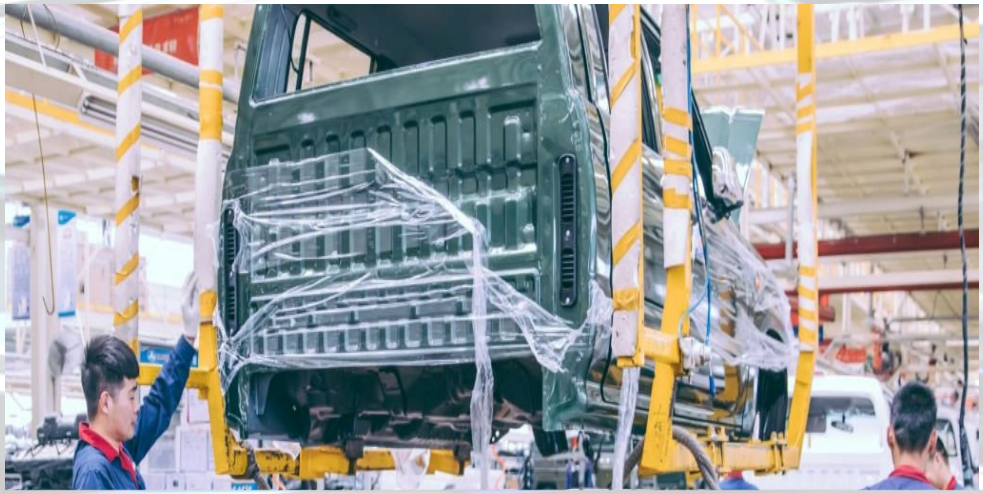
KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

POLITEKNIK MALAYSIA
MUADZAM SHAH

STUDENT GUIDE

DIPLOMA IN MECHANICAL ENGINEERING
(AUTOMOTIVE MANUFACTURING DESIGN)
-DRA-

CURRICULUM EFFECTIVE
SESSION 1 2024/2025



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PREFACE

Politeknik Muadzam Shah

Bismillahirrahmanirrahim
Assalamualaikum
Dear Students,

Welcome to Politeknik Muadzam Shah (PMS)! We are here to support your journey as an adult learner, helping you enhance your skills and achieve a well-rounded education.

In today's rapidly changing technological and business landscape, it's essential for the Malaysian workforce to continuously improve their skills to stay competitive. By balancing academics with extracurricular activities, PMS will enrich your understanding of higher education and guide your career development.

Our programs in Mechanical Engineering, Commerce, Information Technology & Communication, Design & Visual Communication, and Tourism & Hospitality are designed to foster creativity, innovation, and strong character. With a team of qualified lecturers ready to support you, we are excited to have you at PMS.

Welcome!

HAJI MOHD YUSUF BIN ZAKARIA
Director
Politeknik Muadzam Shah

PREFACE

Jabatan Kejuruteraan Mekanikal

Bismillahirrahmanirrahim
Assalamualaikum
Dear Students,

Welcome to the new academic year at the Mechanical Engineering Department of Polytechnic Muadzam Shah (PMS). I wish you success and hope you enjoy this semester's learning experiences. This handbook is designed for current and prospective mechanical engineering students, detailing the knowledge, skills, and outcomes of our programs, which prepare graduates for their careers.

We offer several diploma programs: Diploma in Mechanical Engineering (Product Design), Diploma in Mechanical Engineering (Automation), Diploma in Mechanical Engineering (Automotive Manufacturing Design), and Diploma in Mechanical Engineering (Manufacturing). To graduate, students must complete compulsory, common core, discipline-specific, and optional courses. Our state-of-the-art facilities include an advanced manufacturing laboratory and a welding workshop.

We look forward to your participation, which will enhance the vibrancy of our department. Your time at PMS promises to be an exciting and memorable experience. Best of luck!

DR. NURUL AFIZAH BINTI ADNAN
Head of Mechanical Engineering Department
Politeknik Muadzam Shah

DEPARTMENT OF POLYTECHNIC AND COLLEGE COMMUNITY EDUCATION

VISION

To be the Leading-Edge TVET Institution.

MISSION

1. *To provide wide access to quality and recognized TVET programmes.*
2. *To empower communities through lifelong learning.*
3. *o develop holistic, entrepreneurial and balanced graduates.*
4. *To capitalise on smart partnership with stakeholders.*

POLITEKNIK MUADZAM SHAH

VISION

Menjadi Peneraju institusi TVET yang unggul.

MISSION

1. *Menyediakan akses yang meluas kepada program TVET berkualiti dan diiktiraf.*
2. *Memperkasa komuniti melalui pembelajaran sepanjang hayat.*
3. *Melahirkan graduan holistik, berciri keusahawanan dan seimbang.*
4. *Memanfaatkan sepenuhnya perkongsian pintar dengan pihak berkepentingan.*

INTRODUCTION

Outcome Based Education (OBE)

Ministry of Higher Education, Malaysian Qualification Agency (MQA) and related professional bodies require all programs offered by Institution of Higher Learnings to adopt the Outcome Based Education approach in their teaching and learning activities. This is in line with the paradigm shift mooted by the Ministry of Higher Education to enhance the quality of education in Malaysia.

Outcome-based education (OBE) is an educational approach that focuses on what students are able to do upon completion of a course. All curriculum and teaching decisions are made based on how best to facilitate the desired outcome. The term outcomes in this matter would be a set of values or 'wish list' on what students should acquire upon their educational program completion. Outcome-based education is designed so that "all students are equipped with the knowledge, skills and qualities needed to be successful after they exit the educational system" (Spady, 1994, p. 9).

In brief, OBE answers the following questions:

- What must the student learn?
- What do the teachers or lecturers want the student to learn?
- How does what student learn affect the overall educational outcome?
- How do the teachers or lecturers make sure that the students learn what they are intended to learn?

Thus, OBE outlines the guidance for planning, delivering and evaluating teaching and learning activities to achieve the results expressed in terms of individual student learning outcomes as shown in Figure 1 below.

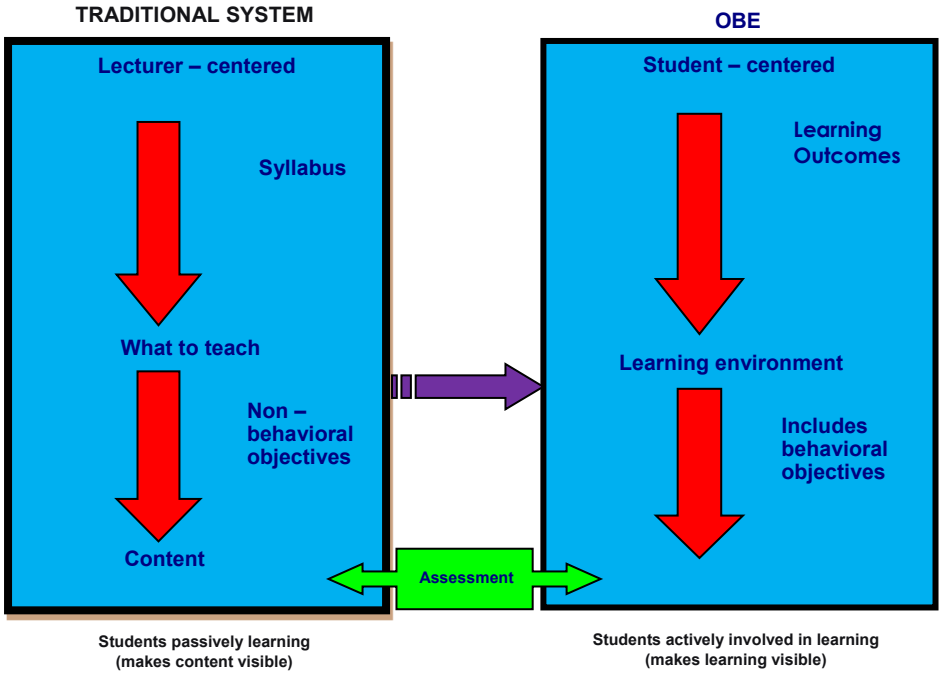


Figure 1 : A Paradigm Shift for Educational System

Beside , the Figure 2 below shown the differentiate between Outcome Based Education (OBE) and Traditional Education(TE).

