and Electronic Technology	2	1	1	0	3	C3				P4						A3			
	DJJ20273	Fhad Mechanics	2	1	1	0	3	C2 C3				P4									
	DJJ20282	Computer Aided Design	1	2	0	0	2	C3				P4				A3			DJJ10223		
TOTAL			24				16														

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

PROGRAMME STRUCTURE

COURSE TYPE	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PROGRAMME LEARNING OUTCOME (PLO)											PREREQUISITE
			L	P	T	O		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	
								Engineering Knowledge	Problem Analysis	Design/Development of Solutions	Investigation	Tool Usage	The Engineer and the World	Ethics	Individual and Collaborative Teamwork	Communications	Project Management and Finance	Life Long Learning	
SEMESTER 3																			
Compulsory	MPU22071	Kursus Integriti dan Anti-Rasuah	0	0	2	0	1								A2		A3		
	DUE30072	Technical English 2	1	0	2	0	2								A2 A3		A3		
Common Core	DBM30183	Engineering Mathematics 3	2	0	2	0	3	C3	C3						A3				DBM20173
Specialization	DJF32052	Manufacturing Workshop Practice 2	0	4	0	0	2					P3 P4	A3						DJF22042
Discipline Core	DJJ30313	Engineering Mechanics	2	1	1	0	3	C3	C4			P4							
	DJJ30323	Strength of Materials	2	1	1	0	3	C3			C4	P4							
	DJJ30293	Thermodynamics	2	1	1	0	3	C3	C4			P4							
TOTAL			25				17												
SEMESTER 4																			
Compulsory	MPU23182	Sains Teknologi dan Kejuruteraan Islam*	1	0	2	0	2							A3	A2		A4		
	MPU23172	Nilai Masyarakat Malaysia**											A3	A2		A4			
Common Core	DJJ30332	Engineering and Society	2	0	0	0	2						C3	C4		A3			
Discipline Core	DJJ40373	Pneumatic and Hydraulics	2	1	1	0	3	C3		C5		P4							
	DJJ40392	Project 1	2	0	0	0	2		C4				C4				A3		
Specialization	DJF42062	Manufacturing Workshop Practice 3	0	4	0	0	2					P3 P4		A3					DJF32052
	DJF42072	CAD CAM	1	3	0	0	2	C3		P3							A3		DJJ20282
	DJF42112	Manufacturing Process	2	0	0	0	2		C3		C4				A3				
Electives	DJFXXXX	Elective***					2												
TOTAL			21				17												

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

PROGRAMME STRUCTURE

COURSE TYPE	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PROGRAMME LEARNING OUTCOME (PLO)											PREREQUISITE	
			L	P	T	O		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11		
								Engineering Knowledge	Problem Analysis	Design/Development of Solutions	Investigation	Tool Usage	The Engineer and the World	Ethics	Individual and Collaborative Teamwork	Communications	Project Management and Finance	Life Long Learning		
SEMESTER 5																				
Compulsory	DUE50082	Technical English 3	1	0	2	0	2										A4 A4		A3	
Common Core	DUU10072	Entrepreneurship	1	2	0	0	2					P2					A3	A3		
Discipline Core	DJJ50403	Project 2	1	3	0	0	3			P5	C4						A4	P4		DJJ40392
Specialization	DJF52083	Jig, Fixture and Tool Design	1	3	0	0	3		C3	P4			A3							
	DJF52092	Quality Control	2	0	0	0	2	C3	C4						A3					
	DJF52103	Manufacturing System and Control	3	0	0	0	3		C3		C4				A3					
TOTAL			19				15													
SEMESTER 6																				
Industrial Training	DUT600910	Engineering Industrial Training	0	0	0	0	10		C3			P4	A3	A5	P4	A4		P4		
TOTAL			0				10													
ELECTIVES																				
1	DJF52122	Manufacturing Economy	2	0	0	0	2		C3		C4						A3			
2	DJJ40352	Computer Programming	1	2	0	0	2	C3				P4						A3		
3	DJJ40452	Instrumentation and control	2	0	0	0	2		C3		C4					A3				
4	DJJ40472	Renewable and Sustainable Energy	2	0	0	0	2	C3					C4					A3		
5	DJM40242	Programmable Logic Control	1	2	0	0	2	C2	C5	P6										
FREE ELECTIVES																				
1	DUD10012	Design Thinking	1	0	0	1	2			C3							A3			

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

PROGRAMME STRUCTURE

Course Type	Total Credit	Total %
i. Compulsory	13	32%
ii. Common Core	17	
iii. Discipline Core	33	66%
iv. Specialization	18	
v. Industrial Training	10	
vi. Electives	2	2%
Total Credit	93	100%

Engineering and Engineering Technology Courses		
Total Credit (Discipline Core, Specialization, Industrial Training)	63	
	Credit	%
i. Practice - Oriented Components	33	52%
ii. Engineering Technology (Specialization)	18	29%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	DUW10042 OCCUPATIONAL SAFETY & HEALTH FOR ENGINEERING	Occupational Safety and Health for engineering course is design to impart understanding of the self regulatory concepts and provisions under the Occupational Safety & Health Act (OSHA) in Malaysia. This course presents the responsibilities of workers in implementing and complying with the safety procedures at work. Understanding of notifications of accidents, dangerous occurrences, poisoning and diseases and liability for offences will be imparts to students. This course will also provide an understanding of the key issues in OSH Management, Incident Prevention, Hazard Identification Risk Control and Risk Assessment (HIRARC), Fire Safety and First Aid, Workplace Environment and Ergonomics and guide the students gradually into this multi-disciplinary science.	CLO1 : Explain briefly Occupational Safety and Health (OSH) procedures, regulation and its compliance. CLO2 : Describe hazards, risks and safe work practices in order to maintain health and safe work environment. CLO3 : Justify the factor that can lead to accident in workshop.	1. Quiz t (1) - 20% 2. Test (1) - 20% 3. Case Study (1) - 40% 4. Presentation (1) - 20%	0%
1	DBM10163 ENGINEERING MATHEMATICS 1	ENGINEERING MATHEMATICS 1 exposes students to basic algebra including resolving partial fractions. This course also covers the concept of trigonometry and the method to solve trigonometry problems by using basic identities, compound angle and double angle formulae. Students will be introduced to the theory of complex numbers and the concept of vector and scalar. Students will explore advanced matrices involving a 3x3 matrix.	CLO1 : CLO1 : Discuss work-related topic using effective communication skills by responding to workplace safety and hazards relevant to engineering technician practice. CLO2 : show mathematical solutions using the appropriate techniques in mathematics CLO3 : use mathematical expression in describing real engineering problems precisely, concisely and logically	1. Quiz (2) - 10% 2. Theory Test (1) - 15% 3. End if Chapter (3) - 20% 4. Discussion (2) - 15%.	50%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	DBS10042 ENGINEERING SCIENCE	ENGINEERING SCIENCE course introduces the physical concepts required in engineering disciplines. Students will learn the knowledge of fundamental physics in order to identify and solve engineering physics problems. Students will be able to perform experiments and activities to mastery physics concepts.	CLO 1: Use basic physics concept to solve engineering physics problems. CLO 2: Use knowledge of fundamental physics in real engineering activities accurately. CLO 3: Perform appropriate activities related to physics concept.	1. Theory Test (1) - 15% 2. Mini Project (1) - 25% 3. Practical Work (3) - 20%.	40%
1	DJJ10223 ENGINEERING DRAWING	Engineering Drawing course provides the students with the fundamentals of technical drawings and the application Computer Aided Design (CAD) software. For technical drawing, it emphasizes the practical knowledge of drawing instruments and drawing techniques while for CAD the student will learn to navigate and use the software to create 2D drawing design in engineering. Students shall be able to demonstrate competency in using some standard available features of technical drawing and CAD application to create and manipulate objects or elements in engineering drawing.	CLO1 : Apply the fundamentals of engineering drawing and features of CAD software CLO2 : Construct the 2D CAD drawing according to the engineering drawing standards CLO3 : Propose a project presentation with following engineering norms and practices in engineering drawing.	1. Theoretical Test (1) - 20% 2. Practical Work (4) - 40% 3. Practical Test (1) - 20% 4. Presentation (1) - 20%	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	DJJT0232 MECHANICAL WORKSHOP PRACTICE 1	Mechanical Workshop Practice 1 exposes the students to welding, machining and fitting which involve the use of arc and gas welding machine, lathe machine, drilling machine, grinding, hand tools, marking out tools, measuring and testing tools. Students are also taught to emphasize on safety procedures and cleanliness in the workshop.	CLO1 : Measure product using appropriate measurement instruments CLO2 : Perform fitting, welding and machining works according to Standard Operational Procedure (SOP). CLO3 : Demonstrate an understanding of sustainable development impacts, environment and norms of engineering practices according to the workshop safety and health regulation.	1. Practical Work (1) - 30% 2. Practical Product (3) - 60% 3. Practical Work Generic Skills (1) - 10%	0%
1	DJJT0243 WORKSHOP TECHNOLOGY	Workshop Technology provides exposure and knowledge in using hand tools, machine operation such as drilling, lathe, milling and computer numerical control. It also covers on gear measurement and inspection welding process in oxy acetylene, Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW) and Gas Metal Arc Welding (GMAW).	CLO1 : Apply the knowledge of basic mechanical components and equipment, hand tools and measuring equipment in workshop technology. CLO2 : Apply standard practice in operating mechanical tools and component. CLO3 : Demonstrate continuous learning and information management skills to complete assigned task.	1. Quiz (1) - 5% 2. Test (1) - 15% 3. Presentation (1) - 10% 4. Assignment (1) - 10% 5. Case Study (1) - 10%	50%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	MPU24041 KELAB/PERSATUAN 1	KELAB/PERSATUAN 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO1 : Mempamerkan kemahiran khusus bagi kelab/ persatuan berkaitan CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif	1. Tunjukcara (I) - 60% 2. Mini Projek (I) - 40%	0%
1	MPU24151 UNIT BERUNIFORM 1 (PISPA)	KELAB/PERSATUAN 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO1 : Mempamerkan kemahiran khusus bagi kursus berkaitan CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif	1. Tunjukcara (I) - 60% 2. Mini Projek (I) - 40%	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	DUE10062 TECHNICAL ENGLISH 1	TECHNICAL ENGLISH 1 is designed to provide technical students the language input and skills required in technical workplace communication. This course aims to prepare students to use language skills to achieve B2 level which is becoming independent language users. Students will be exposed to skills required for effective participation in group discussions contextualized in workplace safety and health issues. The course also includes input and presentation skills on how to use the language appropriately in describing, comparing, and contrasting objects/products relevant to students' respective engineering disciplines. The course will enable students to make verbal and written enquiries related to objects/products for workplace use. The course is also designed to assist students in achieving at least level B1 of Common European Framework of Reference (CEFR).	CLO1 : Discuss work-related topic using effective communication skills by responding to workplace safety and hazards relevant to engineering technician practice. CLO2 : Explain the features and characteristics of objects/products used in a well-defined technical activity CLO3 : Share effective communication skills in making and responding to enquiries related to a well-defined engineering activity.	1. Discussion (1) - 30% 2. Assignment (1) - 15% 3. Presentation (1) - 30% 4. Simulation (1) - 25%.	0%
1	MPU24031 SUKAN 1	SUKAN 1 adalah aktiviti yang mengandungi latihan kemahiran berguna secara rekreasi dan peraturan-peraturan tertentu dalam mengejar kecemerlangan bagi penguasaan pengetahuan dan kemahiran khusus secara holistik. Ia bertujuan bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO1 : Mempamerkan kemahiran khusus bagi sukan berkaitan CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan arnalan positif	1. Tunjukcara (1) - 60% 2. Mini Projek (1) - 40%	

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	MPU24191 UNIT BERUNIFORM 1 (RELASIS)	BRIGED RELASIS 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada pengenalan asas Jabatan Sukarelawan Malaysia (RELA) serta penerangan mengenai tugas dan tanggungjawab kepimpinan dalam RELA serta memberikan pendedahan mengenai tugas, peranan dan bidang kuasa RELA bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO1 : Mempamerkan kemahiran khusus bagi kursus berkaitan CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif	1. Tunjukcara (1) - 60% 2. Mini Projek (1) - 40%	0%
1	MPU24211 UNIT BERUNIFORM 1 (BRIGED BOMBA)	BRIGED BOMBA 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada pengenalan asas Jabatan Bomba dan Penyelamat Malaysia (JBPM) serta memberikan pendedahan mengenai kemahiran, tugas, peranan dan bidang kuasa JBPM bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO1 : Mempamerkan kemahiran khusus bagi kursus berkaitan CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif	1. Tunjukcara (1) - 60% 2. Mini Projek (1) - 40%	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	MPU21072 PENGHAYATAN ETIKA DAN PERADABAN	PENGHAYATAN ETIKA DAN PERADABAN ini menjelaskan tentang konsep etika daripada perspektif peradaban yang berbeza. Ia bertujuan bagi mengenal pasti sistem, tahap perkembangan, kemajuan dan kebudayaan merentas bangsa dalam mengukuhkan kesepaduan sosial. Selain itu, perbincangan dan perbahasan berkaitan isu-isu kontemporari dalam aspek ekonomi, politik, sosial, budaya dan alam sekitar daripada perspektif etika dan peradaban dapat melahirkan pelajar yang bermoral dan profesional. Penerapan amalan pendidikan berimpak tinggi (HIEPs) yang bersesuaian digunakan dalam penyampaian kursus ini.	CLO1 : Membentangkan konsep etika dan peradaban dalam kepelbagaian tamadun. CLO2 : Menganalisis proses pemeraksanaan kesepaduan sosial merentas bangsa di Malaysia. CLO3 : Mencadangkan sikap yang positif terhadap isu dan cabaran kontemporari dari perspektif etika dan peradaban.	1. Pembentangan (1) - 30% 2. e-Folio (1) - 30% 3. Projek (1) - 40%	0%
2	MPU24051 SUKAN 2	SUKAN 2 adalah aktiviti yang mengandungi latihan kemahiran berguna secara rekreasi dan peraturan-peraturan tertentu dalam mengejar kecemerlangan bagi penguasaan pengetahuan dan kemahiran khusus secara holistik. Ia bertujuan bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO 1: Mempamerkan kemahiran khusus bagi sukan berkaitan. CLO 2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan arnalan positif	1. Tunjukcara (1)-60% 2. Mini Projek (1)- 40%	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	MPU24061 KELAB / PERSATUAN 2	KELAB/ PERSATUAN 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO 1: Mempamerkan kemahiran khusus bagi kelab/ persatuan berkaitan CLO2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif	1. Tunjukcara (1)-60% 2. Mini Projek (1)- 40%	TB
2	MPU24151 UNIT BERUNIFORM 2 (PISPA)	Pasukan Institusi Pertahanan Awam (PISPA) 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO 1: Mempamerkan kemahiran khusus bagi kursus berkaitan CLO2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif	1. Tunjukcara (1)-60% 2. Mini Projek (1)- 40%	TB

