



STUDENT HANDBOOK 2020/2021
FACULTY OF MECHANICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA

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Welcome to the Faculty of Mechanical Engineering

Congratulations on choosing Faculty of Mechanical Engineering, Universiti Teknologi MARA for your study destination. On behalf of the faculty, I am delighted to welcome you to the Faculty, and we look forward to working with all of you to unleash your potentials.

In the Faculty, we aim to give our students the best engineering education and training opportunities by offering a programme that will prepare you for an exciting and successful career in a broad range of mechanical engineering fields. Our accredited programme is designed to enhance your understanding and to prepare you to meet new challenges associated with Mechanical Engineering. Our mission is to produce graduates who are not only knowledgeable, but also professional, creative, independent and has global leadership skills. As a Mechanical Engineering student in UiTM, take advantage of the opportunities that await you with commitment. Be part of the community and be excellent, as this is a very important time in your life that will lead you to your career and your personal development.

As you embark on the Mechanical Engineering programme, you can look forward to receiving support from faculty and staff who are firmly committed to your success. With that as our aim, we have assembled this handbook for your use. Please use this handbook as a source guide for you and your academic advisor as you meet to discuss and plan your academic goals. Inside this handbook, you will find information on the study plan, facilities, staffs, student affairs, research works, Outcome-Based Education (OBE), industrial training and final year projects. The Faculty hopes that this handbook will help you to keep track of your academic progress and be your guideline for rules and regulations. Apart from that, our office doors are always open to your thoughts, concerns and questions.

I wish you all the very best as you embark on this adventure.

Prof. Ir. Dr. Muhammad Azmi Ayub



Student **HANDBOOK 2020/2021**



UNIVERSITY VISION AND MISSION

VISION

To establish UiTM as a premier university of outstanding scholarship and academic excellence capable of providing leadership to Bumiputeras's dynamic involvement in all professional fields of world-class standards in order to produce globally competitive graduates of sound ethical standing.

MISSION

To enhance the knowledge and expertise of Bumiputeras in all fields of study through professional programmes, research work and community service based on moral values and professional ethics.

FACULTY INFORMATION

QUALITY POLICY

The Faculty of Mechanical Engineering is committed to provide a learning programme and an excellent research environment with efficient professional services based on established quality culture to fulfill customer satisfactions by continuous quality improvement.

QUALITY OBJECTIVES

1. Achieved enrollment of 10500 students (full time and foundation) by 2020.
2. Ensure that all curriculums are reviewed every 5 years.
3. Ensure that at least 90% of full-time students at the Diploma and Bachelor level graduated within the stipulated period.
4. Ensure at least 45 PhD graduates by 2020.
5. Ensure that graduates' level of employment exceeds: 80% (Bachelor); 95% (Diploma) and 2.5% 2016 & 4% by 2020 (self-employed).
6. Ensure the number of indexed publications reaches 500 by 2020.
7. Ensure the number of research grants reaches 3m by 2020.
8. Ensure excellence in transfer of knowledge by commercializing 2 research products by 2020.



CUSTOMER SATISFACTION PLEDGE

- To provide a conducive environment for effective teaching and learning.
- To produce quality graduates who are capable of meeting the global market needs.
- To ensure that the curriculum is continuously improving and to incorporate current technology practice.
- To maintain the relationship and networking with alumni, industries and other higher learning institutions within the country and overseas.
- To deliver efficient and friendly services.



HISTORY

Faculty of Mechanical Engineering is formerly under School of Engineering ITM/UiTM established in 1967. Being one of the oldest, the faculty has been playing a significant role in promoting professional engineering education amongst the Bumiputra community. So far it has produced 7572 graduates (or 5092 Bachelor of Engineering (Honours) Mechanical) who are currently playing an active role in mechanical engineering profession through different employment activities either in private or public sectors.

Starting from a modest facility in the old academic building, the faculty had moved into its new premise at the UiTM's new Science and Technology complex in 2003. The faculty is equipped with 21 laboratories, 32 classrooms, 4 workshops, 4 computer laboratories, 185 staff, staff offices, administrative offices, and sharing lecture theatres with other faculties.

Producing world-class learners in today's complex and fast paced world is the single most important responsibility of the faculty in line with the UiTM's vision of becoming a world-class university. Lecturers, administrators, and support staff are all working together to ensure all students receive world-class educational opportunities which will enable them not only to meet or exceed national standards, but to position them to succeed well in future educational and career endeavors. Administratively the faculty is facilitating this ambition by maintaining its hard earned ISO9001:2008 Quality Award obtained in 2010, but more importantly is to ensure its programme is continually striving to earn the Engineering Accreditation Council (EAC) recognition through the Board of Engineers Malaysia (BEM) and Washington Accord (WA) and also by The Institution of Mechanical Engineers (IMechE), United Kingdom.

The faculty has established seven (7) Center of Excellence (COE) to spearhead research activities. The Advanced Manufacturing Technology Excellence Centre (AMTEX) was established in January 2009 for new research and development in the field of manufacturing technology focusing on interfaces between sciences, manufacturing and industrial practices.



The Humanoid Robots and Bio-Sensing Center (HuRoBs) was developed to promote UiTM as the center of excellence in humanoid robots and to become the pioneer in development of the first Malaysian indigenous humanoid robot. The Centre of Computer Aided Design Engineering Manufacturing (CADEM) has been long established since 1990's that focused on offering and promoting professional services to both academic and industrial sectors. It also play a role in becoming a hub for integrating and commercializing UiTM's multidisciplinary science and technology expertise and experiences. The Alternative Energy

Research Centre (AERC) was founded in January 2008. Its aim is to become a leading research centre in renewal energy science and engineering and to provide the platform for efficient and low-cost alternative energy technologies. The Automotive Research and Testing Centre (ARTeC) was established to provide facilities for research and testing new product development in automotive engineering. The Flight Technology and Test Centre (FTTC) focuses on the research and development in simulation and experiments in aeronautical engineering in the field of light weight structure and material, aero-gas-dynamics, flight mechanics, and aero-propulsion. Finally, the Center for Advanced Materials Research (CAMAR) that was established in 2007 to promote research work and activities of materials science and engineering on materials development such as new composites with natural fiber reinforcement, hybrid composite, new formulation of asbestos free brake materials and failure studies of automation components.

Currently, the faculty has established many international collaborations such as with ThyssenKrupp Marine Systems AG Hamburg, Germany; Mercedes Benz (former Daimler Chrysler) Malaysia and Stuttgart, Germany; Sumitomo Sdn Bhd, Japan; Daegu University and Korea companies, Korea; Technical University Clausthal, Germany; University of Applied Science Osnabrueck, Germany, University of Applied Science Karlsruhe, Germany, University of Hannover, Germany; and Shimadzu (Asia Pacific) Pte Ltd Singapore. The faculty has opened opportunity for students to do industrial attachment abroad and many students have benefited from this initiative. Exposure to different work culture and technology abroad is to add value to graduates so that they can enter the work force and make significant contributions for the development of the country. In mutual respond to the initiatives on student's exchange program, Faculty of Mechanical Engineering has accepted about 16 students from Germany to conduct in-house practical training and industrial oriented research in our various well-equipped laboratories. Exchange students also attended our undergraduate program which allows them to transfer the course credit to their home university.