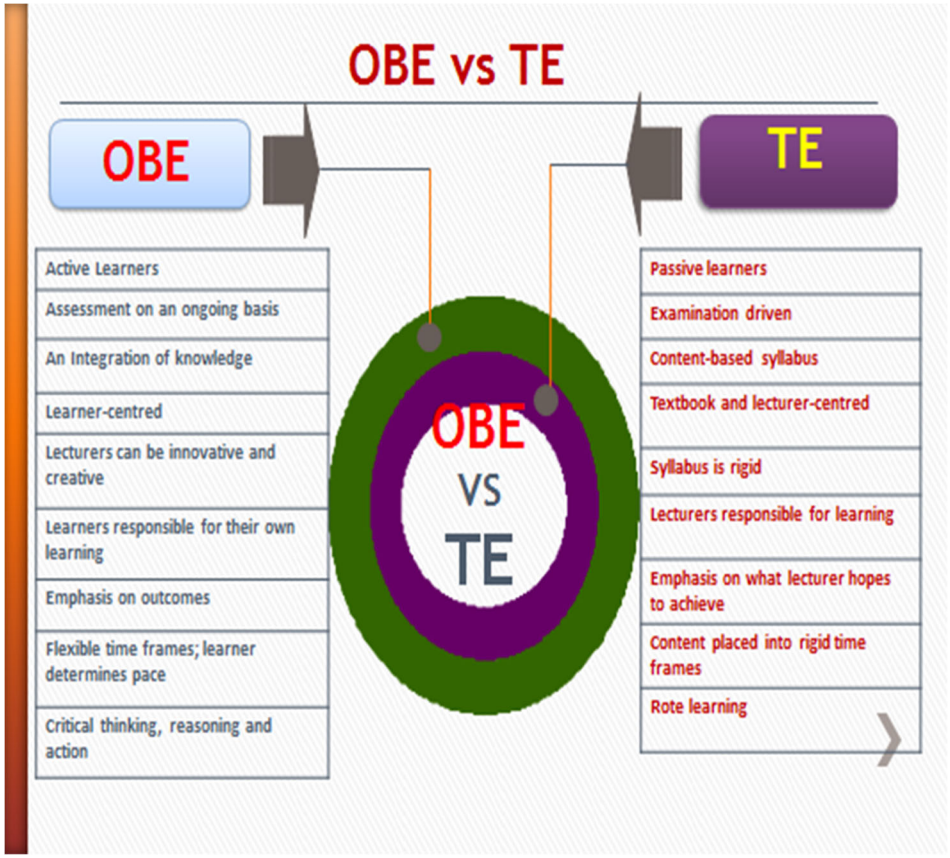


Figure 2 : Comparison of OBE and TE

OBE EDUCATIONAL FRAMEWORK

Programme Educational Objectives (PEO):
The broad statements that describe the career and professional accomplishments which the program is preparing graduates to achieve.

Programme Learning Outcomes (PLO):
The statements that describe what students are expected to know and able to perform or attain in terms of skills, knowledge and behaviour or attitude by the time of graduation.

Course Learning Outcomes (CLO):
The statements that describe the specification of what a student should learn upon completing a course .

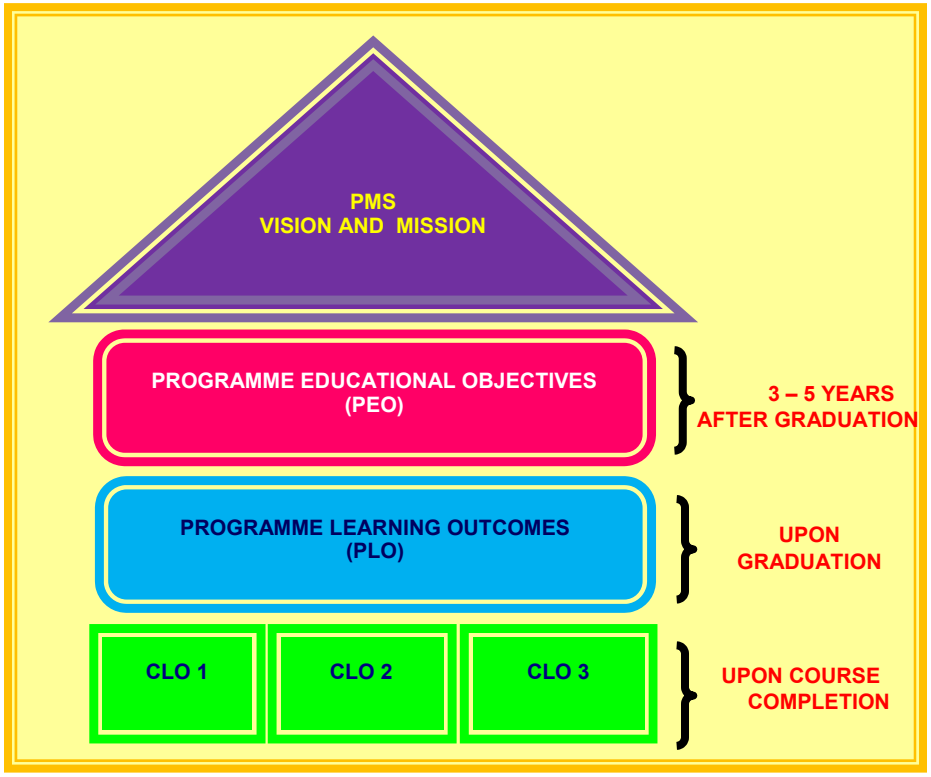


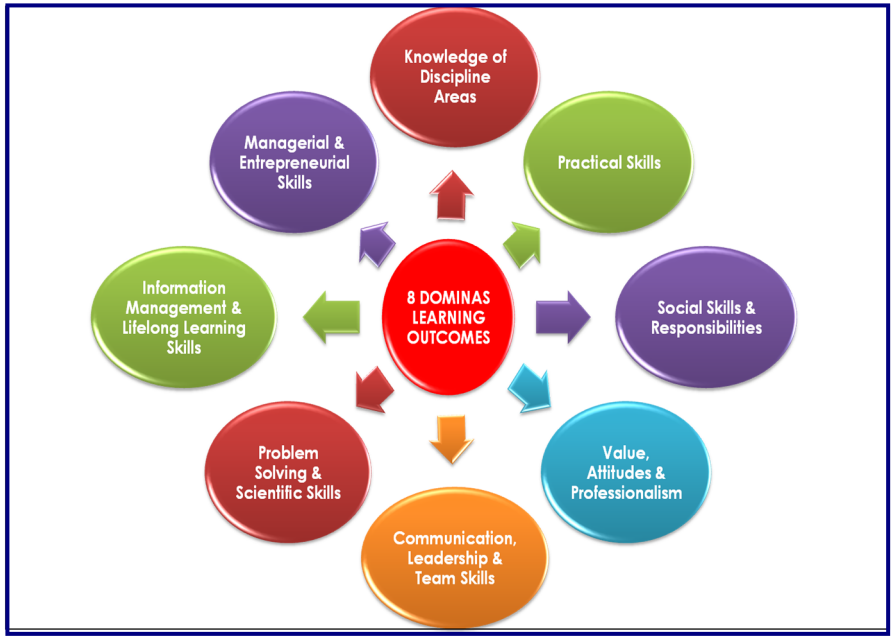
Figure 3: OBE Educational Framework

INTRODUCTION

Outcome Based Education (OBE)

FORMATION OF LEARNING OUTCOMES

The achievement of our students is measured by learning outcomes. These learning outcomes should specify the competencies acquired by students upon completion of their studies. Donnelly, K (2007) mooted that outcomes cater to the understandings, dispositions and capabilities which are the personal and intellectual qualities to be possessed by each student. The outcomes are developed throughout the students' learning span. These features are contained in the 8 domains of learning outcomes:



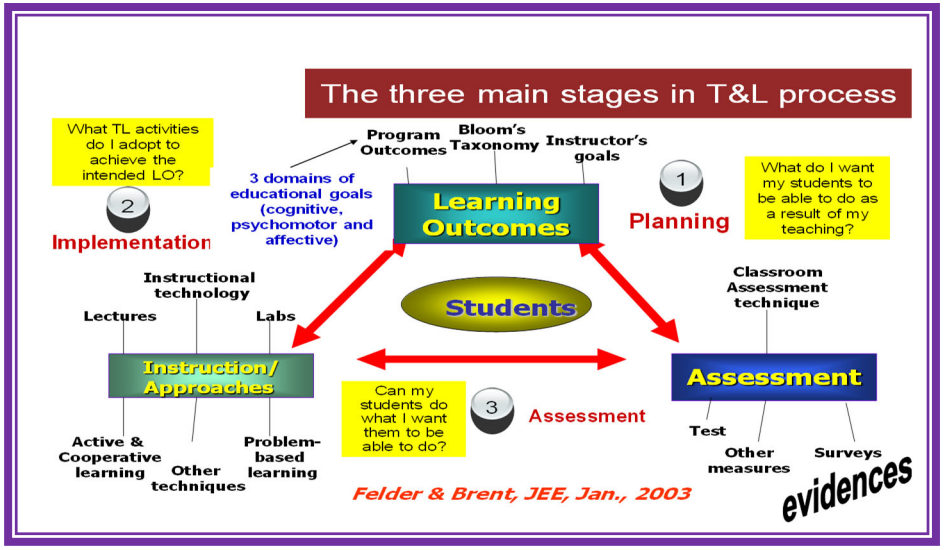
THREE MAIN STAGES IN TEACHING AND LEARNING PROCESS

In general, OBE concept divides teaching and learning activities into three parts, namely:
i. Planning,
ii. Implementation and
iii. Assessment

At the planning stage, learning outcomes should be determined in advance by taking into account what students can do after attending a teaching process.

At the implementation stage, the teaching and learning activities should be designed to achieve the specified learning outcomes.

Finally, the assessment is to be determined where it measures how far students have achieved the specified learning outcomes and assessment provides input to continuously improve the teaching and learning process.