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	MPU24151 UNIT BERUNIFORM 2 (RELASIS)	BRIGED RELASIS 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada asas Ilmu Kemahiran Medan, Pertahanan Diri, tugas, peranan Crisis Management Team (CMT) serta menerangkan jenis dan kegunaan senjata api RELA serta memberi pendedahan kepada Kawalan Kehormatan Pasukan RELA (KKPR), Kawad Transformasi RELA (KTR) dan Kawad Senjata bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO 1: Mempamerkan kemahiran khusus bagi kursus berkaitan CLO2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif	1. Tunjukcara (1)-60% 2. Mini Projek (1)- 40%	TB
2	MPU24151 UNIT BERUNIFORM 2 (BRIGED BOMBA)	BRIGED BOMBA 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada pengenalan asas Jabatan Bomba dan Penyelamat Malaysia (JBPM) serta memberikan pendedahan mengenai kemahiran, tugas, peranan dan bidang kuasa JBPM bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO 1: Mempamerkan kemahiran khusus bagi kursus berkaitan CLO2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif	1. Tunjukcara (1)-60% 2. Mini Projek (1)- 40%	TB

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	DBM20173 ENGINEERING MATHEMATICS 2	ENGINEERING MATHEMATICS 2 exposes students to the basic laws of indices and logarithms. This course introduces the basic rules of differentiation concepts to solve problems that relate to maximum, and minimum and calculate the rates of changes. This course discusses integration concepts in order to strengthen students' knowledge for solving area and volume-bounded region problems. In addition, students will learn the application of both techniques of differentiation and integration.	CLO1 : Explain the relationship between various physical phenomena in algebra and calculus CLO2 : Solve mathematics problems by using appropriate and relevant fundamentals calculus techniques CLO3 : Use mathematics language to express mathematics ideas and arguments precisely, concisely and logically in calculus	1. Quiz (2) - 10% 2. Theory Test (1)- 15% 3.End of Chapter (3) - 15% 4.Discussion (2) - 20%	40%
2	DJF22042 MANUFACTURING WORKSHOP PRACTICE 1	Manufacturing Workshop Practice 1 exposes the students to the fundamental of manufacturing processes, industrial environment, cultural issues and hands-on experiences. This course enables students to apply knowledge and develop required technical skills on sand casting, conventional machining and Tungsten Inert Gas/ Metal Inert Gas (TIG/MIG) welding. The workshop practice helps the students to practice appropriate safety procedures and standard operations when completing practical work and producing practical products. The practical skills also cover the organizational and housekeeping activities, schedule maintenance, planning skills, supervising designs, inspecting and testing welding tasks in order to meet the quality requirements.	CLO1 : follow casting and TIG & MIG tasks based on standard operational procedures and safety CLO2 : perform direct indexing operation using indexing head attachment in milling machine processes. CLO3 : demonstrate an understanding of the responsibilities regarding societal, health, safety, legal and cultural issues during practical work sessions.	1. Practical Work (2) - 60% 2. Practical Product (1) - 30% 3. Practical Work (Generic) (1) - 10%	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	DJJ20263 ELECTRICAL AND ELECTRONIC TECHNOLOGY	Electrical and Electronic Technology exposes students to the basic electrical circuit concept and electronic components, the application of electromagnetism in electrical machine, transformers and usage of renewable energy. The course focuses on the different types of electrical circuit, the relationship between current and voltage including the resistance and function of electronic components. This course also exposes the students to the demonstration of experiments in Electrical and Electronic Engineering.	CLO1 : Apply fundamental knowledge in electricity, electronic, electromagnetisms and electrostatics in motor and generator technologies with embedded to automation control systems to solve related problems in electrical technology. CLO2 : Organize appropriate experiments in groups according to Standard Operating Procedure. CLO3 : Demonstrate commitment and responsibility while conducting electrical devices and components-based practical work, while recognizing the importance of independent and lifelong learning, as well as critical thinking	1. Quiz (1) - 5% 2. Test (2) - 20% 3. Practical Task P (3) - 20% 4. Practical Task A (1) - 5%	50%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CAD)	FINAL EXAMINATION
2	DJJ20273 FLUID MECHANICS	Fluid Mechanics is designed to provide students with the knowledge related to the fundamentals of fluid mechanics. It emphasized on the principles related to the fluid properties and behavior in static and dynamic condition. This course also covers the principle and application of fluid mechanics laboratory techniques including preparation and analysis of fluid properties, Reynold Numbers, Bernoulli Theorem and losses in pipeline system.	CLO1 : explain the fundamental properties of fluids in relation to fluid mechanics. CLO2 : apply fundamental knowledge of fluid mechanics in mechanical engineering applications. CLO3 : organize appropriate experiments in groups according to the standard operating procedure. .	1. Quiz (1) - 5% 2. Test (1) - 10% 3. Practical Task (4) - 25% 4. Assignment (1) - 10%	50%
2	DJJ20282 COMPUTER AIDED DESIGN	Computer Aided Design exposes students to the fundamentals and principles of 3D drawing using 3D CAD software. Students are also equipped with various methods of creating a solid model using extrude, revolve, swept, assembly, simulation, an animation and details drawing. Hands-on exercises drawing of mechanical engineering will also be covered in this course.	CLO1 : Apply CAD commands to produce engineering drawings of mechanical components. CLO2 : Construct 3D models of mechanical components in accordance with technical drawing standards. CLO3 : Demonstrate technical engineering presentations through projects, adhering to standard practices of technical communication.	1. Theoretical Test (1) - 20% 2. Practical Task (2) - 40% 3. Practical Test (1) - 30% 4. Presentation (1) - 10%	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
3	MPU22071 KURSUS INTEGRITI DAN ANTI RASUAH	KURSUS INTEGRITI DAN ANTI RASUAH (KIAR) merangkumi konsep asas tentang nilai integriti, bentuk perbuatan rasuah dan salah guna kuasa dalam kehidupan seharian serta dalam organisasi dan langkah-langkah pencegahan rasuah.	CLO1 : Membincangkan hubungan nilai integriti dan antirasuah dengan isu semasa. CLO2 : Menilai bentuk pelakuan rasuah dan salah guna kuasa dalam aktiviti seharian dan organisasi.	1. Mini Projek (I) - 50% 2. Pembentangan (I) - 50%	0%
3	DUE30072 TECHNICAL ENGLISH 2	TECHNICAL ENGLISH 2 equips technical students with the required language skills to communicate effectively at the workplace mainly in describing process and procedures as well as giving instructions. It is also designed to develop students' skills in conducting and participating in meetings and responding appropriately to complaints related to specific situations. This content structure reflects the stated course learning outcomes to be achieved by the students in order to develop their interpersonal & communication skills. It will enable them to independently participate in technical discussion in work-context. This course also aims to prepare students to use language skills to achieve B2 of CEFR level.	CLO1: Practice effective oral presentation skills in the context of process, procedure and instruction in workplace situations using appropriate language. CLO2: Demonstrate effective communication and social skills in conducting and participating in meetings in workplace situations. CLO3: Propose appropriate response(s) to complaints related to workplace situations.	1. Presentation (I) - 35% 2. Role Play (I) - 30% 3. Assignment (I) - 35%	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
3	DBM30183 ENGINEERING MATHEMATICS 3	ENGINEERING MATHEMATICS 3 exposes students to statistical and probability concepts and their applications in interpreting data. The course also introduces the numerical methods concept to solve simultaneous equations by using the Gaussian Elimination method, LU Decomposition using Doolittle and Crout methods, polynomial problems using Simple Fixed-Point Iteration and Newton-Raphson methods. To strengthen the students in solving engineering problems, Ordinary Differential Equation (ODE) is also included. In addition, the course also discusses optimization problems by using Linear Programming. It is designed to build students' teamwork and problem-solving skills.	CLO1: Demonstrate mathematical concepts, formulate methods of solutions and select appropriate techniques for solving routine mathematics problems. CLO2: Apply mathematical methods and concepts to solve engineering problems. CLO3: Express mathematics ideas clearly by using correct mathematical terminology and proper mathematical notation.	1. Quiz (2) - 10% 2. Theory Test (1) - 15% 3. End Of Chapter (3) - 20% 4. Case Study (1) - 15%	40%
3	DJF32052 MANUFACTURING WORKSHOP PRACTICE 2	Manufacturing Workshop Practice 2 exposes the students to the fundamental of manufacturing processes, industrial environment, cultural issues and hands-on experiences. This course enables students to apply knowledge and develop required technical skills on Computer Numerical Control (CNC) and Electrical Discharge Machining (EDM) machines, conventional machining and surface grinding machine. The workshop practice helps the students to practice appropriate safety procedures and standard operations when completing practical work and practical projects. The practical skills also cover the organizational and housekeeping activities, schedule maintenance, planning skills, supervising designs, inspecting and testing in order to meet the quality requirements.	CLO1: Build a project using CNC and EDM machine based on standard operational procedures and safety CLO2: Perform contouring cutting operation using rotary table attachment in milling machine processes.. CLO3: Demonstrate an understanding of the responsibilities regarding societal, health, safety, legal and cultural issues during practical work sessions	1. Practical Work (2) - 60% 2. Practical Product (1) - 30% 3. Practical Work (Generic) (1) - 10%	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
3	DJJ30313 ENGINEERING MECHANICS	Engineering Mechanics focuses on theoretical knowledge in statics and dynamics. This course provides the students with fundamental understanding of forces and equilibrium, resultants, equilibrium of a particle and structural analysis. This course also covers kinematics and kinetics of particles and exposes the students to the demonstration of experiments in Engineering Mechanics.	CLO1 : solve problems related to statics and dynamics based on the concepts and principle of engineering mechanics. CLO2 : analyze engineering related problems based on fundamentals of statics and dynamics. CLO3 : organize appropriately experiment in groups according to Standard Operation Procedure.	1. Quiz (1) - 5% 2. Test (1) - 10% 3. Practical Work (4) - 20% 4. Assignment (1) - 15%	50%
3	DJJ30323 STRENGTH OF MATERIALS	Strength Of Materials provides knowledge on concepts and calculation of forces on materials, thermal stress, shear force and bending moment, bending stress, shear stress and torsion in shafts. It also deals with the experiments conducted on tensile test, bending moment, shearing force and torsion and deflection.	CLO1 : apply the concepts of strength of materials to solve related problems. CLO2 : analyse problems correctly related to strength of materials. CLO3 : organize appropriately experiment in group according to Standard Operation Procedures.	1. Quiz (1) - 5% 2. Test (1) - 15% 3. Practical Work (4) - 20% 4. Assignment (1) 10%	50%