BACKGROUND OF FACULTY

Hopefully, the rapport established among many industries both local and overseas will facilitate and expedite collaboration in many forms: research and consultancy, student and staff exchange among universities, as well as internships program such as industrial training for students and staff. The faculty has so far worked towards promoting advancement in mechanical engineering across boundaries for the good of humanity and mankind. Over the years since its inception, the Faculty of Mechanical Engineering staff has worked extremely hard that has earned them the overall champion of the UiTM Vice Chancellor Quality's Award in 2008.



Teaching Staff

To ensure a high teaching standard, the faculty is very selective on the recruitment of lecturers and supporting staff. The faculty currently has 105 academic staff, 28 technical and 19 administrative staff. Lecturers are required to upgrade their knowledge and skills by carrying out research and consultancy work. They could undertake short-term or long-term research projects and other relevant consultancy works. Besides teaching, lecturers are also encouraged to engage in industrial training in order to obtain a professional engineer status (PE). The lecturers are assessed for their career enhancement annually according to the university's policy.

Facilities for Students

UiTM and the Faculty of Mechanical Engineering offer a wide choice of facilities to help students in the learning process. With recent development of new technology, the faculty provides computer laboratory to encourage student to access for information through the internet. Apart from that, these facilities can also be used to prepare their assignments and final project reports. Students can also make use of the CADEM center facilities to design their own products and manufacture them using the CNC machine.

High technology equipment is also available in specialized laboratories. Students can make use of them to understand the theory they learned in lectures, through experiments. These facilities can help students in developing their practical knowledge. The laboratory equipment is also being used for research activities and consultancy work by our academic staff.



CADEM Lab



Classroom



Computer Lab



Discussion Area



Lecture Hall



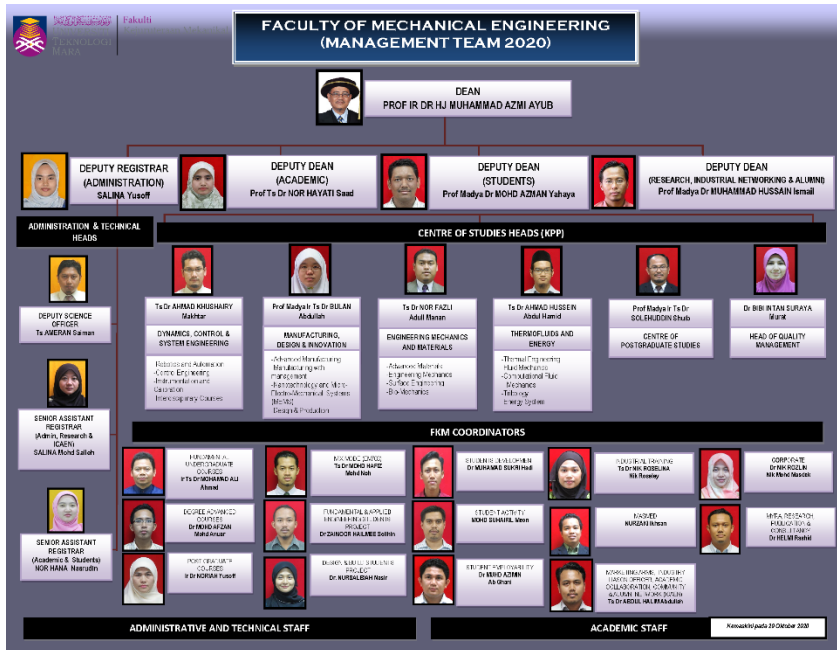
Student Excellence
Centre



Student Kiosk



ORGANIZATION CHART





ACADEMIC PROGRAMME

The faculty now offers a total of seven programmes in three levels which are one programme at diploma level (EM110), two undergraduate-level programmes (EM220, EM221/241) and four postgraduate level programmes (EM703, EM704, EM750, EM950). The diploma programmes are also offered at the UiTM Bukit Mertajam Penang Branch Campus, UiTM Bukit Besi Terengganu Branch Campus and UiTM Pasir Gudang Johor Branch Campus.

The two honours degree programmes accredited by the Engineering Accreditation Council (EAC) are Bachelor of Engineering (Honours) Mechanical (EM220) and Bachelor of Mechanical Engineering (Manufacturing) (Honours) EM221/EM241. These programmes have also been accredited internationally by the Institution of Mechanical Engineers (IMechE), United Kingdom, in view of the Malaysian Government demand to produce global human capital (modal insan) with international recognition. The programme have been accredited by IMechE for five years up-to year 2010 and thus has met high standards pertaining to the principles, practices and ethics set by this international recognized professional body in addition to the national accreditation body.

Besides the full-time programme that runs during working hours, the faculty also offers this programme as evening classes intended for working people. Previously, these students (Out-Campus Programme) are classified differently from the full-time students. But now, they are considered as full-time equivalent programme whose classes begin in the evening. They go through the same mode of operation (similar curriculum and teaching support). However, they have different workload in a semester which allows a maximum of five courses only. Their maximum total study duration doubles the normal day-time students (16 semesters instead of 8).



Programme Level

The Faculty of Mechanical Engineering offers programmes leading to the following academic qualifications, with possible opportunity of alleviation to higher levels.

- Diploma in Mechanical Engineering: A 3 year programme tailored to meet the industry requirements for assistant engineer and engineering technicians, with the opportunity to continue to B.Eng (Hons.) programme upon successful completion. In the final year, students are given the optional module to specialize in their area of interest. Among the choices are pure mechanical, manufacturing, automotive and aerospace engineering modules.
- Bachelor of Engineering (Honours) Mechanical: A 4 year programme (entry from diploma, UiTM Foundation of Engineering, science matriculation, A Level and STPM) designed to comply with the guidelines of Board of Engineer Malaysia (BEM) and the essential requirement for a professional engineer.
- Graduate Program: The Faculty of Mechanical Engineering in association with the Graduate Centre offer Master and Doctor of Philosophy programmes. Both programmes are fully research based - in addition to the Master in Engineering Management (EM704) which is by coursework and Master of Science in Mechanical Engineering (EM703) which is a mixed mode programme.