Towards the future of OBE:
1. Courses will help students to want, passionately, to do things, rather than just 'be able to' do things.
2. Assessment will assess whether students actually and spontaneously achieve the outcomes, rather than just 'being able to'
3. Outcomes will include values and principles and purposes as well as abilities.

In conclusion, the call for accountability is inevitably one of the reasons that lead to the introduction of OBE in Politeknik Muadzam Shah. All parties need to make necessary changes, modifications, and improvements in the light of the changes aimed. The roles of curriculum, lecturers or instructors and assessment must gear the students towards the intended outcomes.

INTRODUCTION
Engineering Technology Accreditation Council (ETAC)

INTRODUCTION

The Engineering Technology Accreditation Council (ETAC) is a delegated body by the Board of Engineers Malaysia. ETAC started as a Protem Council in 2011 in order to provide a smooth transition in the accreditation of Engineering Technology and Engineering Technician education programmes. The Protem ETAC initially focused on the Sydney Accord based education programmes, and obtained the approval of its inaugural Engineering Technology Accreditation Manual by the BEM in 2015. With the 2015 amendment to the Registration of Engineers Act 1967, the BEM established a 21-person ETAC, comprising the seven groupings (BEM, learned bodies, industry/employer, Public Services Department (PSD), Malaysian Qualification Agency (MQA), Ministry, and public representatives) in 2015 as the only recognized accrediting body for engineering technology bachelor degree, engineering diploma and engineering technology diploma programmes offered in Malaysia.

The ETAC was instrumental in ensuring Malaysia's accredited engineering technology bachelors' degree, engineering diploma and engineering technology diploma programmes are substantially equivalent to the engineering degrees of the signatories of the Sydney Accord (SA) and Dublin Accord (DA). This will ensure that through its accreditation process, the qualities of graduates of accredited programmes meet global standards. Accredited programmes are placed in the ETAC and MQA registers. BEM-ETAC is in the process of joining the Sydney and Dublin Accords. It is hoped that by July 2017 BEM-ETAC will be accepted as a Provisional Signatory for both Accords. In becoming signatory to these Accords BEM-ETAC will be able to ensure Malaysian engineering technology and technician graduates meet an international standard. It will accord for mutual recognition of engineering technology degrees and diplomas and their graduates across the member countries. The same education standards for engineering technology and technician for all member countries is maintained through the guidelines provided by the International Engineering Alliance (IEA – www.ieagreements.org) custodian of the SA and DA. ETAC is determined to uphold the high standard of accreditation process, on behalf of BEM, to become the main catalyst for change in Malaysia and the region.

ACCREDITATION OBJECTIVES

The objectives of ETAC are to ensure:

1. The graduates of the accredited engineering programs meet the minimum academic requirements to be registered as graduate engineer with BEM.
2. The Continual Quality Improvement (CQI) is being practiced by Institutions of Higher Learning (IHLs). Accreditation may also serves as a tool to benchmark engineering programs offered by IHLs in Malaysia.

ADVANTAGES FOR STUDENT AND ORGANIZATION

1. Assurance that the diploma programs offered meet the high standards set by ETAC.
2. Enable students to further studies at local or overseas institutions.
3. Institution will be given opportunities to offer technology and TVET programs.
4. Graduates with diploma in engineering will be accepted to be Engineering Technician/ Inspector of Work (IOW) - registered with BEM.

DEPARTMENT OF MECHANICAL ENGINEERING

BACKGROUND

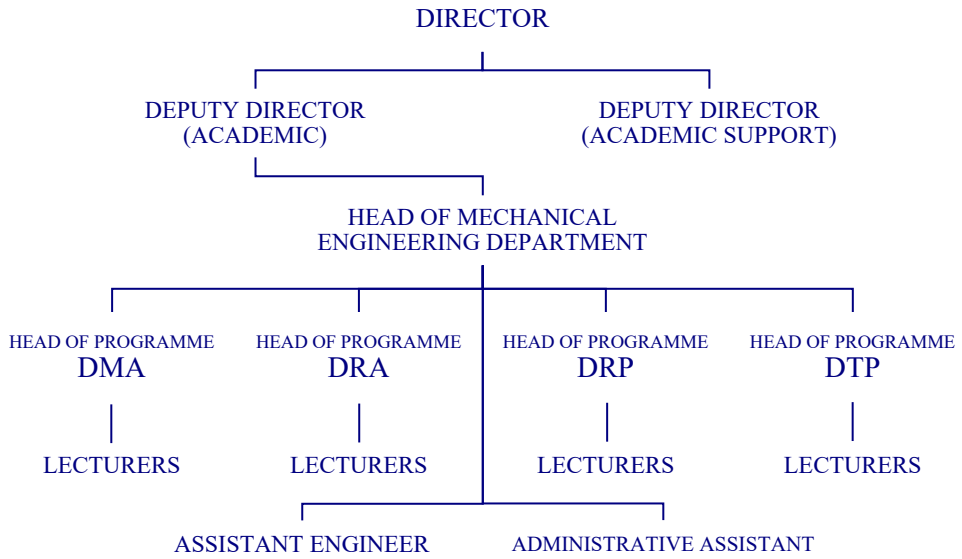
Mechanical Engineering Department **(JKM)** was established at the Polytechnic Muadzam Shah at the end of November 2010. It's establishment is in line with the movements of the Campus PMS operations while the permanent campus. There are four diploma programs offered in this polytechnic:

- Diploma of Mechanical Engineering (Automation)
- Diploma of Mechanical Engineering (Product Design)
- Diploma of Mechanical Engineering (Automotive Manufacturing Design)
- Diploma of Mechanical Engineering (Manufacturing)

The entire programs will take six semesters to complete, relatively five academic semesters at the polytechnics and one semester of industrial training at relevant industries during the final semester. The department consists a Head of Department, Heads of Program and academic lecturers. Lecturers allocated for each program based on their background, expertise and experiences.

Mechanical Engineering Department Organization

Organization Chart



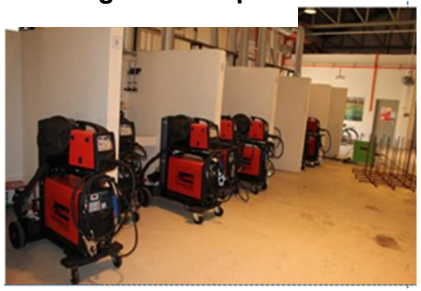
LABORATORY/WORKSHOP FACILITIES
Department of Mechanical Engineering

NO	ROOM
1	Design Studio 1
2	Design Studio 2
3	Design Studio 3
4	Design Studio 4
5	Quality Assurance Lab
6	Electrical Technology Lab
7	CAD/CAM Lab
8	Quality Assurance Lab
9	Control Engineering Lab
10	Advance Manufacturing Lab
11	Foundry Workshop
12	Fitting & Machining Workshop
13	Automotive Workshop
14	Welding Workshop
15	CAD/CAE Lab
18	Technical Design Studio
19	Automotive Workshop Instruction Room

LABORATORY/WORKSHOP FACILITIES
Department of Mechanical Engineering

Bilik Kuliah

Welding Workshop



Design Studio

Bilik Lukisan Kejuruteraan

Control Lab

DIPLOMA IN
MECHANICAL ENGINEERING
(AUTOMOTIVE MANUFACTURING DESIGN)

SYNOPSIS

The Diploma in Mechanical Engineering (Automotive Manufacturing Design) programme is designed to produce holistic graduates with knowledge and skills in mechanical engineering, automotive design and manufacturing. It uses the principles of science and engineering which contributes to the engineering knowledge through applied mathematics and science, computational method, engineering and engineering technology practices, manufacturing and final year project which is integrated with professional engineering practices. This programme includes industrial revolution related skills to meet the needs of the industry and society. To gain industrial work experience, students are required to undergo 20 weeks of industrial training during the final semester.

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DIPLOMA IN MECHANICAL ENGINEERING (AUTOMOTIVE MANUFACTURING DESIGN)

4 PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

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

PEO1: proficient with industry-relevant knowledge and skills in mechanical engineering (automotive manufacturing design) 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: established links with society and players in the industry.

11 PROGRAMME LEARNING OUTCOMES (PLO)

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

PLO1:apply knowledge of applied mathematics, applied science, 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 manufacturing design).

PLO2: identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to mechanical engineering (automotive manufacturing design) field (DK1 to DK4).

PLO3: design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations in area of mechanical engineering (automotive manufacturing design) (DK5).

PLO4: conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements (DK8).

PLO5: apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations (DK2, DK6).

PLO6:consider sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well-defines engineering problems (DK1, DK5 and DK7).*

*PLO7: 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)*

PLO8: function effectively as an individual, and as a member in diverse inclusive teams in multi-disciplinary, face-to-face, remote, and distributed settings (DK9).

PLO9: communicate effectively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.

PLO10: demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments.

PLO11: 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 United Nation Sustainable Development Goals (UN-SDG)*

Note for Knowledge Profile (DK) : DK1 TO DK9

DK1:A descriptive, formula-based understanding of the natural sciences applicable in a subdiscipline.