DIPLoma IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
3	DJJ30293 THERMODYNAMICS	Thermodynamics provides knowledge and application of fundamentals concepts to solve problems related to thermodynamics. It emphasizes analyzing the non-flow process, flow process, heat engine, reversed heat engine and vapor power cycle. This course also exposes the students to the demonstration of experiments by using real equipment.	CLO1 : apply the fundamentals concept and properties of pure substances in thermodynamics. CLO2 : analyze the thermodynamics systems using the laws of thermodynamics. CLO3 : organize appropriately experiments according to the Standard Operating Procedures.	1. Quiz (1) - 5% 2. Test (1) - 10% 3. Practical Work (3) - 15% 4. Assignment (2) - 20%	50%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
4	MPU23182 SAINS TEKNOLOGI DAN KEJURUTERAAN ISLAM	SAINS, TEKNOLOGI DAN KEJURUTERAAN DALAM ISLAM memberi pengetahuan tentang konsep Islam sebagai al-Din dan seterusnya membincangkan konsep sains, teknologi dan kejuruteraan dalam Islam serta impaknya, pencapaiannya dalam tamadun Islam, prinsip serta peranan syariah dan etika Islam, peranan kaedah fiqh serta aplikasinya.	CLO1 : apply the fundamentals concept and properties of pure substances in thermodynamics. CLO2 : analyze the thermodynamics systems using the laws of thermodynamics. CLO3 : organize appropriately experiments according to the Standard Operating Procedures.	1. Tujnjukcara (2) - 40% 2. Tugas Berdasarkan Masalah (2) - 40% 3.e-Folio (1) - 20%	50%
4	MPU23172 NILAI MASYARAKAT	NILAI MASYARAKAT MALAYSIA disediakan untuk membincangkan aspek sejarah pembentukan masyarakat, nilai-nilai agama, adat resam dan budaya masyarakat di Malaysia. Selain itu, pelajar dapat mempelajari tentang tanggungjawab sebagai individu dan nilai perpaduan dalam kehidupan di samping cabaran-cabaran dalam membentuk masyarakat Malaysia yang bersatu padu dan penyayang. and vapor power cycle. This course also exposes the students to the demonstration of experiments by using real equipment.	CLO1 : apply the fundamentals concept and properties of pure substances in thermodynamics. CLO2 : analyze the thermodynamics systems using the laws of thermodynamics. CLO3 : organize appropriately experiments according to the Standard Operating Procedures.	1. Tujnjukcara (2) - 40% 2. Tugas Berdasarkan Masalah (2) - 40% 3.e-Folio (1) - 20%	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
4	DJJ30332 ENGINEERING AND SOCIETY	Engineering and Society focuses on the introduction to professional ethics, theory and philosophy of ethics, values in professional ethics, engineering by laws and standards, issues in professional ethics and sustainability. It also relates towards IR 4.0 introduction and green engineering.	CLO1 : Implement the roles of engineering profession towards the developing of society and the challenge of globalization with professional ethic CLO2 : Determine the importance of engineering management, professional bodies, sustainability and green technology aspect in the engineering profession CLO3 : Explain the issues of sustainability and green technology in engineering practice	1. Quiz (1) - 15% 2. Test (2) - 40% 3. Presentation (1) - 15% 4. Case study (1) - 30%	0%
4	DJJ40373 PNEUMATIC AND HYDRAULICS	Pneumatic and Hydraulics provides knowledge and understanding to the importance of pneumatics and hydraulics circuits, equipment, and design along with its usage in the industry.	CLO1: Apply the basic concept and function of pneumatics and hydraulics system. CLO2: Evaluate the pneumatic, electro-pneumatic and hydraulic circuit according to assigned tasks. CLO3: Perform experiment on pneumatic, electro-pneumatic and hydraulic circuit during practical session.	1. Quiz (1) - 5% 2. Test (1) - 15% 3. Assignment (1) - 10% 4. Practical Work (4) - 20%	50%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
4	DJJ40392 PROJECT 1	PROJECT 1 provides students with solid foundation on knowledge and skills in formulating project proposal preparation, writing and presentation.	CLO1: Identify engineering problems in mechanical engineering fields. CLO2: Analyze the sustainable development impacts in engineering problem. CLO3: Demonstrate engineering management in a technical team.	1. Presentation (1) - 20% 2. Report (1) - 40% 3. Log Book (1) - 10%	0%
4	DJF42062 MANUFACTURING WORKSHOP PRACTICE 3	Manufacturing Workshop Practice 3 exposes the students to develop knowledge and skills in Robot Programming and Application, Programmable Logic Controller(PLC), Additive Manufacturing and Plastic Processing. Robot Application helps the students to learn about programming, hands-on training, and robot application. Students will also learn to create a simple program using PLC which is widely used in manufacturing and mechanical processes. The Additive Manufacturing will focus on designing complex design shapes which involves in modifying and completing design of a prototype. Plastic Processing process helps the students to understand the basic principles of plastic manufacturing processes.	CLO1: construct robot programming and PLC programming process. CLO2: Perform mini project using additive manufacturing and plastic processing process. CLO3: Demonstrate an understanding of professional ethics, responsibilities, standard procedures and safety practices during practical work sessions.	1. Practical Work (2) - 35% 2. Practical Product (2) - 50% 3. Practical Work (Generic) (1) - 15%	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CAD)	FINAL EXAMINATION
4	DJF42072 CAD CAM	Computer Aided Design and Computer Aided Manufacturing (CAD CAM) course covers the theory and basics of coding languages, structures, and the use of CAD CAM systems to generate and verify tool paths. This course aims to expose students to CAD and CAM operation integration, including object design, code production, tool path simulation for a machining operation, and generating NC part programming. This course also covers the application of CAD CAM software by transferring the NC program to a CNC milling/lathe machine or CNC milling/lathe simulator.	CLO1: Apply the concept of CAD CAM for the design and manufacturing process. CLO2: Manipulates machining code (G and M code) by using CAD CAM software as part of the milling and lathe process. CLO3: Demonstrate a project using a CNC milling/ lathe machine/ CNC milling / lathe simulator by utilizing related CAD CAM software.	1. Practical Work (2) - 60% 2. Presentation (1) - 10% 3. End of Chapter (2) - 30%	0%
4	DJF42112 MANUFACTURING PROCESS	Manufacturing Process provides students with an understanding and appreciation of the manufacturing processes and interrelationship between manufacturing processes, product design, material properties and other aspects such as humanity, economy and environment. It introduces advanced machining processes such as electrical discharge machining, laser beam, water jet and abrasive machining.	CLO1: Employ the various method and operation for manufacturing process by consideration of material, design and economic aspect. CLO2: Investigate the appropriate manufacturing processes in making a plastic or composite components based on their the characteristic CLO3: Demonstrate ability to work in team to complete the assigned tasks in advanced machining process.	1. Quiz (1) - 5% 2. Test (2) - 25% 3. Presentation (1) - 10% 4. Case Study (1) - 10%	50%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
5	DUE50082 TECHNICAL ENGLISH 3	ENTREPRENEURSHIP focuses on the fundamentals and concept of entrepreneurship in order to inculcate the value and interest in students to choose entrepreneurship as a career. This course can help students to initiate creative and innovative entrepreneurial ideas. It also emphasizes on online and offline business learning in line with the changing needs of current market.	CLO1: Prepare appropriate types of oral and written communication modes that meet employer's requirements (A4, PLO9) CLO2: Demonstrate effective language-based skills in interpersonal communication, ethics and workplace related contexts. (A3, PLO11) CLO3: Organize texts on a wide range of technical subjects to pass information as well as to give reasons in support of or against particular points of views. A4, PLO9)	1. Presentation (I) - 35% 2. Role Play (I) - 30% 3. Assignment (I) - 35%	0%
5	DUU10072 ENTREPRENEURSHIP	ENTREPRENEURSHIP focuses on the fundamentals and concept of entrepreneurship in order to inculcate the value and interest in students to choose entrepreneurship as a career. This course can help students to initiate creative and innovative entrepreneurial ideas. It also emphasizes on online and offline business learning in line with the changing needs of current market.	CLO1 : Demonstrate application on entrepreneurship concept, competencies, importance and social responsibilities of entrepreneurship. CLO2 : Propose sustainable business idea using Business Model Canvas (BMC) for entrepreneurial project. CLO3 : Organize online business using various cyber social tools.	1. Mini Project (I) - 20% 2. Business Pitching (I) - 30% 3. Business Portfolio Presentation (I) - 20% 4. Business Portfolio (I) - 30%	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
5	DJJ50403 PROJECT 2	Project 2 is a continuation of Project 1 focusing on project planning, development, project report and presentation. This course introduces the students with abilities and skills in conducting project planning, development and management based on their project design. It also provides the students with practical product, report writing and presentation skills. The project will be implemented in a group and each group will work on a project under lecturer(s) supervision. Project title will be based on specialization and students will be assessed individually.	CLO1 : Organize project outcomes in progress report based on standard format CLO2 : Construct design solutions to meet specified needs of the project with appropriate consideration. CLO3 : Analyze the project results and write the project report to achieve proposed objectives CLO4 : Explain the project work and defend project outcomes effectively with good communication skills	1. Practical Product (1) - 40% 2. Presentation (1) - 20% 3. Log Book (1) - 20% 2. Project Report (1) - 20%	0%
5	DJF52083 JIG, FIXTURES AND TOOL DESIGN	Jig, Fixture and Tool Design covers basic production needs in industry. The topics provide fundamental knowledge to design the tooling based on clamping and locating principles. The topics also covers the principle of tooling applications in metal and non-metal processes. All the topics discussed will enable the students to plan and identify the use of tooling. They will also be exposed to the application of tooling in related industries.	CLO1: Apply the concepts of tool design method for designing jig, fixtures, mold and die. CLO2: Perform 3D design of jig, fixture, mold die using CAD software CLO3: Demonstrate the importance of considering environmental and sustainability factors to complete assigned tasks.	1. Quiz (1) - 5% 2. Test (1) - 10% 3. Presentation (2) - 15% 4. Practical Product (2) - 70%	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
5	DJF52092 QUALITY CONTROL	Quality Control provides knowledge on basic principle and concept of quality including statistical method in controlling products quality or services. This course also emphasizes on the application of control chart and quality control tools and explains the quality improvement technique.	CLO1: Apply the basic quality principles, management system and tools related of manufacturing industry. CLO2: Analyze manufacturing process and its issues using the quality tools and techniques for process improvement in quality. CLO3: Demonstrate ability to work in a team to solve quality problem in manufacturing.	1. Quiz (2) - 5% 2. Test (1) - 20% 3. Presentation (1) - 15% 4. Case Study (1) - 10%	50%
5	DJF52103 MANUFACTURING SYSTEM AND CONTROL	Computer Programming course introduces program design and development. Students will learn to design, code, debug, test, and document well-structured programs based on technical and engineering problem. Topic covered software development principle, programming language basic, data types, input and output operation, the use of selection, loops, arrays, internet of things and Arduino in industries.	CLO1: Apply the basic concept of manufacturing systems and operation management, lean operation and process layout CLO2: Investigate problem solving using forecasting, production scheduling, inventory control and material requirement planning CLO3: Demonstrate ability to work in team to complete the assigned task related to industrial robotics.	1. Quiz (2) - 10% 2. Test (1) - 15% 3. Case Study (1) - 10% 4. End of Chapter (2) - 15%	50%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
ELECTIVE	DJF52122 MANUFACTURING ECONOMY	Manufacturing Economy provides knowledge and understanding of the economy for students on the economic aspect which includes concepts, categories, factors of supply and demand, basic elements and characteristics of cost and decision involve in manufacturing process. This course also focuses on fixed costs, variable costs, direct and indirect costs, actual costs and break-even analysis which lead towards eliminating the wastage in manufacturing	CLO1: Apply knowledge of fixed cost, variable cost, direct and indirect cost which contribute to total cost in production. CLO2: Analyze the actual cost and break-even analysis for decision making process CLO3: Demonstrate knowledge and understanding of project management especially in financial aspect for the task assigned.	1. Quiz (1) - 10% 2. Test (2) - 50% 3. Presentations (1) - 20% 4. End of Chapter (2) - 20%	0%
ELECTIVE	DJJ40352 COMPUTER PROGRAMMING	Computer Programming course introduces program design and development. Students will learn to design, code, debug, test, and document well-structured programs based on technical and engineering problem. Topic covered software development principle, programming language basic, data types, input and output operation, the use of selection, loops, arrays, internet of things and Arduino in industries.	CLO1: Apply C Programming commands to solve given problem using an appropriate data type. CLO2: Construct a high-level programming language in solving variety of engineering and scientific problems. CLO3: Demonstrate a solution for assigned project based on programming which relates to current or upcoming technologies and peripherals	1. Theoretical Test (1) - 20% 2. Practical Work (2) - 40% 3. Practical Test (1) - 30% 4. Presentation (1) - 10%	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
ELECTIVE	DJJ40452 INSTRUMENTATION AND CONTROL	Instrumentation & Control exposes the students to the basic principles in control system and its usage in industrial sector is the main focus in this course. Instrumentation and control also provide knowledge to the students in components measurement in control systems that are normally used in industries.	CLO1: Apply the fundamental of instrumentation and control systems in engineering. CLO2: Explore the measurement and process control system in engineering. CLO3: Demonstrate good communication skill in presentation on assigned topics.	1. Quiz (1) - 10% 2. Test (2) - 30% 3. Case study (1) - 50% 4. Presentation (1) - 10%	0%
ELECTIVE	DJJ40472 RENEWABLE AND SUSTAINABLE ENERGY	Renewable and Sustainable Energy focuses on the principles of renewable energy and the sustainability of energy in terms of climate change and the implications of renewable energy to the economy, society, and the environment. This includes possible renewable energy technologies such as biomass, ocean, hydropower, geothermal, wind and solar energy. Students should be able to describe the new perspective of renewable energy and its sustainability for widespread applications such as electricity generation, heating and cooling, transportation and industrial processes.	CLO1: show the applications, principle operation and process of various types of renewable energy and non-renewable energy CLO2: Determine the environmental and social issues of renewable and non renewable energy with appropriate consideration for sustainability, economic, and environmental considerations CLO3: Organize continuous learning while engaging in the new knowledge of renewable and sustainable energy	1. Quiz (1) - 10% 2. Test (2) - 30% 3. Case study (1) - 50% 4. Presentation (1) - 10%	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

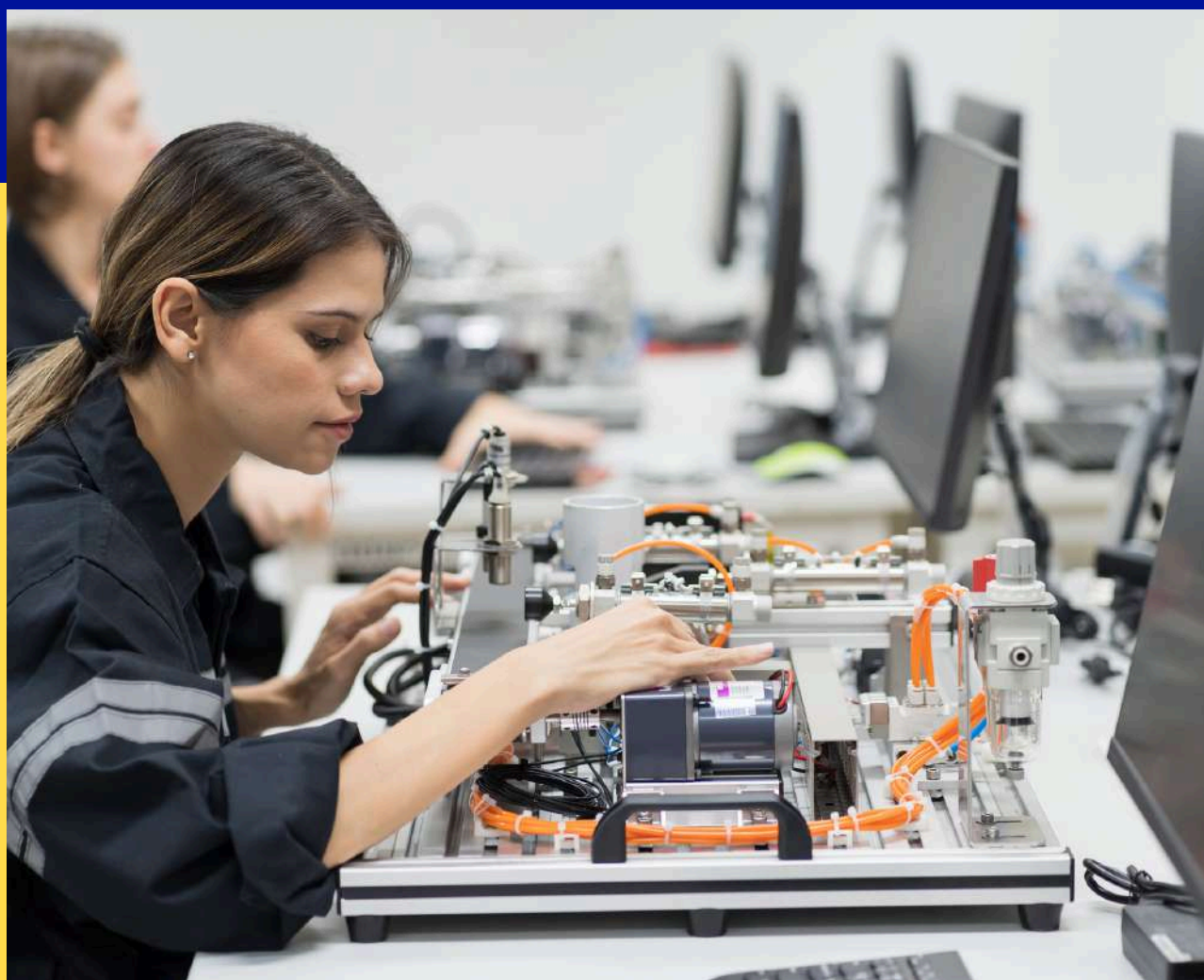
SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
ELECTIVE	DJM 40242 PROGRAMMABLE LOGIC CONTROLLER	Programmable Logic Controller is a course designed to provide knowledge regarding the fundamental concept and principle in PLC. This course emphasizes the relationship between conventional/hardwired/relay ladder logic (RLL) and PLC system application of various industrial input and output devices of PLC, designing process, programming, constructing and PLC maintenance method. This course also provides knowledge and skills in designing environmentally friendly of automation control system based on conventional/hardwired/relay ladder logic (RLL) and PLC students with hardware adaptation and programming skills by employing a PLC for an automation system in the industry.	CLO1: Evaluate environmental-friendly automation control system using PLC. CLO2: Integrate PLC systems by employing the proper tools to programme, build, diagnose, and troubleshoot systems. CLO3: Demonstrate the environmentally-conscious inbuilt system of the PLC by showcasing its dedication to sustainability and energy efficiency.	1. Quiz (1) - 10% 2. Test (1) - 20% 3. Practical Task (2) - 40% 4. Case Study (Generic) (1) - 30%.	0%

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
6	DUT600910 ENGINEERING INDUSTRIAL TRAINING	The Engineering Industrial Training course would provide students with first-hand experience in an engineering-practice environment outside the institution. Students would put into practice prior knowledge and skills, strengthened through industry supervision to acquire higher mastery of engineering essentials and craft skills. Students would also be able to enhance their understanding of the respective job scope requirements, roles in a diversified work environment, professional ethics, and responsibilities, as well as to improve their communication aptitude in performing the tasks, while developing the necessary lifelong learning skills at the workplace.	CLO1 : Perform the assigned task according to the requirements of the job scope. CLO2: Explain tasks assigned in the workplace utilizing effective communication skills. CLO3: Display ability to work collaboratively and individually based on the given task. CLO4: Practice professional ethics and fulfill responsibilities as an engineering technician. Initiate responsibilities as an engineering CLO5: technician while adhering to policies, rules, and safety. CLO6: Write a report based on the given task, adhering to technical practices. CLO7: Demonstrate lifelong learning skills in completing the given task.	1. Performance Appraisal (I) - 65% 2. Logbook (I) - 5% 3. Observation (I)- 10 % 4. Industrial Training Report (I) - 15% 5. Presentation (I) - 5%	0%

DIPLOMA IN MECHATRONIC ENGINEERING



DIPLOMA IN MECHATRONIC ENGINEERING

INTRODUCTION

Diploma in Mechatronic Engineering for polytechnic is developed to provide balance emphasis on theoretical and practical aspects. The Eleventh Malaysia Plan was drawn to produce 60% out of 1.5 million workers in the TVET sector. Until now a total of 69,475 (51%) of the 136,062 technical education and vocational training (TVET) graduates in Malaysia are working as professionals and skilled workers. Hence, Department of Polytechnic and Community College Education (DPCCE) progressively collaborates with major industry players in the country in developing the curriculum to keep up with rapid demand in TVET sector. The programme will take six semesters to complete, five academic semesters at their respective polytechnics and one semester of industrial training at relevant industries during the final semester. This programme complies with the Board of Engineer (BEM) requirement.