Faculty's Strength

The faculty prides itself on these factors:

- Academic staff with various disciplines in Mechanical Engineering at Master and PhD Levels.
- Good number of staff having professional engineer qualification.
- Good collaboration with industry and other institution e.g. Proton for research and consultation.
- Excellent laboratory facilities and equipment.
- A balanced structured curriculum for the programme offered and recognized by professional bodies and accreditation boards locally and abroad.



Programme Profile

Students are equipped with a firm foundation in engineering science, and other skills. The programme incorporates Engineering mathematic, Mechanics, Material, Strength of Material, Thermo-fluids, Electrical systems, Design Manufacturing, Computer application, Management and Communication skills. There is a strong practical approach to the programme and great emphasis is placed on laboratory work, industrial visits and design project. In the later years of the program there is the opportunity for the students to select elective courses, continuing with advance courses of their interest or venturing into a new area such as finite element analysis, building services, aircraft systems, world class manufacturing, total quality management, computational fluid dynamics, renewable energy, environmental and safety related topics.

Teamwork practice such as project control, management techniques, personal interaction and team skills are all practiced through group projects. As part of the learning process, "Career Talks" by professional engineers from various industries are arranged regularly to help students gain knowledge and experience in the related field.

The students are also required to undergo industrial training in various industries. This training is for a period of minimum 8 weeks during the semester break. The objective of this training is to expose students to real working environment.

The assessment of the courses in the program is largely by a balance of coursework assessment which may include laboratory work, project and topical tests and formal examinations held at the end of each semester. Some courses are continuously assessed through half semester.



Degree Programmes

A. EM220 Bachelor of Engineering (Hons.) Mechanical

B. EM221/EM241 Bachelor of Mechanical Engineering (Manufacturing) (Hons.)

These programmes are offered to graduates with a Diploma in Mechanical Engineering as well as those who have completed the Science Matriculation Program. The duration of this program is four years comprising of eight semesters. Candidates with a Diploma in Mechanical Engineering from UiTM would be admitted to the third semester. Candidates from the Matriculation Program would start from first semester. Candidates with other diploma qualifications would be admitted with some credit exemptions. The program incorporates Engineering Mathematics, Mechanics, Material, Strength of Material, Thermo-fluids, Electrical Systems, Design, Manufacturing, Computer Applications, Management and Communication skills. There is a strong practical approach to the program and great emphasis is placed on laboratory work, industrial visits, design project, and final year project. In the later years of the program there is the opportunity for students to select elective courses, continuing with advance courses of their interest or venturing into new areas such as finite element analysis, building services, aircraft systems, world class manufacturing, total quality management, computational fluid dynamics, renewable energy, environmental and safety related topics.

Teamwork practice such as project control, management techniques, personal interaction and team skills are all practiced through group projects. As part of the learning process, career talks by professional engineers from the industries are arranged regularly to help student gain knowledge and experience in the related field.

The students are also required to undergo industrial training in industry. This training is for a period of ten weeks during the semester break. The objective of this training is to expose students to real working environment in the industries.

All students undertake a major individual project in their final three semester, as a partial requirement for the Degree Program. During the final project student are involved in planning, designing, fabricating, testing, collection data, analyzing and arriving at a conclusion before completing the project. The aim of this project is to develop creativity and to get exposure in various industrial processes.



The assessment of the courses in the program is largely by a balance of coursework assessment which may include laboratory work, project and topical tests and formal examinations held at the end of each semester. Some courses are continuously assessed.

Admission Requirements

FACULTY OF MECHANICAL ENGINEERING

<p>1. Bachelor of Engineering (Honours) Mechanical (EM220) 8 semesters</p> <p>2. Bachelor of Mechanical Engineering (Manufacturing) (Hons.) (EM221/EM241) 8 semesters</p>	<p>Entry Requirements</p> <p>1. University’s General Requirement</p> <ul style="list-style-type: none"> • Pass in SPM or equivalent with good credits • Credits in Bahasa Melayu and Sejarah at SPM level or equivalent • Possess a minimum of C grade (2.00 GPA) in Pengajian Am subject or a minimum CGPA of 2.00 • Pass in KPM Matriculation/ UM Science Foundation/ UiTM Foundation and possess a minimum CGPA of 2.00 • Pass in Diploma from other higher learning institutions (IPTs) recognized by the Malaysian Government • Malaysian University English Test (MUET) of Band 2 <p>2. Programme’s Special Requirements</p> <p>a) UiTM Diploma Graduate</p> <ul style="list-style-type: none"> • Graduated Diploma in Mechanical Engineering with a minimum CGPA of 2.50 • Graduated Diploma in Science or related engineering discipline with a minimum CGPA of 2.75 <p>b) Other Institutions’ Diploma Graduate recognized by the Malaysian Government</p> <ul style="list-style-type: none"> • Graduated Diploma in Mechanical Engineering with a minimum CGPA of 3.00 <i>and</i> • Pass in SPM or equivalent with minimum five credits which must
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	<p>include the following subjects:</p> <ul style="list-style-type: none">✓ Mathematics✓ Additional Mathematics✓ Physics✓ English and✓ pass in Chemistry <p>c) UiTM Foundation / UM Science Foundation / KPM Matriculation Graduate</p> <ul style="list-style-type: none">• Minimum grade of B- (2.67) in two (2) subjects and C grade (2.00) in another one (1) subject in any of the following:<ul style="list-style-type: none">✓ Mathematics✓ Physics/ Engineering Physics✓ Chemistry/ Engineering Chemistry <i>and</i>✓ Pass in SPM or equivalent and✓ Pass in English <p>d) STPM holder or equivalent</p> <ul style="list-style-type: none">• Grade of B- (2.67 GPA) in any two (2) of the following subjects:<ul style="list-style-type: none">✓ Mathematics T / Further mathematics T✓ Physics✓ Chemistry <i>and</i>✓ Pass in SPM or Equivalent and✓ Pass in English <p>Note: Applicant with limb disabilities that could cause difficulties to conduct laboratory works is not qualified to apply for these programs.</p>
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* The intake process is carried out twice a year (in September and March). The application for the September intake is normally through the UPU, Ministry of Higher Education (MOHE).



Student Entry Standard

Candidates with a Diploma in Mechanical Engineering from UiTM will be enrolled to the third semester with a maximum credit exemption of 34 credit hours from the total credit hours offered. The exemption of the courses is given for courses offered in semester one and two.

Candidates with diploma from other recognized institutions will be enrolled with some credit exemptions approved by the faculty. Candidates from matriculation program and STPM will be enrolled into the first semester.

Student Entry Regulations

Students are not allowed to register more than one programme at any one time.

The entry requirement and qualifications of the students will be approved by the faculty based on the approved guidelines set by Senate of UiTM.

The selection of students to the programme is done by the Admissions Office.

Failed and dismissed students are not allowed to re-apply to the same programme. Students that fall under this category can apply to other programme after one semester.