DK2:Procedural mathematics, numerical analysis, statistics applicable in a sub-discipline.

DK3:A coherent procedural formulation of engineering fundamentals required in an accepted sub-discipline.

DK4:Engineering specialist knowledge that provides the body of knowledge for an accepted sub-discipline.

DK5:Knowledge that supports engineering design based on the techniques and procedures of a practice area.

DK6:Codified practical engineering knowledge in recognised practice area.

DK7:Knowledge of issues and approaches in engineering technician practice, such as public safety and sustainable development*.

DK8:Engagement with the current technological literature of the practice area.

DK9:Ethics, inclusive behaviour and conduct. 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.

JOB PROSPECT

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

- Assistant Engineer
- Technical Assistant
- Assistant Service Manager
- Service Advisor
- Supervisor
- Technician
- Technical Instructor or Lecturer
- Technical Sales Executive / Engineer
- Draughter / Designer
- Entrepreneur

PROGRAMME STRUCTURE DIP. IN MECH. ENG.
Automotive Manufacturing Design (DRA)

SEMESTER 1

No.	Course Code	Course Title	L	P	T	Credit Hours	Pre-Requisites
1	DUE10062	Technical English 1	1	0	2	2	-
2	MPU24031	Sukan 1	0	2	0	1	-
	MPU 24041	Kelab/Persatuan 1					-
	MPU 24XX1	Unit Beruniform 1					-
3	DUW10042	Occupational, Safety and Health for Engineering	2	0	0	2	-
4	DBM10163	Engineering Mathematics 1	2	0	2	3	-
5	DBS10042	Engineering Science	2	1	0	2	-
6	DJJ10223	Engineering Drawing	1	3	0	3	-
7	DJJ10243	Workshop Technology	3	0	0	3	-
8	DJI11012	Automotive Manufacturing Workshop Practice	0	4	0	2	-
		TOTAL CREDIT	**25**			**18**	

SEMESTER 2

No.	Course Code	Course Title	L	P	T	Credit Hours	Pre-Requisites
1	MPU23182	Sains, Teknologi dan Kejuruteraan Islam *	1	0	2	2	-
2	MPU23172	Nilai Masyarakat Malaysia **					-
3	MPU 24051	Sukan 2	0	2	0	1	MPU24031
	MPU 24061	Kelab / Persatuan 2					MPU 24041
	MPU 24XX1	Unit Beruniform 2					MPU 24XX1
4	DBM20173	Engineering Mathematics 2	2	0	2	3	DBM10163
6	DJJ20263	Electrical and Electronic Technology	2	1	1	3	-
7	DJJ30313	Engineering Mechanics	2	1	1	3	-
8	DJI20123	Automotive Technology	3	0	0	3	-
9	DJI20132	Automotive Technology Practice	0	4	0	2	-
		TOTAL	**24**			**16**	

PROGRAMME STRUCTURE DIP. IN MECH. ENG.
Automotive Manufacturing Design (DRA)

SEMESTER 3

No.	Course Code	Course Title	L	P	T	Credit Hours	Pre-Requisites
1	DUE30072	Technical English 2	1	0	2	2	-
2	MPU21072	Penghayatan Etika dan Peradaban	1	0	2	2	-
3	DBM30183	Engineering Mathematics 3	2	0	2	3	DBM20023
4	DJJ30323	Strength Of Materials	2	1	1	3	-
5	DJI30142	Automotive Product Design 1	0	4	0	2	DJJ10223
6	DJI30152	Engineering and Tooling Design	2	1	0	2	
7	DJI30163	Project Management	2	0	1	2	-
		TOTAL	**24**			**17**	

SEMESTER 4

No.	Course Code	Course Title	L	P	T	Credit Hours	Pre-Requisites
1	DJJ30332	Engineering and Society	2	0	0	2	-
2	DJM20203	Thermofluid	2	2	0	3	-
3	DJJ40343	Material Science and Engineering	2	1	1	3	-
4	DJJ40352	Computer Programming	1	2	0	2	
5	DJJ40392	Project 1	2	0	0	2	
6	DJI40172	Automotive Product Design 2	0	4	0	2	DJI30142
7	DJXXXXXX	Elective***	0	0	0	3	-
		TOTAL	**19**			**17**	

SEMESTER 5

No.	Course Code	Course Title	L	P	T	Credit Hours	Pre-Requisites
1	DUE50032	Technical English 3	1	0	2	2	
2	MPU22071	Kursus Integriti dan Anti-Rasuah	0	0	2	1	
2	DJJ40373	Pneumatic and Hydraulic	2	1	1	3	-
3	DJJ50403	Project 2	1	3	0	3	DJJ40392
3	DUU10072	Entrepreneurship	1	2	0	2	
4	DJI50183	Automotive Manufacturing Process	2	2	0	3	-
		TOTAL	**20**			**14**	

PROGRAMME STRUCTURE DIP. IN MECH. ENG.
Automotive Manufacturing Design (DRA)

	No.	Course Code	Course Title	L	P	T	Credit Hours	Pre-Requisites
SEM 6	1	DUT600910	Engineering Industrial Training	0	0	0	10	
			TOTAL				**10**	

ELECTIVES COURSES ***

1	DJD40133	Ergonomics	3	0	0	0	3
2	DJF52103	Manufacturing System & Control	3	0	0	0	
3	DJJ50413	Troubleshooting and Maintenance for Mechanical Component	2	1	1	0	
4	DJD30113	Product Design and Development	2	2	0	0	
5	DJD30113	Engineering Maintenance and Management	2	2	0	0	
6	DJV50113	Industrial Robotics Automation	2	2	0	0	

1	DUD10012	Design Thinking (Free Electives)	1	0	0	1	2

Total credit hours for GRADUATE: 90 credit hours

Guide :

* For Muslim Students
** For Non-Muslim Students

Notes:

1. The total hours of SLT for Industrial Training is 800 hours or equivalent to 20 weeks.
2. The minimum and maximum credit value of Electives must be referred to the programme standard or professional bodies.
3. Elective courses offered are cross -disciplinary and can be chosen from courses listed in the program structure or any courses listed in the inventory of other disciplines; but must adhere to prerequisite equirements in the Programme Information.
4. Free Electives are courses which are not included in any programme structure but if taken, will contribute towards students' CGPA, provided that institutions adhere to the Jabatan Pendidikan Politeknik & Kolej Komuniti Free Electives Guidelines.
5. MPU22212 Bahasa Kebangsaan A is COMPULSORY for students who did not attain credit in Bahasa Melayu at Sijil Pelajaran Malaysia (SPM) level and will contribute to students' CGPA.
6. Co-curriculum pathways:
   a. Path 1: Sukan b. Path 2: Kelab/Persatuan c.Path C: Unit Beruniform

	COMPULSORY		SPECIALIZATION
	COMMON CORE		ELECTIVE
	DISCIPLINE CORE		INDUSTRIAL TRAINING

SUPPORTING DEPARTMENTS

SUPPORTING DEPARTMENT

Mathematics, Science and Computer Department
General Studies Department

The Mathematics, Science and Computer Department which is also known as JMSK is an academic supporting department. It is responsible in manage courses in three different fields that are Mathematics, Science and Computer. Besides, JMSK coordinate all core courses related to the Mathematics, Science and Computer to the students in Politeknik Muadzam Shah.

This department was set up in December 2010 .This department is equipped with computer laboratories, science laboratory, mathematical laboratory and classrooms.

The General Studies Department strives to produce excellent students in both cognitive and spiritual. For that end, the department provides courses that complement the programmes offered by the main departments.

The English courses prepare the students with the essential knowledge and skills in communication to meet the challenges in their future workplace. Apart from that, students are also nurtured with the teachings of Islam, moral values and the knowledge of Islamic civilization.

This department comprises the Head of Department, together with two Heads of Course from the English Language Unit, the Islamic Education and Moral Studies Unit . Furthermore, the department has three language laboratories that are equipped with the necessary peripherals to enhance the languages' learning and teaching sessions.

The Sport , Cultural & Co-curriculum Department responsible to train the excellent students in sport , cultural and leadership.

The Co-curriculum courses prepare the students with the essential skills in communication and team work to meet the challenges in their future workplace. This department comprises the Head of Department, together with one Heads of Course , One youth and sports officers and one office assistance.

Furthermore, the department manage the sports, cultural and co-curriculum facilities such as Sports Complex , race track and others.