SYNOPSIS

The Diploma in Mechatronic Engineering programme is designed to produce holistic graduates that possess knowledge and competent skills in the field of mechatronic engineering to fulfil the demand of workers in the engineering sector. Five components related to the program have been identified. Components which make up the BOK for Diploma in Mechatronic Engineering are namely Technical, Personal Development, Mathematics, Science and Workplace Competencies. Technical Components is Electronics, Industrial Electronics, Electrical, Computer Aided Design, C Programming, Pneumatic and Hydraulics, Programmable Logic Controller, Safety, Power Electronics, Embedded System Applications, Control System and Industrial Automation.



DIPLOMA IN MECHATRONIC ENGINEERING

JOB PROSPECT

This programme provides the knowledge and skills in Mechatronic Engineering field that can be applied to a broad range of careers in Mechatronic Engineering. The knowledge and skills that the students acquire from the programme will enable them to participate in the job market as:

- a. Assistant Engineer
- b. Technical Assistant
- c. Assistant Service Manager
- d. Service Advisor
- e. Controller System Supervisor
- f. Automation and Robotic Supervisor
- g. Supervisor
- h. Technician
- i. Technical Instructor or Lecturer
- j. Technical Sales Executive / Engineer
- k. Draughter / Designer
- l. Assistant Programmer
- m. Production Technician
- n. Entrepreneur

PROGRAMME AIM

The programme believes that every individual has potential, and the programme aims to develop adaptable and responsible Senior Assistant Mechatronic Engineers to support government aspiration to increase workforce in engineering related field.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

Within a few years after completing Diploma in Mechatronic Engineering, graduates are able to:

PEO1: proficient with industry-relevant knowledge and skills in mechatronic engineering field

PEO2: engaging on lifelong and continuous learning to enhance knowledge and skills

PEO3: acquire with entrepreneurial skills and mind set in the real working environment

PEO4: establish links with society and players in the industry

DIPLOMA IN MECHATRONIC ENGINEERING

PROGRAMME LEARNING OUTCOMES (PLO)

Upon completion of the programme, students should be able to:

PLO 1 : apply knowledge of applied mathematics, applied science, computer and engineering fundamentals and an engineering specialization as specified in DK1 to DK4 respectively to wide practical procedures and practices in area of mechatronic engineering.

PLO 2 : identify and analyze well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to mechatronic engineering field (DK1 to DK4).

PLO 3 : design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety as well as, cultural, societal and environmental considerations in area of mechatronic engineering (DK5).

PLO 4 : conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements (DK8).

PLO 5 : apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations (DK2 and DK6).

PLO 6 : consider sustainable development impacts* to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well- defined engineering problems (DK1, DK5 and DK7).

PLO 7 : understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion (DK9).

PLO 8 : function effectively as an individual, and as a member in diverse and inclusive teams in multi-disciplinary, face-to-face, remote and distributed settings (DK9).

PLO 9 : communicate effectively and inclusively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.

PLO 10 : demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments.

PLO 11 : recognize the need for, and have the ability for i) independent and lifelong learning and ii) critical thinking in the face of specialized technical knowledge (DK8).

*Represented by the 17 UN Sustainable Development Goals (UN-SDG).

DIPLOMA IN MECHATRONIC ENGINEERING

KNOWLEDGE PROFILE (DK)

DK 1: A descriptive, formula-based understanding of the natural sciences applicable in a sub-discipline and awareness of directly relevant social sciences.

DK 2: Procedural mathematics, numerical analysis, statistics applicable in a subdiscipline.

DK 3: A coherent procedural formulation of engineering fundamentals required in an accepted sub-discipline.

DK 4: Engineering specialist knowledge that provides the body of knowledge for an accepted sub-discipline.

DK 5: Knowledge that supports engineering design and operations based on the techniques and procedures of a practice area.

DK 6: Codified practical engineering knowledge in recognized practice area.

DK 7: Knowledge of issues and approaches in engineering technician practice, such as public safety and sustainable development.

DK 8: Engagement with the current technological literature of the practice area.

DK 9: Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes.

DIPLOMA IN MECHATRONIC ENGINEERING

PROGRAMME STRUCTURE

COURSE TYPE	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PROGRAMME LEARNING OUTCOME (PLO)											PREREQUISITE
			L	P	T	O		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	
								Engineering Knowledge	Problem Analysis	Design/Development of Solutions	Investigation	Tool Usage	The Engineer and the World	Ethics	Individual and Collaborative Teamwork	Communications	Project Management and Finance	Life Long Learning	
SEMESTER 1																			
Compulsory	DUE10062	Technical English 1	1	0	2	0	2									A3 A3		A2	
	MPU 24031	Sukan 1																	
	MPU 24041	Kelab/Persatuan 1	0	2	0	0	1							P2		A3			
	MPU24XX1	Unit Beruniform 1																	
Common Core	DUW10042	Occupational, Safety and Health for Engineering	2	0	0	0	2	C2			A3		A3						
	DBM10163	Engineering Mathematics 1	2	0	2	0	3	C3	C3					A3					
	DBS10042	Engineering Science	2	1	0	0	2	C3	P3			A3							
Discipline Core	DJJ10223	Engineering Drawing	1	3	0	0	3	C3				P3		A3					
	DJJ10243	Workshop Technology	3	0	0	0	3	C3					C3				A3		
	DJM10162	Mechatronic Workshop Practice 1	0	4	0	0	2					P3 P4	A3						
TOTAL			25				18												

DIPLOMA IN MECHATRONIC ENGINEERING

PROGRAMME STRUCTURE

COURSE TYPE	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PROGRAMME LEARNING OUTCOME (PLO)											PREREQUISITE
			L	P	T	O		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	
								Engineering Knowledge	Problem Analysis	Design/Development of Solutions	Investigation	Tool Usage	The Engineer and the World	Ethics	Individual and Collaborative Teamwork	Communications	Project Management and Finance	Life Long Learning	
SEMESTER 2																			
Compulsory	MPU21072	Penghayatan Etika dan Peradaban	1	0	2	0	2								A2	A2		A3	
	MPU 24051	Sukan 2																	MPU 24031
	MPU 24081	Kelab/Persatuan 2	0	2	0	0	1								P2		A3		MPU 24041
	MPU24XX1	Unit Beruniform 2																	MPU 24XX1
	MPU22071	Kursus Integriti dan Anti-Rasuah	0	0	2	0	1								A2		A3		
Common Core	DBM20173	Engineering Mathematics 2	2	0	2	0	3	C3	C3						A3				DBM10163
Discipline Core	DJM20172	Mechatronic Workshop Practice 2	0	4	0	0	2			P4		P3			A3				DJM10162
	DJM20182	Basic Electronics	2	1	0	0	2	C3				P4				A3			
	DJM20193	Electrical Technology	2	2	0	0	3	C3				P4			A3				
	DJM20203	Thermofluids	2	2	0	0	3	C3			A3	P4							
TOTAL			26				17												

DIPLOMA IN MECHATRONIC ENGINEERING

PROGRAMME STRUCTURE

COURSE TYPE	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PROGRAMME LEARNING OUTCOME (PLO)											PRE REQUISITE	
			L	P	T	O		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11		
								Engineering Knowledge	Problem Analysis	Design/Development of Solutions	Investigation	Tool Usage	The Engineer and the World	Ethics	Individual and Collaborative Teamwork	Communications	Project Management and Finance	Life Long Learning		
SEMESTER 3																				
Compulsory	DUE30072	Technical English 2	1	0	2	0	2										A2 A3		A3	
Common Core	DBM30183	Engineering Mathematics 3	2	0	2	0	3	C3	C3							A3				DBM20173
	DJJ30332	Engineering and Society	2	0	0	0	2						C3	C4		A3				
Discipline Core	DJJ20282	Computer Aided Design	1	2	0	0	2	C3				P4				A3				DJJ10223
	DJJ30313	Engineering Mechanics	2	1	1	0	3	C3	C4			P4								
	DJM30212	C Programming	1	2	0	0	2	C3		P3						A3				
	DJM30222	Industrial Electronics	1	2	0	0	2	C2				P4				A2				
TOTAL			22				16													
SEMESTER 4																				
Common Core	DUU10072	Entrepreneurship	1	2	0	0	2					P2				A3	A3			
Discipline Core	DJJ40343	Material Science and Engineering	2	1	1	0	3	C3				P4			A3					
	DJJ40373	Pneumatic and Hydraulics	2	1	1	0	3	C3		C5		P4								
	DJJ40391	Project 1	2	0	0	0	2		C4				C4				A3			
	DJM40233	Digital Electronics	2	2	0	0	3	C4				P3	A3							
	DJM40242	Programmable Logic Controller	1	2	0	0	2		C5	P6			A3							
Electives	DJXXXX2	Elective					2													
TOTAL			20				17													

DIPLOMA IN MECHATRONIC ENGINEERING

PROGRAMME STRUCTURE

COURSE TYPE	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PROGRAMME LEARNING OUTCOME (PLO)											PRE REQUISITE
			L	P	T	O		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	
								Engineering Knowledge	Problem Analysis	Design/Development of Solutions	Investigation	Tool Usage	The Engineer and the World	Ethics	Individual and Collaborative Teamwork	Communications	Project Management and Finance	Life Long Learning	
SEMESTER 5																			
Compulsory	MPU23182	Sains Teknologi dan Kejuruteraan Islam*	1	0	2	0	2							A3	A2		A4		
	MPU23172	Nilai Masyarakat Malaysia**												A3	A2		A4		
	DUE50082	Technical English 3	1	0	2	0	2									A4 A4		A3	
Discipline Core	DJJ50403	Project 2	1	3	0	0	3			P5	C4					A4	P4		DJJ40391
	DJM50252	Power Electronics	1	2	0	0	2	C3		P4						A3			
	DJM50262	Embedded System Application	1	2	0	0	2			C3		P4				A3			
	DJM50272	Control System	2	1	0	0	2		C4		P4				A3				
	DJM50283	Industrial Automation	2	2	0	0	3	C3				P4				A3			
TOTAL			19				16												

DIPLOMA IN MECHATRONIC ENGINEERING

PROGRAMME STRUCTURE

DIPLOMA IN MECHATRONIC ENGINEERING

PROGRAMME STRUCTURE

Course Type	Total Credit	Total %
i. Compulsory	13	32%
ii. Common Core	17	
iii. Discipline Core	52	66%
iv. Industrial Training	10	
v. Electives	2	2%
Total Credit	94	100%

Engineering and Engineering Technology Courses		
Total Credit (Discipline Core, Specialization, Industrial Training)	62	
	Credit	%
i. Practice - Oriented Components	32	51%
ii. Engineering and Engineering Technology Total Credit	62	100%

DIPLOMA IN MECHATRONIC ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	DUE10062 TECHNICAL ENGLISH 1	TECHNICAL ENGLISH 1 is designed to provide technical students the language input and skills required in technical workplace communication. This course aims to prepare students to use language skills to achieve B2 level which is becoming independent language users. Students will be exposed to skills required for effective participation in group discussions contextualized in workplace safety and health issues. The course also includes input and presentation skills on how to use the language appropriately in describing, comparing, and contrasting objects/products relevant to students' respective engineering disciplines. The course will enable students to make verbal and written enquiries related to objects/products for workplace use. The course is also designed to assist students in achieving at least level B1 of Common European Framework of Reference (CEFR).	CLO1 : Discuss work-related topic using effective communication skills by responding to workplace safety and hazards relevant to engineering technician practice. CLO2 : Explain the features and characteristics of objects/products used in a well-defined technical activity CLO3 : Share effective communication skills in making and responding to enquiries related to a well-defined engineering activity.	1. Discussion (1) - 30% 2. Assignment (1) - 15% 3. Presentation (1) - 30% 4. Simulation (1) - 25%.	0%
1	MPU24031 SUKAN	SUKAN 1 adalah aktiviti yang mengandungi latihan kemahiran berguna secara rekreasi dan peraturan-peraturan tertentu dalam mengejar kecemerlangan bagi penguasaan pengetahuan dan kemahiran khusus secara holistik. Ia bertujuan bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO 1: Mempamerkan kemahiran khusus bagi sukan berkaitan. CLO 2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan arnalan positif.	1. Tunjukcara (1) - 60% 2. Mini Project (1) - 40%	0%

DIPLOMA IN MECHATRONIC ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	MPU24041 KELAB/PERSATUAN 1	KELAB/PERSATUAN 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO 1: Mempamerkan kemahiran khusus bagi kelab/ persatuan berkaitan. CLO 2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1. Tunjukcara (1) - 60% 2. Mini Project (1) - 40%	0%
1	MPU24XX1 UNIT BERUNIFORM 1 (RELASIS)	BRIGED RELASIS 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada pengenalan asas Jabatan Sukarelawan Malaysia (RELA) serta penerangan mengenai tugas dan tanggungjawab kepimpinan dalam RELA serta memberikan pendedahan mengenai tugas, peranan dan bidang kuasa RELA bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO 1: Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO 2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1. Tunjukcara (1) - 60% 2. Mini Project (1) - 40%	0%

DIPLOMA IN MECHATRONIC ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	MPU24151 UNIT BERUNIFORM 1 (PISPA 1)	Pasukan Institusi Pertahanan Awam (PISPA) 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO 1: Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO 2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1. Tunjukcara (1) - 60% 2. Mini Project (1) - 40%	0%
1	MPU24211 UNIT BERUNIFORM 1 (BRIGED BOMBA 1)	BRIGED BOMBA 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada pengenalan asas Jabatan Bomba dan Penyelamat Malaysia (JBPM) serta memberikan pendedahan mengenai kemahiran, tugas, peranan dan bidang kuasa JBPM bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO 1: Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO 2: Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1. Tunjukcara (1) - 60% 2. Mini Project (1) - 40%	0%