Credit Transfer

Students who have applied for credit transfer to any equivalent courses from other recognized institutions shall follow all the regulations specified by UiTM. The total credits that can be transferred from other recognized institutions must not be more than 30% from the total credit units of the programme.

Credit Exemption

Students can apply for exemption of courses according to the regulation as specified by the UiTM.



A. BACHELOR OF ENGINEERING (HONOURS) (MECHANICAL) – EM220

SEMESTER 1							
Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEC400	INTRODUCTION TO ENGINEERING AND PROBLEM SOLVING	2	0	2	3	–	3
MEC412	ENGINEERING STATICS	3	1	0	3	–	3.5
MEC431	ENGINEERING DRAWING	2	0	2	3	–	3
MEM460	ENGINEERING WORKSHOP PRACTICE	0.5	0	3	2	–	2
MAT435	CALCULUS FOR ENGINEERS	3	1	0	3	–	3.5
EET699	ENGLISH EXIT TEST	0	0	0	0	–	0
XYZ111	CO-CURRICULUM I (HEP List of Elective)	0	0	2	1	–	1
Total					15		16
SEMESTER 2							
Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEC441	FLUID MECHANICS I	3	1	0	3	–	3.5
MEC451	THERMODYNAMICS	3	1	0	3	–	3.5
MEC454	THERMOFLUIDS LAB	0	0	2	1	MEC441/ MEC451	1
MEC481	MATERIALS SCIENCE	3	1	0	3	–	3.5
CSC430	COMPUTER PROGRAMMING AND APPLICATIONS	2	0	2	3	–	3
CTU552	FALSAFAH DAN ISU SEMASA	2	0	0	2	–	2
XYZ121	CO-CURRICULUM II (HEP List of Elective)	0	0	2	1	–	1
Total					16		17.5
SEMESTER 3							
Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEC411	MECHANICS OF MATERIALS	3	1	0	3	MEC412	3.5
MEC420	DYNAMICS	3	1	0	3	MEC412	3.5
MAT455	FURTHER CALCULUS FOR ENGINEERS	3	1	0	3	MAT435	3.5
EPE491	ELECTRICAL POWER AND MACHINES	3	1	0	3	–	3.5
ELC501	ENGLISH FOR CRITICAL ACADEMIC READING	2	0	0	2	–	2
BXY401	THIRD LANGUAGE 1 (APB List of Elective)	2	0	0	2	–	2
XYZ131	CO-CURRICULUM III (HEP List of Elective)	0	0	2	1	–	1
Total					17		19



SEMESTER 4

Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEC424	APPLIED MECHANICS LAB	0	0	2	1	MEC411/ MEC420/ MEC481	1
MEC435	COMPUTER-AIDED DESIGN	2	0	2	3	MEC431	3
MEC442	FLUID MECHANICS II	3	1	0	3	MEC441	3.5
MAT565	ADVANCED DIFFERENTIAL EQUATIONS	3	1	0	3	MAT455	3.5
CTU554	PENGHAYATAN ETIKA DAN PERADABAN II	2	0	0	2	-	2
EWC661	ENGLISH FOR REPORT WRITING	2	0	0	2	-	2
BXY451	THIRD LANGUAGE 2 (APB List of Elective)	2	0	0	2	BXY401	2
Total					16		17

SEMESTER 5

Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEC531	MECHANICAL ENGINEERING DESIGN I	3	0	2	4	MEC411/ MEC435	4
MEC551	THERMAL ENGINEERING	3	0	1	3	MEC451	3.5
MEC554	THERMALFLUIDS LAB	0	0	2	1	MEC442/ MEC551	1
MEM560	MANUFACTURING PROCESSES	3	0	0	3	MEM460	3
MEM564	MANUFACTURING PROCESSES LAB	0	0	2	1	MEM560	1
MEC521	VIBRATIONS	3	1	0	3	-	3.5
BXY501	THIRD LANGUAGE 3 (APB List of Elective)	2	0	0	2	BXY451	2
Total					17		18

SEMESTER 6

Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEC500	NUMERICAL METHODS WITH APPLICATIONS	2	0	2	3		3
MEC522	CONTROL ENGINEERING	3	0	2	4	MEC420	4
MEC532	MECHANICAL ENGINEERING DESIGN II	0	1	5	3	MEC531	3
MEM575	INDUSTRIAL MANAGEMENT	3	0	0	3	-	3
MEC523	APPLIED ELECTRONICS AND MICROPROCESSOR	3	1	0	3	-	3.5
Total					16		16.5

SEMESTER 6

MEC698	INDUSTRIAL TRAINING (SEMESTER BREAK)	0	0	8	4		4
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SEMESTER 7

Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEC600	ENGINEERS IN SOCIETY	3	0	0	3	-	3
MEC601	FINAL YEAR PROJECT I	0.5	1	2	2	MEC531	2
MEM603	OCCUPATIONAL SAFETY AND HEALTH	3	0	0	3	-	3
ENT600	TECHNOLOGY ENTREPRENEURSHIP	3	0	0	3	-	3
MEC6XX	SPECIAL TOPIC 1	3	0	0	3	-	3
Total					14		14



SEMESTER 8

Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEC602	FINAL YEAR PROJECT II	0	1	7	4	MEC601	4
MEC6XX	SPECIAL TOPIC 2	3	0	0	3	-	3
MEC6XX	SPECIAL TOPIC 3	3	0	0	3	-	3
MEC6XX	SPECIAL TOPIC 4	3	0	0	3	-	3
	Total				13		13
	TOTAL CREDIT HOURS				128		135

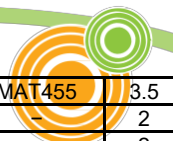
LIST OF ELECTIVES - SPECIAL TOPIC 1, 2, 3 & 4

Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEC611	ADVANCED MECHANICS OF MATERIALS	2	0	2	3		3
MEC612	FRACTURE MECHANICS (EMM)	2	0	2	3		3
MEC613	MECHANICS OF COMPOSITE MATERIALS	2	0	2	3		3
MEC614	IMPACT MECHANICS	2	0	2	3		3
MEC630	FINITE ELEMENT METHOD	2	0	2	3		3
MEC635	DESIGN OPTIMIZATION	2	0	2	3		3
MEC681	MATERIALS FOR ENGINEERING APPLICATION	3	0	0	3		3
MEC621	ADVANCED DYNAMICS	3	0	0	3		3
MEC622	ADVANCED MECHANICAL VIBRATIONS	3	0	0	3		3
MEC623	SYSTEM IDENTIFICATION	2	0	2	3		3
MEC624	ADAPTIVE CONTROL	3	0	0	3		3
MEC628	MODAL TESTING AND ANALYSIS	2	0	2	3		3
MEC629	ENVIROMENTAL NOISE AND CONTROL TECHNOLOGY	2	0	2	3		3
MEM665	ROBOTICS AND AUTOMATION	2	0	2	3		3
MEC671	FLIGHT MECHANICS AND PERFORMANCE	2	0	2	3		3
MEC672	FLIGHT DYNAMICS AND CONTROL	2	0	2	3		3
	DESIGN OF MECHATRONIC SYSTEMS	2	0	2	3		3
MEC641	COMPUTATIONAL FLUID DYNAMICS	2	0	2	3		3
MEC642	LUBRICATION OF MACHINE ELEMENTS	2	0	2	3		3
MEC651	MECHANICS AND THERMODYNAMICS OF PROPULSION	2	0	2	3		3
MEC652	WIND TURBINE DESIGN	2	0	2	3		3
MEC653	HVAC SYSTEMS	3	0	0	3		3
MEC654	FIRE PRECAUTION ENGINEERING	2	0	2	3		3
MEC655	RENEWABLE AND SUSTAINABLE ENERGY TECHNOLOGY	3	0	0	3		3
MEC656	AERODYNAMICS	2	0	2	3		3
MEC657	AUTOMOTIVE INTERNAL COMBUSTION ENGINE	2	0	2	3		3
MEC683	CLIMATE CHANGE & CARBON MANAGEMENT				3		3
MEC658	RADIAL TURBOMACHINERY	2	0	2	3		3
MEM661	APPLIED WELDING ENGINEERING	2	0	2	3		3
MEM673	INDUSTRIAL REVOLUTION	2	0	2	3		3
MEM677	PROJECT MANAGEMENT	2	0	2	3		3
MEM678	TOTAL QUALITY MANAGEMENT	3	0	0	3		3
MEM634	ERGONOMIC DESIGN	2	0	2	3		3



**B. BACHELOR OF MECHANICAL ENGINEERING (MANUFACTURING)
(HONOURS) – EM221/EM241**

SEMESTER 1							
Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEC400	INTRODUCTION TO ENGINEERING AND PROBLEM SOLVING	2	0	2	3	–	3
MEC412	ENGINEERING STATICS	3	1	0	3	–	3.5
MEC431	ENGINEERING DRAWING	2	0	2	3	–	3
MEM460	ENGINEERING WORKSHOP PRACTICE	0.5	0	3	2	–	2
MAT435	CALCULUS FOR ENGINEERS	3	1	0	3	–	3.5
EET699	ENGLISH EXIT TEST	0	0	0	0		0
XYZ111	CO-CURRICULUM I (HEP List of Elective)	0	0	2	1	–	1
		Total			15		16
SEMESTER 2							
Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEC441	FLUID MECHANICS I	3	1	0	3	–	3.5
MEC451	THERMODYNAMICS	3	1	0	3	–	3.5
MEC454	THERMOFLUIDS LAB	0	0	2	1	MEC441/ MEC451	1
MEC481	MATERIALS SCIENCE	3	1	0	3	–	3.5
CSC430	COMPUTER PROGRAMMING AND APPLICATIONS	2	0	2	3	–	3
CTU552	PHILOSOPHY AND CURRENT ISSUES	2	0	0	2	–	2
XYZ121	CO-CURRICULUM II (HEP List of Elective)	0	0	2	1	–	1
		Total			16		17.5
SEMESTER 3							
Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEC411	MECHANICS OF MATERIALS	3	1	0	3	MEC412	3.5
MEC420	DYNAMICS	3	1	0	3	MEC412	3.5
MAT455	FURTHER CALCULUS FOR ENGINEERS	3	1	0	3	MAT435	3.5
EPE491	ELECTRICAL POWER AND MACHINES	3	1	0	3	–	3.5
ELC501	ENGLISH FOR CRITICAL ACADEMIC READING	2	0	0	2	–	2
BXY401	THIRD LANGUAGE 1 (APB List of Elective)	2	0	0	2	–	2
XYZ131	CO-CURRICULUM III (HEP List of Elective)	0	0	2	1	–	1
		Total			17		19
SEMESTER 4							
Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEC424	APPLIED MECHANICS LAB0	0	0	2	1	MEC411/ MEC421/ MEC481	1
MEC435	COMPUTER-AIDED DESIGN	2	0	2	3	MEC431	3
MEC442	FLUID MECHANICS II	3	1	0	3	MEC441	3.5



MAT565	ADVANCED DIFFERENTIAL EQUATIONS	3	1	0	3	MAT455	3.5
CTU554	VALUES AND CIVILIZATION II	2	0	0	2	-	2
EWC661	ENGLISH FOR REPORT WRITING	2	0	0	2	-	2
MEM461	MANUFACTURING PROCESSES I	3	0	0	3	MEM460	3
Total					17		18

SEMESTER 5

Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEM531	INTEGRATED PRODUCT DESIGN I	3	0	2	4	MEC411/M EC435	4
MEC551	THERMAL ENGINEERING	3	1	0	3	MEC451	3.5
MEC554	THERMALFLUIDS LAB	0	0	2	1	MEC442/ MEC551	1
MEM561	MANUFACTURING PROCESSES 2	3	0	0	3	MEM460	3
MEM564	MANUFACTURING PROCESSES LAB	0	0	2	1	MEM560	1
MEC521	VIBRATIONS	3	1	0	3	-	3.5
BXY451	THIRD LANGUAGE 2 (APB List of Elective)	2	0	0	2	BXY401	2
Total					17		18

SEMESTER 6

Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEC500	NUMERICAL METHODS WITH APPLICATIONS	2	0	2	3		3
MEC522	CONTROL ENGINEERING	3	0	2	4	MEC420	4
MEM532	INTEGRATED PRODUCT DESIGN II	0	1	5	3	MEM531	3
MEM575	INDUSTRIAL MANAGEMENT	3	0	0	3	-	3
MEC523	APPLIED ELECTRONICS AND MICROPROCESSOR	3	1	0	3	-	3.5
Total					16		16.5

SEMESTER 6

MEM698	INDUSTRIAL TRAINING (SEMESTER BREAK)	0	0	8	4		4
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SEMESTER 7

Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEC600	ENGINEERS IN SOCIETY	3	0	0	3	-	3
MEM601	FINAL YEAR PROJECT I	0.5	1	2	2	MEM531	2
MEM603	OCCUPATIONAL SAFETY AND HEALTH	3	0	0	3	-	3
ENT600	TECHNOLOGY ENTREPRENEURSHIP	3	0	0	3	-	3
MEM562	COMPUTER INTEGRATED MANUFACTURING	2	0	2	3		3
BXY501	THIRD LANGUAGE 3 (APB List of Elective)	2	0	0	2	BXY451	2
Total					16		16

SEMESTER 8

Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEM602	FINAL YEAR PROJECT II	0	1	7	4	MEM601	4
MEM6XX	SPECIAL TOPIC 1	3	0	0	3	-	3
MEM6XX	SPECIAL TOPIC 2	3	0	0	3	-	3