SYNOPSIS & COURSE LEARNING OUTCOME (CLO) FOR ALL COURSES

SYNOPSIS AND COURSE LEARNING OUTCOME

Compulsory

COURSE	CREDIT HOUR	SYNOPSIS	CLO
MPU23182 Sains, Teknologi Dan Kejuruteraan Islam*	2	**SAINS, TEKNOLOGI DAN KEJURUTERAAN 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	1. Melaksanakan amalan Islam dengan betul dalam kehidupan seharian (A2 , CLS 3B) 2. Menerangkan etika dan profesionalisme berkaitan sains teknologi dan kejuruteraan dalam Islam (A3 , CLS 5) 3. Menghubungkait minda ingin tahu dengan prinsip syariah, etika dan kaedah fiqh dalam bidang sains, teknologi dan kejuruteraan menurut perspektif Islam (A4 , CLS 3F)
MPU23172 Nilai Masyarakat Malaysia**	2	**NILAI MASYARAKAT MALAYSIA** membincangkan aspek sejarah pembentukan masyarakat Malaysia, nilai-nilai agama, adat resam dan budaya masyarakat di Malaysia. Selain itu, pelajar dapat mempelajari tanggungjawab sebagai individu dan nilai perpaduan dalam kehidupan disamping cabaran-cabaran dalam membentuk masyarakat Malaysia yang bersatupadu dan penyayang.	1. Membincangkan sejarah dan nilai dalam pembentukan masyarakat di Malaysia (A2,CLS3B) 2. Menerangkan etika dan profesionalisme terhadap konsep perpaduan bagi meningkatkan semangat patriotisme masyarakat Malaysia.(A3, CLS 5) 3. Menghubungkait minda ingin tahu dengan cabaran-cabaraan dalam membentuk masyarakat Malaysia.(A2,CLS3F)
MPU21072 Penghayatan Etika dan Peradaban	2	**PENGHAYATAN ETIKA DAN PERADABAN** menjelaskan tentang konsep etika daripada perspektif peradaban yang berbeza. Ia bertujuan bagi mengenal pasti sIstem, tahap perkembangan, kemajuan dan kebudayaan merntas 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	1. Membentangkan konsep etika dan peradaban dalam kepelbagaian tamadun (A2,CLS 3B) 2. Menerangkan proses pemerkasaan kesepaduan social merentas bangsa di Malaysia. (A2,CLS5) 3. Mencadangkan sikap yang positif terhadap isu dan cabaran kotemporari dari perspektif etika dan peradaban. (A3,CLS3F)

SYNOPSIS AND COURSE LEARNING OUTCOME

Compulsory

COURSE	CREDIT HOUR	SYNOPSIS	CLO
MPU22071 Kursus Integriti dan Antirasuah	2	**KURSUS INTEGRITI DAN ANTIRASUAH** Konsep asas tentang nilai integrity , bentuk perbuatan rasuah dan salah guna kuasa dalam kehidupan seharian serta dalam organisasi dan Langkah pencegahan rasuah	1. Membincangkan hubungan nilai integrity dan anti rasuah dengan isu semasa.(A2,CLS5) 2. Menilai bentuk pelakuan rasuah dan salah guna kuasa dalam aktiviti seg=hrian dan organiasi(A3,CLS3F)
DUE10062 Technical English 1	2	**TECHNICAL ENGLISH 1** 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). .	1. Discuss work-related topic using effective communication skills by responding to workplace safety and hazards relevant to engineering technician practice (A2,PLO11) 2. Explain the features and characteristics of objects/ products used in a well-defined technical activity (A3,PLO9) 3. Share effective communication skills in making and responding to enquiries related to a well-defined engineering activities(A3 , PLO9)

SYNOPSIS AND COURSE LEARNING OUTCOME

Compulsory

COURSE	CREDIT HOUR	SYNOPSIS	CLO
DUE30072 Technical English 2	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.	1. Practice effective oral presentation skills in the context of process, procedure and instruction in workplace situations using appropriate language (A2 , PLO9) 2. Demonstrate effective communication and social skills in conducting and participating in meetings in workplace situations (A3 , PLO9) 3. Propose appropriate response(s) to complaints related to workplace situations (A3 , PLO11)
DUE50082 Technical English 3	2	**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 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. 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.	1. Prepare appropriate types of oral and written communication modes that meet employer's requirements (A4, PLO 9) 2. Demonstrate effective language-based skills in interpersonal communication, ethics and workplace related contexts (A3,PLO11) 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)

SYNOPSIS AND COURSE LEARNING OUTCOME

Common Core

COURSE	CREDIT HOUR	SYNOPSIS	CLO
DBM10163 Engineering Mathematics 1	3	**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.	1. Use mathematical statement to describe relationship between various physical phenomena (C3,PLO1) 2. Show mathematical solutions using the appropriate techniques in mathematics (C2, PLO2) 3. Use mathematical expression in describing real engineering problems precisely, concisely and logically (A3, PLO8)
DBM20173 Engineering Mathematics 2	3	**ENGINEEERING 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.	1. Explain the relationship between various physical phenomena in algebra and calculus (C3, PLO1) 2. Solve mathematics problems by using appropriate and relevant fundamentals calculus techniques (C3, PLO2) 3. Use mathematics language to express mathematics ideas and arguments precisely, concisely and logically in calculus(A3, PLO8)
DBM30183 Engineering Mathematics 3	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 problems solving skills.	1. Demonstrate mathematical concepts, formulate methods of solutions and select appropriate techniques for solving routine mathematics problems (C3,PLO1) 2. Apply mathematical methods and concepts to solve engineering problems (C3,PLO2) 3. Express mathematics ideas clearly by using correct mathematical terminology and proper mathematical notation(A3,PLO11))

SYNOPSIS AND COURSE LEARNING OUTCOME

Common Core

COURSE	CREDIT HOUR	SYNOPSIS	CLO
DBS10042 Engineering Science	2	**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.	1. Use basic physics concept to solve engineering physics problems (C3, PLO1) 2. Use knowledge of fundamental physics in real engineering activities accurately (A3,PLO6) 3. Perform appropriate activities related to physics concept(P3, PLO4)

COURSE CODE	CREDIT HOUR	SYNOPSIS	CLO
DUW10042 Occupational, Safety and Health for engineering	2	**OCCUPATIONAL SAFETY AND HEALTH FOR ENGINEERING** course is designed 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 imparted 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 .	1. Explain briefly Occupational Safety and Health (OSH) procedures, regulation and its compliance in Malaysia.(C2, PLO 1). 2. Describe hazards, risks and safe work practices in order to maintain health and safe work environment..(A3, PLO 4) 3. Justify the factor that can lead to accident in workplace.(A3, PLO 6
DJJ30332 Engineering and Society	2	**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.	1. Implement the roles of engineering profession towards the developing of society and its challenges the challenge of globalization with professional ethic. (C3,PLO7) 2. Determine the importance of engineering management, professional bodies, sustainability and green technology aspect in the engineering profession. (C4,PLO6) 3. Explain the issues of sustainability and green technology in engineering practice (A3,PLO9)

COURSE CODE	CREDIT HOUR	SYNOPSIS	CLO
DJJ10223 Engineering Drawing	3	**ENGINEERING DRAWING** Provides the students with the fundamentals of technical drawings and the application Computer Aided Design (CAD) software. For technical drawing, it emphasizes on 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.	1. Apply the fundamentals of engineering drawing and features of CAD software . (C3, PLO1) 2. Construct the 2D CAD drawing according to the engineering drawing standards (P3, PLO5) 3. Propose a project report with following engineering norms and practices in engineering drawing. (A3, PLO7)
DJJ10243 Workshop Technology	3	**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).	1. Apply the knowledge of basic mechanical components and equipment, hand tools and measuring equipment in workshop technology (C3, PLO1) 2. Apply standard practice in operating mechanical tools and component (C3, PLO7) 3. Demonstrate continuous learning and information management skills to complete assigned task (A3, PLO11)
DJJ20263 Electrical and Electronic Technology	3	**ELECTRICAL AND ELECTRICAL TECHNOLOGY** exposes students to the basic electrical circuit concept and electronic components, the application of electromagnetism in electrical machines, 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 Technology.	1. Apply fundamental knowledge in electricity, electronic, electromagnetisms and electrostatics in motor and generator control systems to solve related problems in electrical technology. (C3, PLO1) 2. Organize appropriate experiments in groups according to Standard Operating Procedure. (P4,PLO5) 3. Demonstrate continuous learning and information management skills while engaging in independent acquisition of new knowledge and skills in laboratory report. (A3,PLO11)

COURSE	CREDIT HOUR	SYNOPSIS	CLO
DJJ30313 Engineering Mechanics	3	**ENGINEERING MECHANICS** focuses on theoretical knowledge in statics and dynamics. This course provides students with fundamental understanding of forces and equilibrium, resultants, equilibrium of a particles and structural analysis. This course also covers kinematics and kinetics of particles and exposes the students to the demonstration of experiments in Engineering Mechanics.	1. Solve problems related to static and dynamics based on the concepts and principle of engineering mechanics (C3, PLO 1) 2. Analyze engineering related problems based on fundamentals of static and dynamics (C4, PLO 2) 3. Organize appropriately experiment in groups according to Standard Operation Procedures (P4, PLO 5)
DJJ30323 Strength of Materials	3	**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.	1. Apply the concepts of strength of materials to solve related problems. (C3, PLO1) 2. Analyze problems correctly related to strength of materials (C4, PLO4) 3. Oganize appropriately experiment in group according to Standard Operation Procedures (SOP). (P4, PLO5)
DJM20203 Thermofluid	3	**THERMOFLUID** 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 the application of principles to solve problems related to thermofluids processes.	1. Apply the fundamentals concepts of thermodynamics and fluid mechanics to solve the related problem (C3,PLO1) 2. Perform Experiments according to the Standard Operating Procedures appropriately (P4,PLo5) 3. Demonstrate the ability to work in team to complete the assigned tasks (A3,PLO4)
DJJ40352 Computer Programming	2	**COMPUTER PROGRAMMING** 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.	1.Apply C Programming commands to solve given problem using an appropriate data type [C3,PLO1) 2.constructs a high level programming language in solving variety engineering and scientific problems(P4,PLO3) 3.Demonstrate a solutions for assigned project based on programming which relates to current or upcoming technologies and peripherals (A3,PLO11)