DIPLOMA IN MECHATRONIC ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	DUW10042 OCCUPATIONAL, SAFETY AND HEALTH FOR ENGINEERING	Occupational Safety and Health for engineering course is design to impart understanding of the self regulatory concepts and provisions under the Occupational Safety & Health Act (OSHA) in Malaysia. This course presents the responsibilities of workers in implementing and complying with the safety procedures at work. Understanding of notifications of accidents , dangerous occurrences, poisoning and diseases and liability for offences will be imparts to students. This course will also provide an understanding of the key issues in OSH Management, Incident Prevention, Hazard Identification Risk Control and Risk Assessment (HIRARC), Fire Safety and First Aid, Workplace Environment and Ergonomics and guide the students gradually into this multi-disciplinary science.	CLO1 : Explain briefly Occupational Safety and Health (OSH) procedures, regulation and its compliance. CLO2 : Describe hazards, risks and safe work practices in order to maintain health and safe work environment. CLO3 : Justify the factor that can lead to accident in workshop.	1. Quiz (1) - 20% 2. Test (1) - 20% 3. Case Study (1) - 40% 4. Presentation (1) - 20%	0%
1	DBM10163 ENGINEERING MATHEMATICS 1	ENGINEERING MATHEMATICS 1 exposes students to basic algebra including resolving partial fractions. This course also covers the concept of trigonometry and the method to solve trigonometry problems by using basic identities, compound angle and double angle formulae. Students will be introduced to the theory of complex numbers and the concept of vector and scalar. Students will explore advanced matrices involving a 3x3 matrix.	CLO 1: Use mathematical statement to describe relationship between various physical phenomena CLO 2: Show mathematical solutions using the appropriate techniques in mathematics CLO 3: Use mathematical expression in describing real engineering problems precisely, concisely and logically	1. Quiz (2) - 10% 2. Theory Test (3) - 20% 3. Discussion (2) - 15% 4. End of Chapter (3) - 20%.	40%

DIPLOMA IN MECHATRONIC ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CAD)	FINAL EXAMINATION
1	DBS10042 ENGINEERING SCIENCE	ENGINEERING SCIENCE course introduces the physical concepts required in engineering disciplines. Students will learn the knowledge of fundamental physics in order to identify and solve engineering physics problems. Students will be able to perform experiments and activities to mastery physics concepts.	CLO 1: Use basic physics concept to solve engineering physics problems. CLO 2: Use knowledge of fundamental physics in real engineering activities accurately. CLO 3: perform appropriate activities related to physics concept.	1. Theory Test (1) - 15% 2. Mini Project (1) - 25% 3. Practical Work (3) - 20%.	40%
1	DJJ10223 ENGINEERING DRAWING	Engineering Drawing course provides the students with the fundamentals of technical drawings and the application Computer Aided Design (CAD) software. For technical drawing, it emphasizes the practical knowledge of drawing instruments and drawing techniques while for CAD the student will learn to navigate and use the software to create 2D drawing design in engineering. Students shall be able to demonstrate competency in using some standard available features of technical drawing and CAD application to create and manipulate objects or elements in engineering drawing.	CLO1 : Apply the fundamentals of engineering drawing and features of CAD software CLO2 : Construct the 2D CAD drawing according to the engineering drawing standards CLO3 : Propose a project presentation with following engineering norms and practices in engineering drawing.	1. Theoretical Test (1) - 20% 2. Practical Work (4) - 40% 3. Practical Test (1) - 20% 4. Presentation (1) - 20%	0%

DIPLOMA IN MECHATRONIC ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
1	DJJT0243 WORKSHOP TECHNOLOGY	Workshop Technology provides exposure and knowledge in using hand tools, machine operation such as drilling, lathe, milling and computer numerical control. It also covers on gear measurement and inspection welding process in oxy acetylene, Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW) and Gas Metal Arc Welding (GMAW).	CLO1 : apply the knowledge of basic mechanical components and equipment, hand tools and measuring equipment in workshop technology. CLO2 : apply standard practice in operating mechanical tools and component. CLO3 : demonstrate continuous learning and information management skills to complete assigned task.	1. Quiz (1) - 5% 2. Test (1) - 15% 3. Presentation (1) - 10% 4. Assignment (1) - 10% 5. Case Study (1) - 10%	50%
1	DJM10162 MECHATRONIC WORKSHOP PRACTICE 1	MECHATRONIC WORKSHOP PRACTICE 1 introduces students to welding, machining and fitting which involves the use of arc and gas welding machine, lathe machine, drilling machine, grinding, hand tools, marking out tools, measuring and testing tools activities. Students will be taught proper usage of PPE and workshop-related tools. Students are also taught to emphasize safety procedures and cleanliness in workshop.	CLO1 : Measure finish product using appropriate measurement for (fitting, welding and machining) practice instruments (P3, PLO5) CLO2 : Perform fitting, welding and machining works according to Standard Operational Procedure (SOP). (P4, PLO5) CLO3 : Demonstrate an understanding of sustainable development impacts, environment and norms of engineering practices according to workshop safety and health regulation. (A3, PLO6).	1. Practical Work (2) - 45% 2. Practical Product (2) - 45% 3. Presentation (Generic) (1) - 10%	0%

DIPLOMA IN MECHATRONIC ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	MPU21072 PENGHAYATAN ETIKA DAN PERADABAN	PENGHAYATAN ETIKA DAN PERADABAN ini menjelaskan tentang konsep etika daripada perspektif peradaban yang berbeza. Ia bertujuan bagi mengenal pasti sistem, tahap perkembangan, kemajuan dan kebudayaan merentas bangsa dalam mengukuhkan kesepaduan sosial. Selain itu, perbincangan dan perbincangan berkaitan isu-isu kontemporari dalam aspek ekonomi, politik, sosial, budaya dan alam sekitar daripada perspektif etika dan peradaban dapat melahirkan pelajar yang bermoral dan profesional. Penerapan amalan pendidikan berimpak tinggi (HIEPs) yang bersesuaian digunakan dalam penyampaian kursus ini.	CLO1 : Membentangkan konsep etika dan peradaban dalam kepelbagaian tamadun. CLO2 : Menganalisis proses pemeraksanaan kesepaduan sosial merentas bangsa di Malaysia. CLO3 : Mencadangkan sikap yang positif terhadap isu dan cabaran kontemporari dari perspektif etika dan peradaban.	1. Pembentangan (1) - 30% 2. e-Folio (1) - 30% 3. Projek (1) - 40%	0%
2	MPU24051 SUKAN 2	SUKAN 2 adalah aktiviti yang mengandungi latihan kemahiran berguna secara rekreasi dan peraturan-peraturan tertentu dalam mengejar kecemerlangan bagi penguasaan pengetahuan dan kemahiran khusus secara holistik. Ia bertujuan bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO1 : Mempamerkan kemahiran khusus bagi sukan berkaitan. CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1. Tunjukcara (1) - 60% 2. Mini Projek (1) - 40%	0%

DIPLOMA IN MECHATRONIC ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	MPU24061 KELAB/PERSATUAN 2	KELAB/ PERSATUAN 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO1 : Mempamerkan kemahiran khusus bagi kelab/ persatuan berkaitan. CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif	1.Tunjukcara (1) - 60% 2.Mini Projek (1) - 40%	0%
2	MPU24301 UNIT BERUNIFORM 2 (RELASIS 2)	BRIGED RELASIS 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada asas Ilmu Kemahiran Medan, Pertahanan Diri,tugas, peranan Crisis Management Team (CMT) serta menerangkanjenis dan kegunaan senjata api RELA serta memberi pendedahan kepada Kawalan Kehormatan Pasukan RELA (KKPR), Kawad Transformasi RELA (KTR) dan Kawad Senjata bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO1 : Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1.Tunjukcara (1) - 60% 2.Mini Projek (1) - 40%	0%

DIPLOMA IN MECHATRONIC ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINALEXAMINATION
2	MPU24261 UNIT BERUNIFORM 2 (PISPA 2)	Pasukan Institusi Pertahanan Awam (PISPA) 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	CLO1 : Mempamerkan kemahiran khusus bagi kelab/ persatuan berkaitan. CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif	1.Tunjukcara (1) - 60% 2.Mini Projek (1) - 40%	0%
2	MPU24321 UNIT BERUNIFORM 2 (B. BOMBA 2)	BRIGED BOMBA 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik kepada pengenalan asas Jabatan Bomba dan Penyelamat Malaysia (JBPM) serta memberikan pendedahan mengenai kemahiran, tugas, peranan dan bidang kuasa JBPM bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	CLO1 : Mempamerkan kemahiran khusus bagi kursus berkaitan. CLO2 : Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif.	1.Tunjukcara (1) - 60% 2.Mini Projek (1) - 40%	0%

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COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINALEXAMINATION
2	MPU22071 KURSUS INTEGRITI DAN RASUAH	KURSUS INTEGRITI DAN ANTI RASUAH (KIAR) merangkumi konsep asas tentang nilai integriti, bentuk perbuatan rasuah dan salah guna kuasa dalam kehidupan seharian serta dalam organisasi dan langkah-langkah pencegahan rasuah.	CLO1 : Membincangkan hubungan nilai integriti dan antirasuah dengan isu semasa. CLO2 : Menilai bentuk pelakuan rasuah dan salah guna kuasa dalam aktiviti seharian dan organisasi.	1. Mini Projek (1) - 50% 2. Pembentangan (1) - 50%	0%
2	DBM20173 ENGINEERING MATHEMATICS 2	ENGINEERING MATHEMATICS 2 exposes students to the basic laws of indices and logarithms. This course introduces the basic rules of differentiation concepts to solve problems that relate to maximum, and minimum and calculate the rates of changes. This course discusses integration concepts in order to strengthen students' knowledge for solving area and volume-bounded region problems. In addition, students will learn the application of both techniques of differentiation and integration.	CLO1 : Explain the relationship between various physical phenomena in algebra and calculus. CLO2 : Solve mathematics problems by using appropriate and relevant fundamental calculus techniques CLO3 : Use mathematics language to express mathematics ideas and arguments precisely, concisely and logically in calculus.	1. Theory Test (1) - 15% 2. End Of Chapter (3) - 15% 3. Quiz (2) - 10% 4. Discussion (2) - 20%	40%

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COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	DJM20172 MECHATRONIC WORKSHOP PRACTICE 2	MECHATRONIC WORKSHOP PRACTICE 2 enhances knowledge on CNC and 3D Printing to enable student to carry out related task scopes. This course also emphasizes on how to operate CNC machines and 3D printer properly.	CLO1 : Construct product design to generate NC programming according CLO2 : Follow working instructions of CNC machining and 3D printing according to Standard Operating Procedure CLO3 : Demonstrate the ability to work to complete assigned tasks	1. Practical Work (2) - 30% 2. Practical Product (2) - 60% 3. Presentation (Generic) (1) - 10%	0%
2	DJM20182 BASIC ELECTRONICS	Basic Electronics is designed to provide students with an understanding of the fundamental working of electronic components. The course emphasized on the electrical characteristics and properties of semiconductor materials, semiconductor devices, linear DC power supply system and amplifier circuits.	CLO1 : Examine characteristics and properties of semiconductor material. CLO2 : Construct a electronic circuit based on schematic diagram CLO3 : describe the function of electronic system after completing the assigned tasks	1. Test (1) - 20% 2. Assignment (1) - 20% 3. Practical task (Generic) (1) - 30% 4. Practical Task (2)-30%	0%

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COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
2	DJM20193 ELECTRICAL TECHNOLOGY	Electrical Technology exposes students to the basic electrical circuit concepts, the course will introduce students to the principles related to DC electrical circuits. It covers the fundamental laws, theorems and circuit techniques of the electrical technology basic fundamental and provides the skill on the methods of constructing basic circuits. This course also exposes the students to the demonstration of experiments in electrical technology covers inductors, capacitors, magnetic and electromagnetic circuits	CLO1 : Apply the principles and concept of the related electrical circuit theorems and law to solve DC electrical circuit using various methods and approaches CLO2 : Construct laboratory activities of DC electrical circuits using appropriate electrical equipments CLO3 : Demonstrate the ability to work in a team to complete assigned tasks	1. Test (1) - 20% 2. Quiz(1) - 10% 3. Assignment (1) - 15% 4. Practical Task (3) - 40% 5. Practical Task (Generic) (1) - 15%	0%
2	DJM20203 THERMOFLUIDS	Thermofluids provides students with the basic concepts of thermodynamics and fluids mechanics into one integrated course. This course emphasizes the concepts of conceptual principles in thermofluids, fluid applications, properties of pure substances, first and second law of thermodynamics. This course also provides knowledge and understanding of theories, concepts and application of principles to solve problems related to thermofluids processes.	CLO1: Apply the fundamental concepts of thermodynamics and fluid mechanics to solve the related problems. CLO2: Perform experiments according to the Standard Operating Procedures appropriately. CLO3: Demonstrate the ability to complete the assigned tasks.	1. Test (1) - 10% 2. Quiz(1) - 5% 3. Assignment (1) - 10% 4. Practical Task (3) - 20% 5. Practical Task (Generic) (1) - 5%	50%

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COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
3	DUE30072 TECHNICAL ENGLISH 2	TECHNICAL ENGLISH 2 equips technical students with the required language skills to communicate effectively at the workplace mainly in describing process and procedures as well as giving instructions. It is also designed to develop students' skills in conducting and participating in meetings and responding appropriately to complaints related to specific situations. This content structure reflects the stated course learning outcomes to be achieved by the students in order to develop their interpersonal & communication skills. It will enable them to independently participate in technical discussion in work-context. This course also aims to prepare students to use language skills to achieve B2 of CEFR level.	CLO1: Practice effective oral presentation skills in the context of process, procedure and instruction in workplace situations using appropriate language. CLO2: Demonstrate effective communication and social skills in conducting and participating in meetings in workplace situations. CLO3: Propose appropriate response(s) to complaints related to workplace situations.	1. Presentation (1) - 35% 2. Role Play (1) - 30% 3. Assignment (1) - 35%	0%
3	DBM30183 ENGINEERING MATHEMATICS 3	ENGINEERING MATHEMATICS 3 exposes students to statistical and probability concepts and their applications in interpreting data. The course also introduces the numerical methods concept to solve simultaneous equations by using the Gaussian Elimination method, LU Decomposition using Doolittle and Crout methods, polynomial problems using Simple Fixed-Point Iteration and Newton-Raphson methods. To strengthen the students in solving engineering problems, Ordinary Differential Equation (ODE) is also included. In addition, the course also discusses optimization problems by using Linear Programming. It is designed to build students' teamwork and problem-solving skills.	CLO1: Demonstrate mathematical concepts, formulate methods of solutions and select appropriate techniques for solving routine mathematics problems. CLO2: Apply mathematical methods and concepts to solve engineering problems. CLO3: Express mathematics ideas clearly by using correct mathematical terminology and proper mathematical notation.	1. Quiz (2) - 10% 2. Theory Test (1) - 15% 3. End Of Chapter (3) - 20% 4. Case Study (1) - 15%	40%