MEM6XX	SPECIAL TOPIC 3	3	0	0	3	-	3
Total					13		13
TOTAL CREDIT HOURS					131		138

LIST OF ELECTIEVS –SPECIAL TOPIC 1 & 2 & 3

Code	Course	Contact Hrs			Credit Hrs	CO/Pre-REQ	SLT Credits
		L	T	P			
MEM631	DESIGN FOR MANUFACTURE AND ASSEMBLY	2	0	2	3		3
MEM634	ERGONOMIC DESIGN	2	0	2	3		3
MEM636	CONCURRENT ENGINEERING	2	0	2	3		3
MEM637	COMPUTER MODELING AND RAPID MANUFACTURING	2	0	2	3		3
MEM661	APPLIED WELDING ENGINEERING	2	0	2	3		3
MEM665	ROBOTICS AND AUTOMATION	2	0	2	3		3
MEM673	WORLD CLASS MANUFACTURING	3	0	0	3		3
MEM677	PROJECT MANAGEMENT	2	1	1	3		3
MEM678	TOTAL QUALITY MANAGEMENT	3	0	0	3		3



A) BACHELOR OF ENGINEERING (HONS) MECHANICAL - EM220

SEMESTER 1

MEC400 – INTRODUCTION TO ENGINEERING AND PROBLEM SOLVING (3 credit hours)

This course introduces the engineering profession and aspects related to it, and the systematic approach, basic principles and selective computational tools for solving and presenting engineering problems. The following topics will be covered; Engineering profession, Introduction to mechanical engineering design, Engineering solutions, Data acquisition and representation, Engineering approximations, and Dimension, units and unit conversions. Group work introduces students to working in a team to collectively undertake and complete the assigned tasks. The computational tools useful for solving engineering problems are covered in the practical sessions. Industrial visit to expose students to the engineering world is recommended.

Prerequisite: None

MEC412 – ENGINEERING STATICS (3.5 credit hours)

This course covers basic principles in statics. The course begins with basic concepts of mechanics *i.e.* space, time, mass, and force, the concept of vectors and laws governing addition and resolution of vectors, and followed by the equilibrium of particles and rigid bodies. It then proceeds to simple practical applications involving the analysis of forces in structures, machines, and problems involving friction. The course also covers the first and second moments of area and mass.

Prerequisite: None

MEC431 – ENGINEERING DRAWING (3 credit hours)

This course introduces the basic concepts in technical and mechanical engineering drawing and familiarizes students with the use of drawing instruments and aids in preparing basic geometrical drawing of simple objects. Topics covered includes principles of orthographic projection, isometric drawings, sectioning drawing, development of part and product drawing, drawing standards and practices, fit and tolerances, working drawings, and fabrication drawings. Students will be trained to do manual drawing and CAD practices.

Prerequisite: None



MEM460 – ENGINEERING WORKSHOP PRACTICE (2 credit hours)

The course covers lectures on basic understanding and 'hands on' experiences on workshop related activities. The lectures are on the overall pictures of workshop practice, machines, materials and safety aspects. The 'hands on' experience covers the various basic workshop crafts, forming and metal cutting processes and fabrication methods such as hand tools, sheet metal working, lathe work, milling work, foundry and welding activities.

Prerequisite: None

MAT435 – CALCULUS FOR ENGINEERS (3.5 credit hours)

This course consists of three chapters: methods of integration, functions of two and three variables and differential equations. In the first chapter, methods discussed are by parts, trigonometric integrals, trigonometric substitution and integration of rational functions. In chapter three, first and second order differential equations will be discussed. Applications in engineering and sciences will be covered for chapter two and three.

Prerequisite: None

HBU111-NATIONAL KESATRIA I (1 credit hour)

State Kesatrias of the course emphasizes those aspects of a balanced proficiency of soft-skill namely self-discipline and skills. These two components will be applied to all students to be able to be the generation that has a high stage of self-discipline, spirit of competitiveness and a strong fighting spirit and national patriotism and next thankful to Allah and to thank the leader. This course cover the components developed discipline, management and construction of self and ethics in the content of implementing the national Kesatria military training.

SEMESTER 2

MEC441 – FLUID MECHANICS 1 (3.5 credit hours)

This course covers the introduction of fundamental fluid mechanics theory including properties of fluid, hydrostatics and control volume analysis. Applied topics covering dimensional analysis and similarity, incompressible flow in pressure conduit and flow measurement are also taught.

Prerequisite: None

MEC451 – THERMODYNAMICS (3.5 credit hours)

The course is designed for students studying thermodynamics for the first time at degree level. Considerable emphasis is placed on the understanding and application of the first law and second laws of thermodynamics. Fundamental concepts and principles of various thermodynamics plants and machineries are covered in this course.

Prerequisite: None



MEC454 – THERMOFLUIDS LAB (1 credit hour)

The course consists of two parts, *i.e.* topics in thermodynamics and fluid mechanics. It provides the opportunity for the students to operate under supervision various experimental equipment. Students shall complete with confidence all laboratory experiments and to relate them to theoretical understandings of thermofluids

Prerequisite: MEC441

MEC481 – MATERIALS SCIENCE (3.5 credit hour)

This course covers some fundamentals of materials science, which are necessary for the understanding of materials properties for their appropriate applications. The major families of materials such as metals, ceramics, polymers and composite are discussed for their structures, properties and applications.

Prerequisite: None

CSC430 – COMPUTER PROGRAMMING AND APPLICATIONS (3 credit hours)

This course is designed for students to study engineering programming. Fundamental

concepts and principles of the chosen computer programming software are covered in this course. Considerable emphasis is placed on the understanding and application of computer programming.

Prerequisite: None

CTU552 – PHILOSOPHY AND CURRENT ISSUES (2 credit hours)

Kursus merangkumi hubungan ilmu falsafah dengan Falsafah Pendidikan Negara dan Rukunegara. Penggunaan falsafah sebagai alat untuk memurnikan budaya pemikiran dalam kehidupan melalui seni dan kaedah berfikir serta konsep insan. Topik utama dalam falsafah iaitu epistemologi, metafizik dan etika dibincangkan dalam konteks isu semasa. Penekanan diberikan kepada falsafah sebagai asas bagi menjalin dialog antara budaya serta memupuk nilai sepenuhnya. Di hujung kursus ini pelajar akan mampu melihat disiplin-disiplin ilmu sebagai satu badan ilmu yang komprehensif dan terkait antara satu sama lain.