SYNOPSIS AND COURSE LEARNING OUTCOME

Discipline Core

COURSE	CREDIT HOUR	SYNOPSIS	CLO
DJJ40343 Material Science and Engineering	3	**MATERIAL 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.	1. Apply the knowledge of materials science in engineering applications (C3 ,PLO1) 2. Performed appropriate material testing according operating procedure (P4 , PLO5) 3. Work individually and collaboratively in group to complete the assigned tasks. (A3, PLO8)
DJJ40373 Pneumatics and Hydraulic	3	**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. .	1. Apply the basic concept and function of pneumatics and hydraulics system. (C3 , PLO1) 2. Evaluate the pneumatics, electro-pneumatic and hydraulic circuit according to assigned tasks.(C5 , PLO3) 3. Perform experiment on pneumatic, electro-pneumatic and hydraulic circuit during practical session.(P4 , PLO5)
DJJ40392 Project 1	2	**PROJECT 1** provides students with solid foundation on knowledge and skills in formulating project proposal preparation, writing and presentation	1. Identify engineering problems in mechanical engineering fields (C4, PLO2) 2. Analyze the sustainable development impacts in engineering problem (C4, PLO6) 3. Demonstrate engineering management in a technical team (A3, PLO10)
DJJ50403 Project 2	3	**PROJECT 2** 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.	1. Organize project outcomes in progress report based on standard format (P4, PLO 10) 2. Construct design solutions to meet specified needs of the project with appropriate consideration.(P5, PLO 3) 3. Analyze the project results and write the project report to achieve proposed objectives(C4, PLO 4) 4. Explain the project work and defend project outcomes effectively with good communication skills(A4, PLO 9)

SYNOPSIS AND COURSE LEARNING OUTCOME

Discipline Core

COURSE	CREDIT HOUR	SYNOPSIS	CLO
DJJ50403 Project 2	3	**PROJECT 2** 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.	1. Organize project outcomes in progress report based on standard format (P4, PLO 10) 2. Construct design solutions to meet specified needs of the project with appropriate consideration.(P5, PLO 3) 3. Analyze the project results and write the project report to achieve proposed objectives(C4, PLO 4) 4. Explain the project work and defend project outcomes effectively with good communication skills(A4, PLO 9)

COURSE	CREDIT HOUR	SYNOPSIS	CLO
DJI11012 Automotive Manufacturing Workshop Practice	2	**AUTOMOTIVE MANUFACTURING WORKSHOP PRACTICE 1** exposes the students to machining in terms of lathe, milling, and fitting. It involves the use of arc, gas, TIG and MIG welding machine, marking out tools, measuring and testing tools. Students are also taught to procedures in the workshop.	1.Perform the Standard Operating Procedure (SOP) for fitting and machining work in producing a quality product. (P4, PLO5) 2.Perform the Standard Operating Procedure (SOP) for welding work in producing a quality product. . (P4, PLO5) 3.Act according to professional ethics , responsibilities and norms of engineering practices according to the workshop safety regulation.. (A3, PLO6)
DJI20123 Automotive Technology	3	**AUTOMOTIVE TECHNOLOGY** provides a knowledge to students regarding to the engine and chassis system. Students are also exposed to understand the powertrain units, electrical system and modern technology in automotive systems. .	1. Explain the knowledge in construction and characteristics of automotive components and systems. .(C2,PLO1) 2.Show the classification and operating principles of any system in automotive. . (C3,PLO1) 3.Describe the theory that related to automotive system.. (A3,PLO9)
DJI20132 Automotive Technology Practice	2	**AUTOMOTIVE TECHNOLOGY PRACTICE** Provides basic knowledge skill in automotive focusing on vehicle engine, transmission, and electrical system. Students are also taught to emphasize the standard operation procedure (SOP) and safety regulation in automotive workshops within responsibility as a technical team. . .	1. Assemble engine by following the standard procedure.(P3,PLO5) 2. perform electrical and chassis system according to the standard procedure. (P4,PLO5) 3. Organize effectively as an individual, and as a member in diverse technical teams.(A3,PLO8)

SYNOPSIS AND COURSE LEARNING OUTCOME

Specialization

COURSE	CREDIT HOUR	SYNOPSIS	CLO
DJI30152 Engineering and Tooling Design	2	**ENGINEERING AND TOOLING DESIGN** focuses on providing information about engineering design related to mathematical analysis for simple component designs such as mechanical joint and bearing. It also introduces to principle and methods of designing production tools such as jigs and fixtures for removal processes. .	1. Apply the basic principle of engineering and production tool design in manufacturing based on product or component (C3, PLO1) 2. Make a simple design of engineering component or production tools by using design process analysis (P4, PLO5) 3. Organize effectively as an individual, and as a member in diverse technical teams on task given. (A3, PLO8)
DJI30142 Automotive Product Design 1	2	**AUTOMOTIVE PRODUCT DESIGN 1** prepares for careers in automotive design, provided with the necessary skills and knowledge to become a competent automotive designer. This course will also develop innovative thinkers and aesthetically pleasing automotive products that meet industry standards, user needs, and market demands in the automotive industry. .	1. Sketch the product based on element knowledge and the principle of design in the artwork. (P3,PLO3) 2. Performs the elements knowledge and principles of design into Computer-Aided Design (CAD). (P4,PLO5) 3. Relate the values, concepts and techniques during design development in team.(A3,PLO8)
DJI40172 Automotive Product Design 2	2	**AUTOMOTIVE PRODUCT DESIGN 2** is a robust course that enables the creation of rich and complex designs highly demanded in the contemporary design industry, in particular the automotive industry. The main aim of introducing this course is to impart knowledge as well as practical skill on creating simple parts and assembly drawings using software. This basic course focuses on the fundamental skills and concepts as a basis for building a solid foundation in design. .	1. Construct product design concept for a product development (P3, PLO3) 2. Performs the ideation and concept into Computer Aided Design (CAD) (P4, PLO5) 3. Describe sample automotive component by using designing principles and CAD (A3, PLO9)

COURSE	CREDIT HOUR	SYNOPSIS	CLO
DJI30163 Project Management	3	**PROJECT MANAGEMENT** course will ensure interactive exercises, case studies, and engagement of group discussions to apply project management concepts to real-world scenarios. This course aims to equip with the skills, knowledge, and tools to successfully manage projects from initiation to closure while considering stakeholder needs, managing risks, and ensuring project success. By the end of the project management course, participants should have a solid understanding of project management principles, tools, and techniques. .	1. Apply concepts and processes during an investigation involved In project management. (C3, PLO4) 2..Demonstrate problem analysis in project management activities. (C3 ,PLO6) 3.Explain information, views and suggestions from exploring issues related to project management.. (A3, PLO10)
DJI50183 Automotive Manufacturing Process	3	**AUTOMOTIVE MANUFACTURING PROCESS** provides students with an understanding of basic design and manufacturing processes including a study of forming and shaping process, joining processes. Students also learn the process of rapid prototyping and surface textile on the quality of an engineering component. .	1.Classify the concept of manufacturing including joining and shaping process, advanced manufacturing and surface texture in Automotive Industry. . (C4, PLO1) 2.perform the significant of manufacturing process practically that related in Automotive Industry. . (P4, PLO5) 3.Demonstrate the basic manufacturing process in group on assigned task.(A3, PLO9)

SYNOPSIS AND COURSE LEARNING OUTCOME

Elective**

COURSE	CREDIT HOUR	SYNOPSIS	CLO
DJV50113 Industrial Robotics Automation	3	**INDUSTRIAL ROBOTICS AUTOMATION** provides knowledge related to the concept of robotic automation. This course focuses on definitions of robotic automation, advantages and disadvantages especially in manufacturing industry, and the fundamentals of mechanical concept for robot automation. Robot Automation components, classification and selected programming languages and applications are also discussed. Safety standards, maintenance process and cost are also emphasized. The course enables students to complete this course with designing robot automation system using programming languages.	1. Apply robotics automation concepts in engineering industry (C3,PLO1) 2. Investigate problems related in robotics automation industry (C4,PLO4) 3. Demonstrate practical skills in robotics automation using programming language to design robotics automation system (P4,PL09)
D40133 Ergonomics	3	**ERGONOMICS** covers the introduction to ergonomics, human biomechanics, anthropometry, ergonomics in design, ergonomics approach in product design and work environment and safety. Students are made aware of human factors considerations in product design. .	1. analyze the ergonomics factors towards human biomechanics and anthropometry needed in work systems involving people and machine (C4, PLO2). 2. illustrate the ergonomics approaches on workstation, device or product design (C4, PLO3) 3. justify the ergonomics approaches used on the proposed design (A3,PLO11)
DJF52103 Manufacturing System & Control	3	**MANUFACTURING SYSTEM AND CONTROL** provides knowledge about basic principles and concepts of industrial robotics, process layout and lean operations. It also includes knowledge in forecasting, production scheduling, inventory control and material requirement planning (MRP) in manufacturing processes. .	1. Apply the basic concept of manufacturing systems and operation management, lean operation and process layout. (C3, PLO2) 2. Investigate problem solving using forecasting, production scheduling, inventory control and material requirement planning. (C4, PLO4) 3. Demonstrate ability to work in team to complete the assigned task elated to industrial robotics.(A3, PLO8)