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COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CAD)	FINAL EXAMINATION
3	DJJ30332 ENGINEERING AND SOCIETY	Engineering and Society focuses on the introduction to professional ethics, theory and philosophy of ethics, values in professional ethics, engineering bylaws and standards, issues in professional ethics and sustainability. It also relates towards IR 4.0 introduction and green engineering.	CLO1 : Implement the roles of engineering profession towards the developing of society and the challenge of globalization with professional ethic CLO2 : Determine the importance of engineering management, professional bodies, sustainability and green technology aspect in the engineering profession CLO3 : Explain the issues of sustainability and green technology in engineering practice	1. Quiz (1) - 15% 2. Test (2) - 40% 3. Presentation (1) - 15% 4. Case Study (1) - 30%	0%
3	DJJ20282 COMPUTER AIDED DESIGN	Computer Aided Design exposes students to the fundamentals and principles of 3D drawing using 3D CAD software. Students are also equipped with various methods of creating a solid model using extrude, revolve, swept, assembly, simulation, an animation and details drawing. Hands-on exercises drawing of mechanical engineering will also be covered in this course.	CLO1 : Apply CAD commands to produce engineering drawings of mechanical components. CLO2 : Construct 3D models of mechanical components in accordance with technical drawing standards. CLO3 : Demonstrate technical engineering presentations through projects, adhering to standard practices of technical communication.	1. Theoretical Test (1) - 20% 2. Practical Task (2) - 40% 3. Practical Test (1) - 30% 4. Presentation (1) - 10%	0%

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COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
3	DJJ30313 ENGINEERING MECHANICS	Engineering Mechanics focuses on theoretical knowledge in statics and dynamics. This course provides the students with fundamental understanding of forces and equilibrium, resultants, equilibrium of a particle and structural analysis. This course also covers kinematics and kinetics of particles and exposes the students to the demonstration of experiments in Engineering Mechanics.	CLO1 : solve problems related to statics and dynamics based on the concepts and principle of engineering mechanics. CLO2 : analyze engineering related problems based on fundamentals of statics and dynamics. CLO3 : organize appropriately experiment in groups according Standard Operation Procedure.	1. Quiz (1) - 5% 2. Test (1) - 10% 3. Practical Work (4) - 20% 4. Assignment (1) - 15%	50%
3	DJM30212 C PROGRAMMING	C Programming course introduces programme design and development. Students will learn to design, code, debug, test and document well-structured programs based on technical and engineering problems. This course also introduces the application of C language for integration with micro controller. Topics covered are software development principles, basic programming language, data types, input and output operation, the use of selection, loops, arrays, function structure and microcontroller fundamentals	CLO1 : Implement knowledge of C Programming to solve given problems CLO2 : Construct C Programming language in solving variety engineering and scientific problems. CLO3 : Demonstrate a solution for assigned project based on programming which relates to current or upcoming technologies and peripherals	1. Test (1) - 15% 2. Practical Work (3) - 70% 3. Presentation (Generic) (1) - 15%	0%

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COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
3	DJM30222 INDUSTRIAL ELECTRONICS	Industrial Electronics provides exposure to mechanical, electrical and electronic devices. This course discusses structures of circuits, switches, relays, solenoids, sensors and data acquisition systems.	CLO1 : explain the operational principle and function of switches, relay, solenoid, sensor and data conversion. CLO2 : construct industrial electronic circuits using various types of switches, relay, solenoid and sensors according to operational principle. CLO3 : present industrial electronic concept using switches, relay, solenoid, electronic control devices, and sensors in various circuit	1. Quiz (1) - 15% 2. Test (1) - 20% 3. Practical Work (2) - 35% 4. Mini Project (Generic) (1) - 30%	0%

DIPLOMA IN MECHATRONIC ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
4	DUU10072 ENTREPRENEURSHIP	ENTREPRENEURSHIP focuses on the fundamentals and concept of entrepreneurship in order to inculcate the value and interest in students to choose entrepreneurship as a career. This course can help students to initiate creative and innovative entrepreneurial ideas. It also emphasizes on online and offline business learning in line with the changing needs of current market.	CLO 1: Demonstrate application on entrepreneurship concept, competencies, importance and social responsibilities of entrepreneurship. CLO 2: Propose sustainable business idea using Business Model Canvas (BMC) for entrepreneurial project. CLO 3: Organize online business using various cyber social tools.	1. Mini Project (1) - 20% 2. Business Pitching (1) - 30% 3. Business Portfolio Presentation (1) - 20% 4. Business Portfolio (1) - 30%	0%
4	DJJ40343 MATERIAL SCIENCE AND ENGINEERING	Materials Science and Engineering course is an introduction to students to learn the fundamentals of materials science and engineering (structure, properties, design and performance). The key step in engineering process is selection of materials for the applications. In the course, students will learn about different classifications of materials, atomic structure and bonding, materials properties, phase diagram and processes involved to produce a final product. This includes advanced techniques in metal fabrications such as powder metallurgy and 3D printing technology. Students will also learn to analyze the materials failure in the structure, applications and environments. Laboratory work will be used to perform the testing techniques employed by materials engineers to determine the properties and evaluate the materials tested. In order to cater for Industry 4.0 technology, students will be given case study and examples based on the current trends in materials and applications.	CLO1 : Apply the knowledge of materials science in engineering applications. CLO2 : Perform the appropriate material testing according to Operating Procedure. CLO3 : Work individually and collaboratively in group to complete the assigned tasks.	1. Test (1) - 15% 2. Quiz(1) - 10% 3. Practical Work (4) - 20% 4. Practical Work (Generic) (1) - 5%	50%

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COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
4	DJJ40373 PNEUMATIC AND HYDRAULICS	Pneumatic and Hydraulics provides knowledge and understanding to the importance of pneumatics and hydraulics circuits, equipment, and design along with its usage in the industry.	CLO1: Apply the basic concept and function of pneumatics and hydraulics system. CLO2: Evaluate the pneumatic, electro-pneumatic and hydraulic circuit according to assigned tasks. CLO3: Perform experiment on pneumatic, electro-pneumatic and hydraulic circuit during practical session.	1. Quiz (1) - 5% 2. Test (1) - 15% 3. Assignment (1) - 10% 4. Practical Work (4) - 20%	50%
4	DJJ40392 PROJECT 1	PROJECT 1 provides students with solid foundation on knowledge and skills in formulating project proposal preparation, writing and presentation.	CLO1: Identify engineering problems in mechanical engineering fields. CLO2: Analyze the sustainable development impacts in engineering problem. CLO3: Demonstrate engineering management in a technical team.	1. Presentation (1) - 20% 2. Report (1) - 40% 3. Log Book (1) - 10%	0%

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COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
4	DJM40233 DIGITAL ELECTRONICS	Digital Electronics is designed to provide students with knowledge of the fundamental principles and components that form the basis of modern computing and communication systems. This course focuses on number and code systems, Boolean operations, sequential logic circuits, and counters and registers.	CLO1: analyze the characteristics and operations of various digital circuits. CLO2: construct digital circuits based on schematic diagrams CLO3: demonstrate good communication skill in oral presentation for the role of digital circuits in real world applications.	1. Quiz (1) - 5% 2. Test (1) - 15% 3. Practical Work (4) - 20% 4. Presentation (Generic) (1) - 10%.	50%
4	DJM 40242 PROGRAMMABLE LOGIC CONTROLLER	Programmable Logic Controller is a course designed to provide knowledge regarding the fundamental concept and principle in PLC. This course emphasizes the relationship between conventional/hardwired/relay ladder logic (RLL) and PLC system application of various industrial input and output devices of PLC, designing process, programming, constructing and PLC maintenance method. This course also provides knowledge and skills in designing environmentally friendly of automation control system based on conventional/hardwired/relay ladder logic (RLL) and PLC students with hardware adaptation and programming skills by employing a PLC for an automation system in the industry.	CLO1: Evaluate environmental-friendly automation control system using PLC. CLO2: Integrate PLC systems by employing the proper tools to programme, build, diagnose, and troubleshoot systems. CLO3: Demonstrate the environmentally-conscious inbuilt system of the PLC by showcasing its dedication to sustainability and energy efficiency.	1. Quiz (1) - 10% 2. Test (1) - 20% 3. Practical Task (2) - 40% 4. Case Study (Generic) (1) - 30%.	0%

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COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINALEXAMINATION
5	MPU23182 SAINS TEKNOLOGI DAN KEJURUTERAAN ISLAM	SAINS, TEKNOLOGI DAN KEJURUTERAAN DALAM ISLAM memberi pengetahuan tentang konsep Islam sebagai al-Din dan seterusnya membincangkan konsep sains, teknologi dan kejuruteraan dalam Islam serta impaknya, pencapaiannya dalam tamadun Islam, prinsip serta peranan syariah dan etika Islam, peranan kaedah fiqh serta aplikasinya.	CCLO 1: Melaksanakan amalan Islam dengan betul dalam kehidupan seharian CLO 2: Menerangkan etika dan profesionalisme berkaitan sains teknologi dan kejuruteraan dalam Islam CLO 3: Menghubunkait minda ingin tahu dengan prinsip syariah, etika dan kaedah fiqh dalam bidang sains, teknologi dan kejuruteraan menurut perspektif Islam	1. Tunjukcara (2) - 40% 2. Tugas Berdasarkan Masalah (2) - 40% 3. e-Folio (1) - 20%	0%
5	MPU23172 NILAI MASYARAKAT MALAYSIA	NILAI MASYARAKAT MALAYSIA disediakan untuk membincangkan aspek sejarah pembentukan masyarakat, nilai-nilai agama, adat resam dan budaya masyarakat di Malaysia. Selain itu, pelajar dapat mempelajari tentang tanggungjawab sebagai individu dan nilai perpaduan dalam kehidupan di samping cabaran-cabaran dalam membentuk masyarakat Malaysia yang bersatu padu dan penyayang.	CLO 1: Membincangkan sejarah dan nilai dalam pembentukan masyarakat di Malaysia CLO 2: Menerangkan etika dan profesionalisme terhadap konsep perpaduan bagi meningkatkan semangat patriotisme masyarakat Malaysia CLO 3: Menghubunkait minda ingin tahu dengan cabaran-cabaran dalam membentuk masyarakat Malaysia	1. Tunjukcara (2) - 40% 2. Tugas Berdasarkan Masalah (2) - 40% 3. e-Folio (1) - 20%	0%

DIPLOMA IN MECHATRONIC ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
5	DUE50082 TECHNICAL ENGLISH 3	DUE50082TECHNICAL ENGLISH 3 aims to prepare students to use language skills (listening, reading, speaking and writing) to achieve B2 level in Common European Framework of Reference (CEFR) which is becoming independent language users. It covers skills which are needed by students focusing on self-assessment, job-search strategies, writing and explaining technical text (s) on a wide range of technical subjects. Students will be able to select jobs or positions which match their qualifications, retrieve relevant information regarding the positions available and request for a job interview. This course also aims to prepare students with skills to write effective resumes with accompanying cover letters. The second part of this course is divided into three stages which focuses on students' abilities to study different types of technical text (s), plan and prepare clear and detailed technical text (s) and explain the content of technical text (s) using effective presentation skills.	CLO 1: Prepare appropriate types of oral and written communication modes that meet employer's requirements (A4, PLO9) CLO 2: Demonstrate effective language-based skills in interpersonal communication, ethics and workplace related contexts (A3, PLO11) CLO 3: Organize texts on a wide range of technical subjects to pass information as well as to give reasons in support of or against particular points of views. (A4, PLO9)	1. Presentation (I) - 35% 2. Role Play (I) - 30% 3. Assignment (I) - 35%	0%
5	DJJ50403 PROJECT 2	Project 2 is a continuation of Project 1 focusing on project planning, development, project report and presentation. This course introduces the students with abilities and skills in conducting project planning, development and management based on their project design. It also provides the students with practical product, report writing and presentation skills. The project will be implemented in a group and each group will work on a project under lecturer(s) supervision. Project title will be based on specialization and students will be assessed individually.	CLO1 : Organize project outcomes in progress report based on standard format CLO2 : Construct design solutions to meet specified needs of the project with appropriate consideration. CLO3 : Analyze the project results and write the project report to achieve proposed objectives CLO4 : Explain the project work and defend project outcomes effectively with good communication skills	1. Practical Product (I) - 40% 2. Presentation (I) - 20% 3. Log Book (I) - 20% 4. Project Report (I) - 20%	0%

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COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
5	DJM50252 POWER ELECTRONICS	Power Electronics provides knowledge on widely used motor control concepts especially those in high power industry. The course focuses on basic concepts of Power Electronics and applications with DC and AC motor control covering construction of DC and AC electrical drives	CLO1 : apply the characteristics and operations of various power electronic devices and their respective attributes CLO2 : construct power electronic converter and electrical drive circuits based on schematic diagram. CLO3 : demonstrate effectively on well-defined engineering of power electronic application	1. Test (1) - 25% 2. Practical work (2) - 40% 3. Presentation (Generic) (1) -25% 2. Quiz (1) - 10%	0%
5	DJM50262 EMBEDDED SYSTEM APPLICATION	Embedded System Application covers the fundamental concept and application of microcontroller system and embedded system. Students will be able learn programming and hardware on embedded development system and document well-structured programs based on technical and engineering problem. Integration with basic Internet of Things (IoT) will also be done to embedded application	CLO1 : apply fundamental of concept of microcontroller in embedded system CLO2 : constructs a programming language in solving hardware interfacing and Internet of Things (IoT) CLO3 : propose a solution for assigned project based on programming which relates to current or upcoming technologies and peripherals	1. Test (1) - 25% 2. Practical work (2) - 35% 3. Presentation (Generic) (1) -30% 2. Quiz (1) - 10%	50%

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COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
5	DJM50272 CONTROL SYSTEM	Control System Control System provides knowledge on various concepts of feedback in control system and the required mathematical methods. The emphasis of the course is on control action, transfer functions, and Laplace transforms. This course also provides knowledge in analyzing and interpreting data on different types of controller mode.	CLO1 : Analyze the basic concepts of control system including controller principle, transfer function and stability CLO2 : Perform experiment / simulation on different types of controller mode in order to analyse and interpret data CLO3 : Demonstrate the ability to work in team in completing assigned tasks.	1. Test (1) - 20% 2. Practical Work (2) - 30% 3. Practical Work (Generic) (1) - 25% 4. Case Study (1) - 25%	0%
5	DJM50283 INDUSTRIAL AUTOMATION	Industrial Automation explains the fundamental concept of industrial automation including the mechanical system, actuator control and sensory devices in based on process specification. It also gives students an understanding of modern industrial automation technology	CLO1 : apply the fundamental concept of industrial automation including the mechanical system, actuator control and sensory devices respective characteristics CLO2 : builds control structure for industrial automation system based on process specification CLO3 : explain clearly the application of Time-of-Flight (ToF) sensors used for various applications such as robot navigation, monitoring, computation and object detection	1. Test (1) - 20% 2. Practical Task (3) - 30% 3. Presentation (Generic) (1) - 25% 4. Quiz (1) - 10% 5. Assignment (1) - 15%	50%