HBU121-NATIONAL KESATRIA II (1 credit hour)

National Kesatria II is a continuation course of National Kesatria I which includes three major components, discipline, physical development and personal skills as well as spiritual development. This course will expose students to practice the method described above to create students who are competent, have the outstanding leader and a balanced personality in terms of mental, physical and spiritual in line with the demands of religion, race and country



SEMESTER 3

MEC411 – MECHANICS OF MATERIALS (3.5 credit hours)

The course deals with the study of stresses and strains in deformable bodies under axial loading, torsion, bending, and combined loadings. The study is restricted to the linear-elastic response of the bodies. It covers the transformations of plane stress and strain including the method of Mohr's circle, deflections of beams, buckling of columns, and strain energy.

Prerequisite: MEC410

MEC420- DYNAMICS (3.5 credit hours)

The course covers both kinematics and kinetics of particles and rigid bodies in planar and spatial motion. The course emphasizes the use of both scalar and vector approaches for solving 2D and 3D rigid bodies' problems in dynamics. The rigid body dynamics will be focused mainly in this course.

Prerequisite: MEC410/MEC421

MAT455 – FURTHER CALCULUS FOR ENGINEERS (3.5 credit hours)

This course consists of topics in finite series, partial derivative, multiple integral and vector calculus.

Prerequisite: MAT 435

EPE491 – ELECTRICAL POWER AND MACHINES (3.5 credit hours)

The course covers introduction to electrical supply system, single and three phase supply, elements of industrial power system, design, operation and maintenance, industrial applications of electrical machines and power transformers, and single phase motors.

Prerequisite: None

BAB401-ARAB LANGUAGE I (2 credit hours)

This course is beginning level 1. At this stage students will be guided to mastering basic Arabic. Expansion of the simple and appropriate course would serve to strengthen the language to the students in learning the four language skills at the beginning.

Prerequisite: None

HBU131-NATIONAL KESATRIA III (1 credit hour)

These courses will produce students who have personality perfectly in line with the demands of religion, race and nation. In addition, for

have to strengthen the foundation of soft skills in leadership, charisma and skills in social affairs and also has its own identity and spirit of the fighting spirit and heroism as well as sensitive to development efforts and well-being of their race, religion and country. Students are also able to practice the skills needed by all the time.

**MEC424 – APPLIED MECHANICS LAB (1 credit hour)**

The course consists of three parts, *i.e.* topics in mechanics of materials; material science; and dynamics and vibrations. It provides the opportunity for the students to operate under supervision various experimental equipment. Students shall complete with confidence all laboratory experiments and to relate them to the theoretical understandings.

Prerequisite: MEC411/MEC420/MEC481

MEC435 – COMPUTER AIDED DESIGN (3 credit hours)

This course introduces and applies computer hardware, its peripherals and software that are essential for Computer Aided Design (CAD), Computer Aided Engineering (CAE) and Computer Aided Manufacturing (CAM) leading to design process and the role of CAD. The topics including the Parametric and Non-Parametric Profile, Constructive Geometric Modelling, Engineering Drawing, and Mechanical Assembly Design. The integration of steps in engineering design and manufacturing is described by applying the CAD model in design process.

Prerequisite: MEC431

MEC442 –FLUIDS MECHANICS II (3.5 credit hours)

This course is a continuation of Fluid Mechanics 1. The course covers the Differential Approach to Flow Analysis; Potential Flow; Flow Past Immersed Bodies; Compressible Flow; Boundary Layer and Fluid Machinery.

Prerequisite: MEC441

MAT565 – ADVANCED DIFFERENTIAL EQUATION (3.5 credit hours)

This course consists of Laplace transforms, system of linear first order differential equation, Fourier series and boundary value problem. In Fourier series, the students will

learn how to write any periodic functions in a Fourier series. The students will also learn

Laplace transform as a tool to solve ordinary differential equations and system of first order differential equation. The last chapter is to solve the boundary values problems which include the wave equation by using the method of separation of variables and Fourier series.

Prerequisite: MAT455

BAB451-ARABIC LANGUAGE II (2 credit hours)

This course is an advanced course II after level I in BAB401. At these stage students is motivated to continue their language skills on the basis that they have learned. Increase the appropriate course content is expected to member strengthening the language to the students in learning the four language skills at a moderate level.



CTU554 – VALUES AND CIVILIZATION II (2 credit hours)

Kursus ini menerangkan tentang konsep etika daripada perspektif peradaban yang berbeza. Ia bertujuan bagi mengenal pasti sistem, tahap perkembangan, kemajuan dan kebudayaan sesuatu bangsa dalam mengukuhkan kesepaduan sosial. Selain itu, 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. Di hujung kursus ini pelajar akan dapat menghubungkan etika dan kewarganegaraan berminda sivik.

SEMESTER 5

MEC 531 – MECHANICAL ENGINEERING DESIGN I (4 credit hours)

This course covers the Mechanical Design Process and Design of Mechanical Elements. It includes failure theories for both static and fatigue conditions. One integrated design project from concept to Blue Print/Production Drawing is also included.

Prerequisite: MEC411/MEC435

MEC551 – THERMAL ENGINEERING (3.5 credit hours)

The course begins with the introduction of thermodynamics and heat transfer and the relations with energy utilization and environment. The fundamentals of heat transfer mechanisms of conduction, convection, and radiation are introduced as analytical tools to solve various energy problems. Engineering systems with major heat transfer applications is analyzed. The principle of combustion, gas mixtures and stoichiometry are exposed to the students. Refrigeration and air conditioning principles are introduced with respect to major energy transfer applications.

Prerequisite: MEC451

MEC554 – THERMALFLUIDS LAB (1 credit hour)

The course consists of two parts, *i.e.* topics in thermodynamics and fluid mechanics. It provides the opportunity for the students to operate under supervision various experimental equipments. Students shall complete with confidence all laboratory experiments and to relate them to theoretical understandings of thermofluids.

Prerequisite: MEC442/MEC551

MEM560 – MANUFACTURING PROCESSES (3 credit hours)

This course covers the different types of manufacturing processes and technology usually employed in industries. It includes the study of metal forming and shaping processes, metal casting, sheet-metal working, joining, traditional and non-traditional machining, jig and fixture, metrology and manufacturing of semiconductor devices. The course also emphasises the competitiveness aspects of manufacturing processes.

Prerequisite: MEM460



MEM564 – MANUFACTURING PROCESSES LAB (1 credit hours)

The course provides students with hands-on experience on the operation, evaluation and overcoming problems related to basic manufacturing practices such as in metal casting, welding and thermal cutting, metal cutting, non-traditional machining and the use of metrological instruments in this field. Demonstration and practical on certain manufacturing practices will be carried out.

Prerequisite: MEM560

MEC521 – VIBRATIONS (3.5 credit hours)

The course emphasizes understanding of the fundamental concepts of vibrations. It begins with free vibration of single-degree-of-freedom for undamped and damped systems followed by forced vibration with harmonic excitation. Multi-degree-of-freedom systems, equations of motion and solution methods are introduced after which the determination of natural frequencies and mode shapes are further explored. The course concludes with the understanding of continuous media vibrations.