SYNOPSIS AND COURSE LEARNING OUTCOME

Elective***

COURSE CODE	CREDIT HOUR	SYNOPSIS	CLO
DJD30113 Product Design and Development	3	**PRODUCT DESIGN AND DEVELOPMENT** covers the development of design ideas, specifications, and solutions, based on the design and development process with consideration of the current market demands which start from product planning and until realization of the product. Ultimately, students are required to present a presentation on the product produced with the necessary documents in the presentation. .	1. Apply the design idea through consideration based on design development process to satisfy customer need (C3, PLO3) 2. Construct the design idea into 3D visual and physical model or prototype the product from detail design developed (P4,PLO5) 3. Organize properly a presentation including preparing the materials , models and presentation panel . (A3, PLO9)
DJJ50413 Troubleshooting and Maintenance for Mechanical Components	3	**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.	1. Analyze the concept of mechanical components to solve the problems. (C4,PLO2) 2. Organize appropriately experiments in groups to Standard Operating procedures . (P4,PLO4). 3. Perform the trouble shooting on mechanical component failure and damage (P4,PLO11)

SYNOPSIS AND COURSE LEARNING OUTCOME

Engineering Industrial Training

COURSE	CREDIT HOUR	SYNOPSIS	CLO
DUT 600910 Engineering Industrial Training	10	**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. .	1. Perform the assigned task accordingly based on job scope requirement (P4 , PLO 5) 2. Explain tasks assigned in the workplace utilizing effective communication skills. (A4 , PLO 9) 3. Display ability to work collaboratively and individually based on the given task.(P4,PLO8 4. Practice professional ethics and fulfill responsibilities as an engineering technician. (A5 , PLO 7) 5. Initiate responsibilities as an engineering technician while adhering to policies, rules, and safety.(A3 , PLO 6) 6. Write a report based on the given task, adhering to technical practices. (C3 , PLO 2) 7. Demonstrate lifelong learning skills in completing the given task. (P4 , PLO 11)

STUDENT FACILITIES

STUDENT FACILITIES

STUDENT SUPPORT SERVICES

ACCOMMODATION

Hostel – Conducive, safe, comfortable and peaceful accommodation for learning

Accommodation in the hostel:
New students – will be given priority
Existing students – accommodation will be offered if vacant room is available through the selection process based on the criteria determined by Polytechnic. The criteria includes social economic, home distance, academic and co-curriculum achievement, contribution and disciplinary performance.

Capacity:

Total Block	4(Male)	6 (Female)
Total Room	536	804
Total Beds	1440	2160

Supporting Facilities:

Facilities	Capacity
Hostel Office	Hostel Supervisor Office and Warden Office
Cafeteria	3 Food Stalls
Wash room	At each Level of hostel (5 levels)
Recreation Room	2 at 1 block of Man Hostel 2 at 1 block of Female Hostel
Surau	At each Block (1 room)
Sick Bay	2 room (1 male hostel & 1 female hostel)
WIFI	Recreation Room at Hostel , Cafeteria Area and Co-op Shop

STUDENT FACILITIES

HEALTH SERVICES

- Equipped with first aid facility.
- Hostel Supervisors are responsible to provide transportation service for sick students when medical treatment is needed in the office hour. While this duty will be taken by wardens after office hour.
- Periodic food quality monitoring in the cafeteria/canteen will be carried out periodically.

INSURANCE

GROUP TERM FAMILY TAKAFUL OF POLITEKNIK MUADZAM SHAH

Company	Scope	Sum Covered
Takaful Malaysia Berhad Premium: RM35.00 yearly Students are insured 24 hours during their studies in Politeknik Muadzam Shah, Pahang	Accidental Death Permanent Disablement (refer to the cases) Medical Expenses Funeral expenses (Due to Accident) Medical Hospital Allowance Ambulance Fee Orthopédic Equipment Accidental Outpatient Allowance Snatch Theft Dengue Recuparation Death Benefit(Natural) Total adn Permanent Disablement (Natural) Funeral Expenses	RM50,000.00 +/- RM50,000.00 RM3,000.00 RM1,500.00 RM50.00 /Day (Max. 30 Day) RM200.00 RM2000.00 RM 30.00/Day (Max. 15 days) RM250.00 RM100.00 RM12,000.00 RM12,00.00 RM2,000.00

INSURANCE OVERVIEW

All the students are insured using Takaful protection known as ‘Group Term Family Takaful’. Agency and Insurance Company The policy chosen is based on Takaful accordance. Generally, the premium, the scope and the sum assured are issued by the insurance company chosen. Currently, the students in Politeknik Muadzam Shah are subjected to Takaful protection by Syarikat Takaful Malaysia Berhad. The following table lists the scope and sum assured by the company.

STUDENT FACILITIES

Steps to be taken if accidents occur:

- Students could get medical treatment from Public or Private Hospital
- Academic Advisor/Student/Next of Kin should inform the details of the accident to the Student Affairs Department within 5 days from the date of occurrence.
- The Student Affairs Department will inform the insurance company within 24 hours from the date of report received.
- Insurance Claim Form will be given to the student for claim purpose.
- A completed form with supporting documents should be submitted to the Student Affairs Department for further process by the insurer.

The supporting documents for the claim:

- A copy of MyKad / IC
- A copy of Birth Certificate
- A copy of Police Report/ Factory etc.
- The Doctor's / Medical Report/Post Mortem
- Burial permit (applicable for death claim)
- A copy of death certificate (applicable for death claim)

FINANCIAL AID

Scholarships

- Yayasan-yayasan Negeri
- Jabatan Hal Ehwal Orang Asli (JHEOA)

Loans

- Perbadanan Tabung Pendidikan Tinggi Malaysia (PTPTN)
- Tabung Pinjaman Pendidikan Kementerian Pengajian Tinggi Malaysia (KPT)

SPORTS & CULTURAL

PMS provides its community with a wide range of facilities for fitness and leisure activities. The facility provides a comfortable environment for both students and staff to relax and stay fit.

STUDENT FACILITIES

List of Recreational Facilities & Other Amenities are as in table below:

NO.	RECREATIONAL AND FACILITIES AND OTHERS	QUANTITY
1.	Football Field	1
2.	Rugby Field	1
3.	Netball Court	4
4.	Basketball Court	2
5.	Volleyball Court	4
6.	Tennis Court	4
7.	Futsal Court	3
8.	Badminton Court	8
9.	Gymnasium	1
10.	Archery equipment	4
11.	Tennis Table	10
12.	Sport Complex	1
13.	Squash Court	2
14.	Swimming Pool	1
15.	Wood Ball equipment	10
16.	Golf Equipment	2
17.	Synthetic Track	1
18.	Music equipment	6 Guitar / 1 Drum set / Nasyid Instrument Set
19.	Kayaking equipment	14
20	Hockey Court	1
21	Mountain Bike	6

Table: Recreational Facilities & Other Amenities

STUDENT FACILITIES

UNIT OF PSYCHOLOGY MANAGEMENT (UPPSi)

Unit of Psychology & Career Polytechnic Muadzam Shah (UPK PMS) is the unit responsible for providing effective services to students in particular to the process of enrichment and development expand along with the students' academic development. This unit consists of a Career in Psychology Officer assisted by Guidance & Counseling Department Coordinator appointed by the respective department heads. This unit is responsible for implementing the terms of reference as follows:

1. Managing Individual Counseling Services
2. Managing Group Counseling Services
3. Managing Career Counseling Services
4. Managing Lecture
5. Managing Study Visit
6. Managing Control Workshop / Course
7. Managing Exhibition
8. Managing PRS Polytechnic Training
9. Managing the dissemination of Units of Psychology and Career

NO	FACILITIES
1	Individual Counseling Room- 2
2	Discussion / Group Counseling Room – 1

Table: Facilities

STUDENT FACILITIES

ROLE OF AN ACADEMIC ADVISOR

Academic advising is an essential element of the educational process. The academic advisor is a member of the teaching staff who will be guiding students on academic matters throughout their tenure in the polytechnic.

The role an academic advisor:

- Assists the student in obtaining a well balanced education and in interpreting polytechnic policies and procedures. The academic advisor approves the students' academic schedules each semester
- Advise the students on the courses s h e / he should take during a particular semester.
- Will inform the students about the pre requisites and the minimum or maximum number of credit hours a student is eligible to take.
- Will provide the information about the students GPA , CGPA etc.