DIPLOMA IN MECHATRONIC ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
6	DUT600910 ENGINEERING INDUSTRIAL TRAINING	The Engineering Industrial Training course would provide students with first-hand experience in an engineering-practice environment outside the institution. Students would put into practice prior knowledge and skills, strengthened through industry supervision to acquire higher mastery of engineering essentials and craft skills. Students would also be able to enhance their understanding of the respective job scope requirements, roles in a diversified work environment, professional ethics, and responsibilities, as well as to improve their communication aptitude in performing the tasks, while developing the necessary lifelong learning skills at the workplace.	CLO1 : Perform the assigned task according to the requirements of the job scope. CLO2: Explain tasks assigned in the workplace utilizing effective communication skills. CLO3: Display ability to work collaboratively and individually based on the given task. CLO4: Practice professional ethics and fulfill responsibilities as an engineering technician. Initiate responsibilities as an engineering CLO5: technician while adhering to policies, rules, and safety. CLO6: Write a report based on the given task, adhering to technical practices. CLO7: Demonstrate lifelong learning skills in completing the given task.	1. Performance Appraisal (I) - 65% 2. Logbook (I) - 5% 3. Observation (I)- 10 % 4. Industrial Training Report (I) - 15% 5. Presentation (I) - 5%	0%

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COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
ELECTIVE	DJJ40432 ENGINEERING PLANT TECHNOLOGY	Engineering Plant Technology introduces power plant technology industry such as steam power plant, gas turbine power plant, combine cycle plant, diesel power plant and water treatment.	CLO1: Organize the concepts and technology of power plant system and components; and suggest solution. CLO2: Classify the professional ethics and responsibility and norms in power plant. CLO3: Demonstrate skill of effective communication on well-defined engineering problems.	1. Quiz (1) - 10% 2. Test (2) - 40% 3. Presentation (1) - 20% 4. Case Study (1) - 30%	0%
ELECTIVE	DJJ40442 INDUSTRIAL MANAGEMENT	Industrial Management provides students with a strong fundamental understanding of industrial management prospects and production system planning such as inventory, scheduling, production system operation, facilities, plan location, layout and line balancing. This course also provides knowledge in quality control, and human resource management.	CLO1: Apply the basic concept of industrial management system to solve related problem. CLO2: Analyze problems related to industrial management. CLO3: Demonstrate communication skill in group to explain plant location and layout.	1. Quiz (2) - 20% 2. Test (2) - 50% 3. Presentation (1) - 10% 4. Case Study (1) - 20%	0%

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COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CAD)	FINAL EXAMINATION
ELECTIVE	DJJ40462 RAILWAY TRACK SYSTEM	Railway Track System provides knowledge regarding to railway track engineering concepts including track component and system design, construction, evaluation, maintenance, load distribution and wheel/rail interaction. Topics covered include: track layout and geometry; ballast and subgrade; ties; rail and fastenings; track analysis and design; special trackwork; grade crossings; track standards and inspection, condition assessment and asset management.	CLO1: Organize the concept of railway track system. CLO2: Analyze the railway engineering and give respond in work application CLO3: Describe the effectiveness of railway track system through engineering issue in group.	1. Quiz (2) - 30% 2. Test (2) - 50% 3. Presentation (1) - 20%	0%
ELECTIVE	DJF42072 CAD CAM	Computer Aided Design and Computer Aided Manufacturing (CAD CAM) course covers the theory and basics of coding languages, structures, and the use of CAD CAM systems to generate and verify tool paths. This course aims to expose students to CAD and CAM operation integration, including object design, code production, tool path simulation for a machining operation, and generating NC part programming. This course also covers the application of CAD CAM software by transferring the NC program to a CNC milling/lathe machine or CNC milling/lathe simulator.	CLO1: Apply the concept of CAD CAM for the design and manufacturing process. CLO2: Manipulates machining code (G and M code) by using CAD CAM software as part of the milling and lathe process. CLO3: Demonstrate a project using a CNC milling/ lathe machine/ CNC milling / lathe simulator by utilizing related CAD CAM software.	1. Practical Work (2) - 60% 2. Presentation (1) - 10% 3. End of Chapter (2) - 30%	0%

DIPLOMA IN MECHATRONIC ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
ELECTIVE	DJF52092 QUALITY CONTROL	Quality Control provides knowledge on basic principle and concept of quality including statistical method in controlling products quality or services. This course also emphasizes on the application of control chart and quality control tools and explains the quality improvement technique.	CLO1: Apply the basic quality principles, management system and tools related to manufacturing industry. CLO2: Analyze manufacturing process and its issues using the quality tools and technique for process improvement in quality. CLO3: Demonstrate ability to work in a team to solve quality problem in manufacturing.	1. Quiz (2) - 5% 2. Test (1) - 20% 3. Presentation (1) - 15% 4. Case Study (1) - 10%	50%
ELECTIVE	DJM50292 RAILWAYS SIGNALLING	Railways Signaling exposes the student to the principle of railway signaling. This course covers the basic concepts of Railway Signaling fundamental data. Students are exposed to Railway Signalling according to Malaysian Rail Systems	CLO1: sketch the concept and principles in railways signalling according to mainline Malaysian Railways. CLO2: perform the basic concept of signalling in the railways interlocking systems CLO3: demonstrate the understanding of concepts in railways signalling doing practical work	1. Practical Work (2) - 40% 2. Practical Work (2) - 45% 3. Presentation (Generic) (1) - 15%	0%

DIPLOMA IN MECHATRONIC ENGINEERING

COURSE SYNOPSIS & COURSE OUTCOME (CLO)

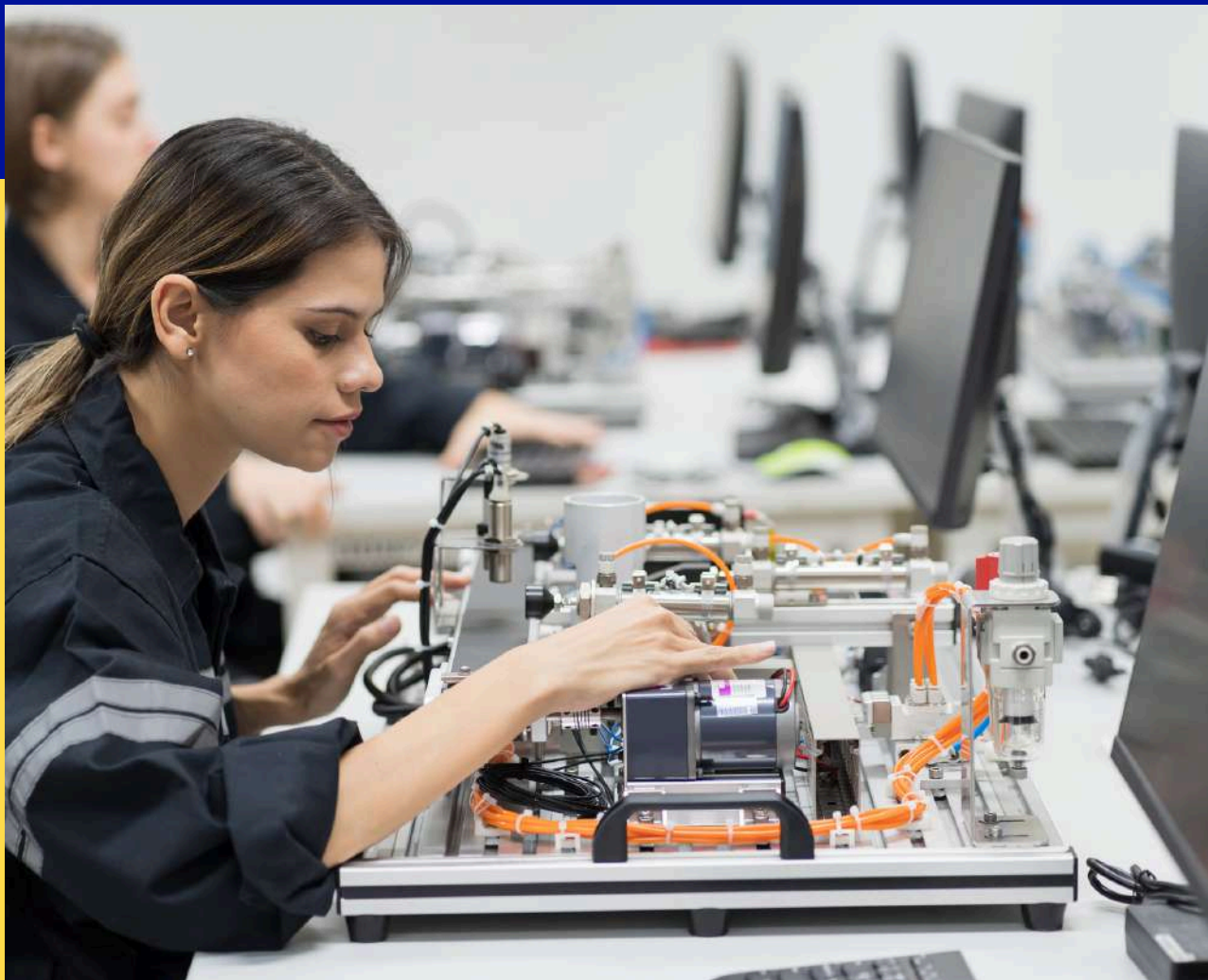
SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINAL EXAMINATION
ELECTIVE	DJM50302 AUTONOMOUS VEHICLES SYSTEM	Autonomous Vehicles System course introduces the basic concept, driving regulation and standards of the autonomous vehicle. The course includes practical work related to the autonomous vehicle sensing system and operation. It also covers environment representation such as Autoware Installation, mapping, object detection, localization and path planning to complete the autonomous vehicle task	CLO1: expose the basic concept, driving regulation and standards of the autonomous vehicle system CLO2: perform the practical work on autonomous vehicle sensing, actuator and autonomous software operation CLO3: demonstrate the environment representation of autonomous vehicle as a team to complete assigned task	1. Quiz (1) - 10% 2. Test (1) - 25% 3. Practical Work (2) - 40% 4. Presentation (Generic) (1) -25%	0%
ELECTIVE	DJM50312 INTERNET BASED CONTROLLER	Internet Based Controller course provides students with the knowledge and exposure in advance technology. The course focuses on the basic knowledge of hardware component, wireless communication technologies and wireless sensor network. Green network in Internet of Things will help student to exploit on environmental conservation and surveillance to minimize the cost and power consumption in development of project.	CLO1: apply the basic concepts, structure and components of Internet of Things in mechatronic engineering field CLO2: perform various types of input/output application, data acquisition and communication during practical work using embedded system platform/board. CLO3: demonstrate social responsibility in sustaining environment through mini project development theme-based	1. Mini Project (1) - 30% 2. Test (1) - 20% 3. Practical Work (2) - 30% 4. Presentation (Generic) (1) -20%	0%

DIPLOMA IN MECHATRONIC ENGINEERING

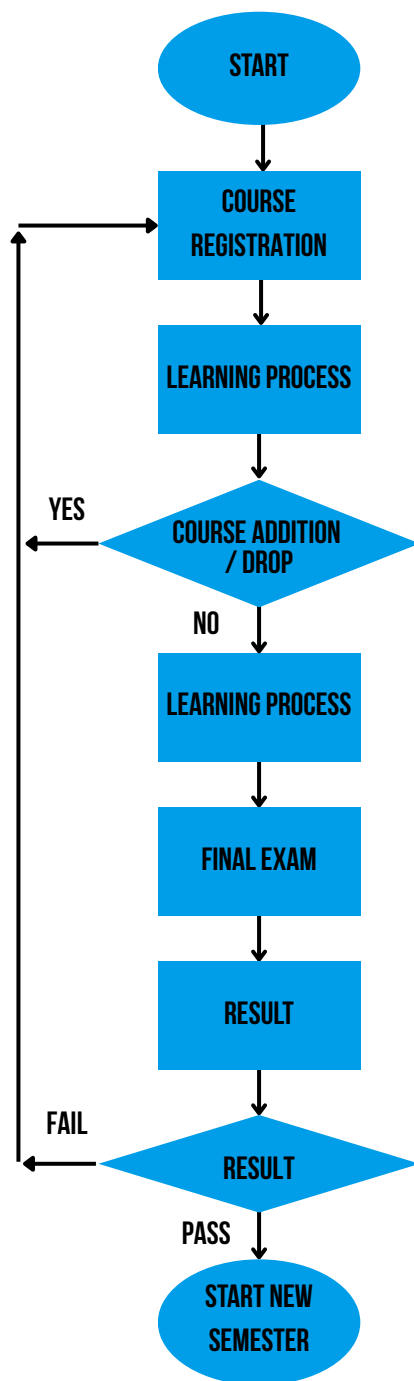
COURSE SYNOPSIS & COURSE OUTCOME (CLO)

SEMESTER	CODE & COURSE NAME	SYNOPSIS	COURSE LEARNING OUTCOME (CLO)	COURSEWORK ASSESSMENT (CA)	FINALEXAMINATION
ELECTIVE	DJJ40472 RENEWABLE AND SUSTAINABLE ENERGY	Renewable and Sustainable Energy focuses on the principles of renewable energy and the sustainability of energy in terms of climate change and the implications of renewable energy to the economy, society, and the environment. This includes possible renewable energy technologies such as biomass, ocean, hydropower, geothermal, wind and solar energy. Students should be able to describe the new perspective of renewable energy and its sustainability for widespread applications such as electricity generation, heating and cooling, transportation and industrial processes.	CLO1: show the applications, principle operation and process of various types of renewable energy and non-renewable energy CLO2: Determine the environmental and social issues of renewable and non renewable energy with appropriate consideration for sustainability, economic, and environmental considerations CLO3: Organize continuous learning while engaging in the new knowledge of renewable and sustainable energy	1. Quiz (1) - 10% 2. Test (2) - 30% 3. Case study (1) - 50% 4. Presentation (1) - 10%	0%

ADDITIONAL STUDENT INFO



COURSE REGISTRATION



- Must settle the study fee, then proceed with senior student registration.
- For sem 1 student/ student without fail course need to complete course registration by follow the program structure before start of week 1 (Register course according Current Class time table)
- Students with failed courses are required to register for carry courses first (Register course according time table which discussed with academic advisor)
- Max 20 credit, and min 12 credit except for final semester student
- Dropping Course allowed from Week 3 to Week 6 only
- Students can apply for deferment of study for the current session

- Week 14: Must pass 80% attendent and 40% carry mark for eligible sit for Final Exam (FE) / pass course without FE
- Must sit and pass min 20% of fe marks