ASSESSMENTS

GRADING POINT SYSTEM

- Under Polytechnics' assessment system, student's performance is being measured on the basis of quantitative method and being known as Grading Point System (GPS).

- In the Grading Point System, there are measures to evaluate student's performance:

GRADE POINT AVERAGE (GPA) -PNM

- The average grade of a student for a given semester is being computed by taking the sum of the courses' credit hours and grade point divided by the total credit hours taken in that semester.

- Formula: **GPA =** $\frac{\text{Total credit hours x Grade point}}{\text{Total credit hours taken in that semester}}$

CUMULATIVE GRADE POINT AVERAGE (CGPA) -HPNM

- The sum of the courses' credit hours and the grade point for all courses taken in all semesters, divided by the total credit hours taken in all semesters.

- Formula: **CGPA =** $\frac{\text{Total credit hours x Grade point in all semester}}{\text{Total credit hours taken in all semester}}$

STUDIES INFORMATION

SAMPLE GPA CALCULATION

The table below gives the grades obtained by a student during first semester at diploma level.

CODE	COURSE	CREDIT HOURS	GRADE ACHIEVED	GRADE POINTS
DUE100012	Communicative English 1	2	B	3.00
MPU24XX1	Sukan/ Unit Beruniform 1	1	A	4.00
DBM10013	Engineering Mathematics 1	3	B+	3.33
DBS10012	Engineering Science	2	A-	3.67
DUW10022	Occupational, Safety and Health for Engineering	2	A-	3.67
DJJ10013	Engineering Drawing	3	B	3.00
DJI11012	Automotive Manufacturing Workshop Practice	2	B+	3.33
DJJ10033	Workshop Technology	3	A	4.00
Credit Total		**18**		

GPA = Σ (Credit hours X Credit points) ÷ Σ Total Credit hours

= {(2X3) + (1X4) + (3X3.33) + (2X3.67) + (2X3.67) + (3X3.00) + (2X3.33)+(3X4) } ÷ {2+1+3+2+2+3+2+3}

= 62.33 ÷ 18
= 3.46

Therefore, **Semester GPA = 3.46**

STUDIES INFORMATION

GRADING SYSTEM

- A student will be evaluated based on the following mark scales, grades and grade points as being outlined in Table below:

Mark Scale	Grade Point	Grade	Status
90 – 100	4.00	A+	High Distinction
80 - 89	4.00	A	Distinction
75 – 79	3.67	A-	Credit
70 – 74	3.33	B+	Credit
65 – 69	3.00	B	Credit
60 – 64	2.67	B-	Pass
55 – 59	2.33	C+	Pass
50 – 54	2.00	C	Pass
45 – 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

COURSE CREDIT HOUR

- Total credit hours taken by students are in between 12 to 20 credit hours every semester which have been stated in the Curriculum Document and Program Structure.
- A minimum total credit hours shall be fulfilled before the students are qualified to be awarded a Diploma (including advanced diploma) which has also been stated in the curriculum document and program structure.

REGISTER COURSE

- Students must register within fourteen days (14) of the commencement date of each semester.
- Students should get an advice from the Academic Advisor and get approval from the Head of Mechanical Engineering Department before registering the courses more than 20 credit hour.
- Students should register the repeated course/s in the current semester if that particular course/s being offered except, there was undue circumstances. Therefore, students must get an approval first from the Head of Mechanical Engineering Department.

- If students fail to register the repeated course/s or any course/s that should be taken in the particular semester
- The student will be given Grave F with the grade point equivalent to 0.00 for that particular course; and
- The student will be assumed as has already taken the course and failed it.

ADD COURSE

- Course adding can be done on the 3rd until the 6th week of an academic session. Students should get an advice from the Academic Advisor and obtain an approval from the Head of Mechanical Engineering Department.

DROP COURSE

- Students are allowed to drop the course with one condition that the students' credit hours are not less than 12 hours.
- Course's dropping can be done on the 3rd until the 6th week of an academic session. Students should get an advice from the Academic Advisor or the Head of Program, and obtain an approval from the Head of Mechanical Engineering Department

REPEAT COURSE

- Student who fails two or more courses in previous semester is required to repeat that particular course/s in any semester after getting confirmation from the Examination Board.

ASSESMENT RESULT CATEGORY

- Assessment result for each semester can be categorized into:

Pass status

- Student who obtains a CGPA (Cumulative Grade Point Average) equivalent to or more than 2.00.

Conditional pass status

- Student who obtains a CGPA (Cumulative Grade Point Average) equivalent to or more than 1.60 and less than 2.00.

Fail status

- Student who obtains a CGPA (Cumulative Grade Point Average) less than 1.60.
- Student who obtains a GPA (Cumulative Grade Point Average) less than 1.00 except for final semester student and part-time student.
- Student who fails in any courses for three (3) times including the special final examination.
- Student who obtains conditional pass status for three times consecutive-ly.

STUDIES INFORMATION

CRITERIA TO GRADUATE GRADING SYSTEM

A student will graduate from his/her studies for a program if he/she fulfills the criteria below:

I. Pass all courses under a program;
II. Obtain a CGPA (Cumulative Grade Point Average) equivalent to or more than 2.00;
III. Obtain sufficient total credit hours for a program;
IV. Student who obtain the minimum passing grade (C-, D+ and D) is allowed to repeat the course only once to improve their grade for the next semester including the short semester. Only the higher grade calculation will be taken into the result without adding the credit hour.
V. Fulfill all program's requirement and certified by the *Lembaga Peperiksaan*.

PROGRAM DURATION

- Duration of a full-time program are as follows:
  Diploma
  - Minimum is five (5) semesters
  - Maximum is nine (9) semesters

- Student that has been charged disciplinary action (will be suspended under Act 174) is included in the duration of study.
- The period of deferment that has been approved by the Director of Polytechnic will not be computed as part of the period of study.

STUDIES INFORMATION

ALUMNI

- The alumni assist students preparing for their professional future through:
  - Their own success stories
  - Career Information
  - Seminars/Talks on career
- Alumni/polytechnic graduates are expected to provide their feedback through the Tracer Study which is carried out annually. 85% of polytechnic graduates take part in this Tracer Study in order to provide their feedback pertaining to the curriculum taught and their mandatory 6-month industrial experience. All these input serves provide the basis for curriculum development, achievement of learning outcomes and future programs.
- Details of Alumni of Politeknik Muadzam Shah are as follows:

Address : Persatuan Alumni Politeknik Muadzam Shah Rompin Pahang
Lebuhraya Tun Abdul Razak
26700 Muadzam Shah
Pahang Darul Makmur

No Telefon : 09 – 4502005
No. Faks : 09 – 4502009

Website : www.pms.edu.my or www.politeknik.gov.my

INDUSTRIAL TRAINING

INTRODUCTION TO INDUSTRIAL TRAINING

Industrial Training (LI) is part of the curriculum requirements that must be fulfilled by the students before they are awarded with Diploma from Polytechnic. Diploma students will undergo their LI in Semester 6.

Duration of the LI is 20 weeks where the students are spreads to selected firms and organizations all over the country.

PREPARATION FOR INDUSTRIAL TRAINING

Once eligible, the students need to follow proper procedures for the LI. The students are required to apply for LI placement from the firms or organizations that offered LI via the Industrial Training Officer of Department (PLIJ) respectively. It is advisable that the LI should be relevant to the students' academic courses of study.

The following documents will be issued by the PLIJ to be used in the application for a placement in the firms or organizations:

- Industrial Training Application Letter/*Surat Memohon Tempat Latihan Industri* - that has Polytechnic's letterhead
- Reply Form/*Borang Jawapan* - that has to be submitted to the firms/organizations

INDUSTRIAL TRAINING

DURING INDUSTRIAL TRAINING

The confirmation of the LI attachment is done when the students submit the following documents for verification purpose on the registration of the LI day at each respective firms/organizations:

- Letter of Report Duty/*Surat Lapor Diri* - that has Polytechnic's letterhead
- Polytechnic Student's ID card/*Kad Pelajar*
- Letter of Indemnity/*Surat Lepas Tanggung*
- Journal Reflection Book
- Performance Evaluation Form/*Borang Penilaian Pelajar*

An academic supervisor will be assigned to each of the students. The academic supervisor (or representative) will visit the students at the firms/organizations during the LI and thus, will be evaluated.

COMPLETION OF INDUSTRIAL TRAINING

After completing of LI, the students are required to re-register to the Polytechnic with the End of Training Confirmation Letter .Upon completion, the students are required to prepare a technical report about their LI. The students are expected to include information related to the job/task which they have undergone during LI in the write up and shall submit both report and log book to the PLIJ.

Squash Court

Multipurpose Court

Swimming Pool

Futsal Court

Tennis Court

Basketball Court

Gym

Football Field

Jogging Track

Rugby Field

Volley Ball Court

ACTIVITIES

Department of Mechanical Engineering

Department of Mechanical Engineering

EDITORIAL BOARD

All feedback or suggestions for the Handbook should be directed to Administrator of Department of Mechanical Engineering Politeknik Muadzam Shah

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