- Final Exam: Must sit and pass min 20% of FE marks
- Appeal against the assessment results may do so in writing to the institution's Examination Committee within fourteen (14) days from the date of the official results

***Study Duration: Min 5 semesters, max 9 semesters ONLY (Including Industrial Training)**

POINT VALUE SYSTEM

- The assessment system for polytechnics and community colleges is based on the quantitative evaluation method of student performance in a programme, known as the Point Value System (SNM).
- According to the Point Value System, student performance for a course is based on the Grade System, where student achievement is evaluated using two (2) measures, namely:

- i. Grade Point Average (GPA) or *Purata Nilai Mata (PNM)*

$$\text{GPA} = \frac{\text{Total Credit Points earned in the current semester}}{\text{Total Credit Hours taken in the current semester}}$$

- ii. Cumulative Grade Point Average (CGPA) or *Himpunan Purata Nilai Mata (HPNM)*

$$\text{CGPA} = \frac{\text{Total Credit Points earned to date}}{\text{Total Credit Hours taken to date}}$$

GRADING SYSTEM

MARKS	POINT VALUE	GRADE	STATUS
90 – 100	4.00	A+	Excellent
80 – 89	4.00	A	Excellent
75 – 79	3.67	A-	Excellent
70 – 74	3.33	B+	Honours
65 – 69	3.00	B	Honours
60 – 64	2.67	B-	Honours
55 – 59	2.33	C+	Pass
50 – 54	2.00	C	Pass
47 – 49	1.67	C-	Pass
44 – 46	1.33	D+	Pass
40 – 43	1.00	D	Pass
30 – 39	0.67	E	Fail
20 – 29	0.33	E-	Fail
0 – 19	0.00	F	Fail

- For student receive grade E and below, need to repeat the course in next semester
- Students who receive grades D, D+ and C- can repeat the course to repair their grades during their study (Only Once)
- Only students who get a CGPA of 2.00 and above are eligible to be awarded a diploma

ASSESSMENT RESULTS

Assessment results for each semester will be categorised into:

- **Pass Full (LP - Lulus Penuh)**
 - Final semester students who obtain a Cumulative Grade Point Average (CGPA - Himpunan Purata Nilai Mata) equal to or more than 2.00 and meet the requirements, and are eligible to be awarded an academic certificate.
- **Good Standing (KB - Kedudukan Baik)**
 - Students who obtain a Cumulative Grade Point Average (CGPA) equal to or more than 2.00.
- **Conditional Standing (KS - Kedudukan Bersyarat)**
 - Students who obtain a Cumulative Grade Point Average (CGPA) equal to or more than 1.60 and less than 2.00.
- **Fail and Dismissed (GB - Gagal dan Diberhentikan)**
 - Fail and Dismissed Standing is given to a student if:
 - they obtain a Cumulative Grade Point Average (CGPA) less than 1.60; or
 - they obtain a Grade Point Average (GPA - Purata Nilai Mata) less than 1.00, except for students stated in items (i), (ii), and (iii); or
 - they fail a course THREE (3) times, including special final examinations or special assessments or short semesters; or
 - they obtain a Conditional Standing (KS) result THREE (3) consecutive times, not including the short semester; or
 - they fail Industrial Training TWO (2) times; or
 - they fail the same course during Work Based Learning TWO (2) times; or
 - they have exceeded the maximum study duration for a program.

DRESSING CODE

DRESS CODE FOR CLASSES/WORKSHOPS/LABS/EXAMS/OFFICIAL INSTITUTION EVENTS (MALE STUDENTS)

- Long or short-sleeved collared shirts.
- Collared 'T' shirts which do not have writing or pictures that carry wild, negative, vulgar meanings or symbolise any political party.
- Non-collared 'T' shirts are NOT allowed.
- Shirts must always be tucked into trousers (tuck-in).
- Shirts must always be perfectly buttoned.
- Wearing national attire (baju kebangsaan) is allowed but must be complete with sampin, shoes, and a black songkok.
- Long trousers (slacks / khakis in a slack cut / dark-coloured cargo pants).
- Wearing tight-fitting trousers and short-cut leg (senteng) trousers is NOT allowed.
- Must wear shoes and socks. Slippers, clogs (terompah), capal, and the like are NOT allowed.
- Wearing any form of jewellery (necklaces, earrings, bracelets, and others) is NOT allowed.
- Must wear workshop/lab safety clothing and equipment when in the workshop/lab if required to do so. Wearing hats is not allowed except for workshop/lab/work site safety helmets.
- Wearing, appearance, and conduct resembling a woman is PROHIBITED



DRESSING CODE

DRESS CODE FOR CLASSES/WORKSHOPS/LABS/EXAMS/OFFICIAL INSTITUTION EVENTS (FEMALE STUDENTS)

- Muslim female students are MANDATORY to cover their aurat (modesty).
- Conspicuous attire such as tight, revealing, short (including mini dresses/short pants), slit, thin clothing, or clothing that exposes any part of the body is NOT allowed.
- Non-Muslim students are NOT allowed to wear skirts shorter than knee level.
- Collared 'T' shirts that have writing or pictures that carry wild, negative, vulgar meanings, as well as non-collared 'T' shirts, are NOT allowed.
- Permitted trousers are long trousers (slacks / khakis in a slack cut / dark-coloured cargo pants). Tight-cut trousers (revealing the actual body shape, for example, leggings/palazzo), short-cut (senteng), and sheer fabric are NOT allowed.
- All students are mandatory to wear fully closed shoes (from the toes to the ankle) and socks.
- Slippers, clogs (terompah), capal, sandals, and high-heeled shoes exceeding two inches are NOT allowed.
- Must wear workshop/lab safety clothing and equipment when in the workshop/lab if required to do so.
- Wearing hats is not allowed except for workshop/lab/work site safety helmets.
- Wearing, appearance, and conduct resembling a male is PROHIBITED



ACADEMIC CALENDER

INSTITUSI A - Kedah, Kelantan dan Terengganu

INSTITUSI B - Perlis, Pulau Pinang, Perak, Selangor, Negeri Sembilan, Melaka, Pahang, Johor, Sabah, Sarawak, Wilayah Persekutuan Kuala Lumpur

INSTITUSI / TARIKH		BIL. MINGGU	AKTIVITI	CATATAN	LATIHAN INDUSTRI (LI) / WORK BASED LEARNING (WBL)
INSTITUSI A	INSTITUSI B				
SESI II : 2025/2026					
04/01/26 - 10/01/26	05/01/26 - 11/01/26	1	Pendaftaran Pelajar Baharu/Aktiviti Suai Kenal		Politeknik • LI / WBL **04/05 Januari 2026 - 21/22 Mei 2026 (20 minggu) • Penilaian LI (Kejuruteraan sahaja) 24/25 Mei 2026 - 04/05 Jun 2026 (2 minggu)
11/01/26 - 14/02/26	12/01/26 - 15/02/26	5	Kuliah		
15/02/26 - 21/02/26	16/02/26 - 22/02/26	1	Kuliah secara dalam talian	• Tahun Baru Cina : 17 & 18 /02/26 (Selasa & Rabu)	
22/02/26 - 18/03/26	23/02/26 - 18/03/26	4	Kuliah		
19/03/26 - 28/03/26	19/03/26 - 29/03/26	1	Cuti Pertengahan Semester	• Hari Raya Aidilfitri : 20 & 21 /03/26 (Jumaat & Sabtu)	Kolej Komuniti • LI / WBL **04/05 Januari 2026 - 23/24 April 2026 (16 minggu) • Penilaian LI 26/27 April 2026 - 07/08 Mei 2026 (2 minggu)
29/03/26 - 24/04/26	30/03/26 - 24/04/26	4	Kuliah		Sijil Teknologi Elektrik Pemasangan dan Perkhidmatan (STE) 15 Disember 2025 – 15 Jun 2026 (6 bulan)
25/04/26 - 17/05/26	25/04/26 - 17/05/26	3	Peperiksaan Akhir Semester (kecuali STE)	• Hari Pekerja : 01/05/26 (Jumaat)	
18/05/26 - 27/06/26	18/05/26 - 28/06/26	6	Cuti Akhir Semester/ Semester Pendek Pelaksanaan Semester Pendek bergantung kepada institusi (Kuliah Semester Pendek bermula pada 18 Mei 2026)	• Hari Raya Aidiladha : 27/05/26 (Rabu) • Hari Wesak : 31/05/26 (Ahad) • Hari Keputeraan Yang di-Pertuan Agong : 01/06/26 (Isnin) • Awal Muharam : 17/06/26 (Rabu)	
SESI I : 2026/2027					
21/06/26 - 27/06/26	22/06/26 - 28/06/26	1	Pendaftaran Pelajar Baharu/ Aktiviti Suai Kenal		

Tertakluk kepada sebarang perubahan dasar Kementerian Pendidikan Tinggi dan Jabatan Pendidikan Politeknik dan Kolej Komuniti.

**Tertakluk kepada hari bekerja industri.

ACADEMIC CALENDER

KEMENTERIAN PENDIDIKAN TINGGI JABATAN PENYELARAS POLITEKNIK DAN KOLEJ KOMUNITI		TAKWIM PROSES PEMBELAJARAN DAN PENGAJARAN SESI II : 2025/2026 POLITEKNIK SULTAN MIZAN ZAINAL ABIDIN		POLITEKNIK SULTAN MIZAN ZAINAL ABIDIN	
TARIKH	AKTIVITI	CATATAN	TINDAKAN		
04/01/2026 – 10/01/2026	- Terima Jadual Waktu - Terima Surat Pelantikan Mengajar - Pendaftaran Pelajar Baharu - Minggu Transformasi Siswa (MTS) - Daftar Kursus	- Selewat-lewatnya 04/01/2026 - Selewat-lewatnya 04/01/2026 04/01/2026 05/01/2026 – 08/01/2026 04/01/2026 – 10/01/2026 - RM disediakan, disemak & disahkan (04/01/2026 – 08/01/2026) - Jadual Kerja Amali - Penyerahan Course Outline Hari Israk dan Mikraj (17/01/2026 : Sabtu) Hari Kelepasan Am Negeri (18/01/2026 : Ahad)	- KJ / PJWJ / PK - KJ - JHEP - JHEP - JK Pendaftaran Kursus / PA / PK - PK / KK / KPro / KJ - PK - PK		
	11/01/2026 – 17/01/2026	KULIAH / AMALI (M1)			
	18/01/2026 – 24/01/2026	KULIAH / AMALI (M2)			
	25/01/2026 – 31/01/2026	KULIAH / AMALI (M3)			
	01/02/2026 – 07/02/2026	KULIAH / AMALI (M4)			
08/02/2026 – 14/02/2026	KULIAH / AMALI (M5)				
15/02/2026 – 21/02/2026	KULIAH SECARA DALAM TALIAN (M6)				
22/02/2026 – 28/02/2026	KULIAH / AMALI (M7)	Tahun Baru Cina (17-18/02/2026 : Selasa-Rabu) - Kemaskini i-FRP oleh Pensyarah Kursus - Semakan Pertama i-FRP (01/03/2026 – 05/03/2026) Hari Ulangtahun Pertabalan Kebawah D.Y.M.M Sultan Terengganu (04/03/2026 : Rabu) Hari Nuzul Quran (07/03/2026 : Sabtu)	- PK - KK / KPro / KJ		
01/03/2026 – 07/03/2026	KULIAH / AMALI (M8)				
08/03/2026 – 14/03/2026	KULIAH / AMALI (M9)	Hari Kelepasan Am Negeri (08/03/2026 : Ahad)			
15/03/2026 – 18/03/2026	KULIAH / AMALI (M10)	Minggu Akhir Pamer Markah PKK kepada pelajar	PK		
19/03/2026 – 28/03/2026	CUTI PERTENGGAHAN SEMESTER				
29/03/2026 – 04/04/2026	KULIAH / AMALI (M11)	Hari Raya Puasa (21-22/03/2026 : Sabtu-Ahad) Hari Kelepasan Am Negeri (23/03/2026 : Ahad)			
05/04/2026 – 11/04/2026	KULIAH / AMALI (M12)				
12/04/2026 – 18/04/2026	KULIAH / AMALI (M13)	- Minggu akhir Pemantauan Kehadiran <80% oleh Pensyarah Kursus sehingga 16/04/2026 - Minggu akhir keluar surat tunjuk sebab ketidakhadiran <80% kepada pelajar dan salinan dihantar kepada ibu bapa/penjaja pelajar. PA, PK dan fail jabatan.	- PK - KJ/PPK		
19/04/2026 – 24/04/2026	KULIAH / AMALI (M14)	- KJ menghantar senarai nama pelajar TL & KQ kepada Unit Peperiksaan selewat-lewatnya 23/04/2026 - Unit Peperiksaan londa TL & KQ dalam i-exam - Keluar Surat Makluman Tidak Layak Dinilai / Tidak Dibenarkan Menduduki Peperiksaan Akhir (kehadiran kurang 80% dan markah PKK kurang 40%) selewat-lewatnya 23/04/2026 - Serah Rekod Markah PKK kepada KJ (19/04/2026 – 23/04/2026)	- KJ - KJUPep - KJUPep - PK		
25/04/2026 – 02/05/2026	PEPERIKSAAN AKHIR	- KJ serah salinan asal Rekod Markah PKK kepada Unit Peperiksaan selewat-lewatnya 26/04/2026 - Kemaskini i-FRP oleh Pensyarah Kursus Hari Keputeraan Kebawah D.Y.M.M Sultan Terengganu (26/04/2026 : Ahad) Hari Pekerja (01/05/2026 : Jumaat)	- KJ - PK		
03/05/2026 – 09/05/2026	PEPERIKSAAN AKHIR	Semakan Kedua i-FRP (03/05/2026 – 07/05/2026)	KK / KPro / KJ		
10/05/2026 – 17/05/2026	PEPERIKSAAN AKHIR	Semakan Fail Penyerahan Kursus (EPK) (10/05/2026 – 14/05/2026)	PK / KK / KPro / KJ		

REFERENCE

- Curriculum Diploma Mechanical Engineering, Version 2024
- Curriculum Diploma Mechanical Engineering (Automotive), Version 2024
- Curriculum Diploma Mechanical Engineering (Manufacturing), Version 2024
- Curriculum Diploma Mechatronic Engineering, Version 2024
- Garis Panduan Kecemerlangan Sistem Penasihat Akademik Politeknik, Jabatan Pengajian Politeknik
- Garis Panduan Pengurusan dan Kaedah Penilaian Latihan Industri Politeknik, Jabatan Pengajian Politeknik
- Buku Panduan dan Peraturan Am Pelajar Politeknik dan Kolej Komuniti, Edisi Pertama 2024



- Arahan Peperiksaan Dan Kaedah Penilaian Politeknik Dan Kolej Komuniti Edisi 1, 2025



NOTE

NOTE

NOTE

Published by :



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2026 EDITION**

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DEPARTMENT OF MECHANICAL ENGINEERING



**BRINGING IDEAS & INNOVATION
TO LIFE THROUGH TECHNOLOGY**