Prerequisite: None

BAB501-ARABIC LANGUAGE III (2 credit hours)

This Course is a continuation of the BAB401 and BAB451. Students at this level will be guided to strengthen and improve their language skills based on two stages that have been learned. Expansion of the teaching appropriate language is expected to make the strengthening of the students in the various language skills

SEMESTER 6

**MEC500-NUMERICAL METHOD WITH APPLICATIONS
(3 credit hours)**

The course covers introduction to mathematical modeling and computing environment, numerical approximations and error analysis, solution methods of linear and nonlinear equations, system of linear algebraic equations, curve fitting, numerical differentiation and integration, and numerical solutions of ordinary differential equations, convergence and stability of the methods. Use of computer software in solving engineering problems is emphasized.

Prerequisite: None

MEC522 – CONTROL ENGINEERING (4 credit hours)

The course covers introduction to mathematical modeling and control engineering, models of industrial control devices and systems, basic concepts and principles of feedback controls, system stability and its criteria, performance specifications, frequency response analysis, control system design via state-space formulation, and control design applications.

Prerequisite: MEC420



MEC532- MECHANICAL ENGINEERING DESIGN III (3 credit hours)

This course is a continuation of MEC531. It incorporates and integrates previously acquired knowledge and skills in the study of mechanical engineering through a real-world and open-ended engineering project. Students will continue their design efforts until completion. Product design using and based on current standards, codes and practices is emphasized.

Prerequisite: MEC531

MEM575 – INDUSTRIAL MANAGEMENT (3 credit hours)

This course covers theoretical and practical aspects of industrial management. It is based on principal characteristics of the typical manufacturing industry. Topics include concepts of production and operation management with specific techniques in production planning and control, procurement and inventory control, and other aspects on industrial management such as project management, TQM and maintenance management.

Prerequisite: None

MEC523 – APPLIED ELECTRONICS AND MICROPROCESSOR (3.5 credit hours)

This course is to provide essential knowledge and understanding to students on the operation and applications of diodes, transistors and operational amplifiers. It also covers the topics on digital principles and microprocessor system, programming, interfacing and applications.

MEC699 – INDUSTRIAL TRAINING (4 credit hours)

This is a 12 weeks (minimum) course of external, full-time, and mechanical-engineering-career-related experiences designed to enhance the student's understanding and readiness for an intended career with a business, industry, or government agency. It is aimed at helping them to improve their competency level with direct hands-on or related employment enrichment programs and with exposure to the actual working atmosphere which they will eventually face after graduation. During the training, the students must conduct their activities in accordance with the requirements as approved by the Faculty and shall abide by the personnel regulations of the industry. Students are assessed by both, supervisor from the industry and the evaluating lecturer. A comprehensive written report on the industrial training is required.



SEMESTER 7

MEC600 – ENGINEERS IN SOCIETY (3 credit hours)

This course has been designed to accommodate the “Engineers in Society” syllabus of the Institute of Engineers (Malaysia). The course will comprise of topics that are examinable (Topics 1 – 9) and others that are non-examinable (Topics 10 – 11). Examinable topics cover a wide range of management theories and practices while the non-examinable topics would relate to current issues and the inter-relationships between the engineer and society. The non-examinable topics will be delivered in the form of guest lectures by professionals from both private and public sectors. Lectures for the examinable topics would be conducted in a normal classroom manner.

Prerequisite: None

MEC601 – FINAL YEAR PROJECT 1 (2 credit hours)

This course is the first part of the two-phase Final Year Project. It provides the opportunity for students to apply knowledge and skills acquired in all previous courses to undertake problem identification, formulation and solution of a real-world engineering problem. The course is aimed to foster independent thinking and develop problem-solving skills. It focuses on the ability of the students to first identify problem of their own interests and then formulate it for further development in the next following semester. The students will have to do a literature review and come up with project planning and proposal.

Prerequisite: MEC531

MEM603 – OCCUPATIONAL SAFETY AND HEALTH (3 credit hours)

This course covers the fundamentals of occupational safety and health in the working environment. These include the implementation and regulation of Occupational Safety and Health Act (OSHA) in Malaysia. The course also covers the identification of industrial hazards, the types and inspection of the industrial hazards concerned, and addresses the analysis and control of such hazards. The types of hazards included in this course are industrial hazard, mechanical hazard, chemical hazard, physical hazard and psycho-social hazard. Besides that, the course also emphasizes on industrial hygiene, accident causation, accident investigation and accident analysis. Safety and health management and implementation of health regulation will also be covered.

Prerequisite: None

ENT600 – TECHNOLOGY ENTREPRENEURSHIP (3 credit hours)

In this course, students will be exposed to concepts and philosophies of entrepreneurship. It is expected that they apply the knowledge gained above as a basis for the creation and development of technology based business venture.

Prerequisite: None



SEMESTER 8

MEC602 – FINAL YEAR PROJECT II (4 credit hours)

This course is the second part of the two-phase Final Year Project. It provides an opportunity for students to apply knowledge and skills acquired in earlier courses to the solution of an engineering problem. The second part focuses on the execution of the project, project evaluation, testing, and analysis toward completion and achievement of the project objectives. Students will have to communicate their findings or project outcomes in both written and oral forms.

Prerequisite: MEC601

SPECIAL TOPIC

MEC611- ADVANCED MECHANICS OF MATERIAL (3 credit hours)

This course is a continuation of mechanics of materials. It offers more analytical and experimental approaches, giving a more generalized treatment of the stress and strain. Numerical and experimental techniques in stress analysis are also introduced. This course also provides an insight to the theory of plasticity. The theory is important in the understanding the mechanics of formation, that is, the processes whereby the materials are prepared and converted into particular desired forms.

MEC613 – MECHANICS OF COMPOSITE MATERIAL (3 credit hours)

The application of conventional materials is not sufficient to meet the demand of modern structures. Modern materials have often been the choice in design. One of these materials, which is light yet strong, is composite material. This course covers the fundamental aspects of the mechanics of composite materials and their applications. These include the understanding of fiber, matrix, mechanical properties, macro mechanical and micromechanical properties, laminate structure, lamination theory, failure theories and fabrication method. Through the lab works and mini project, students will be trained to conduct computational analysis on composite structures

MEC624 – ADAPTIVE CONTROLS (3 credit hours)

The course covers fundamental aspects and concepts in adaptive control, adaptive control schemes, properties of adaptive systems, deterministic, stochastic and predictive self-tuning regulators, model-reference adaptive systems, and stability, convergence, and robustness analysis for linear and nonlinear system.



MEC635 – DESIGN OPTIMIZATION (3 credit hours)

This subject deals with design optimization. Methods of optimization will be introduced, for single design variables as well as multi design variables, for unconstrained optimization as well as constrained optimization. The optimization methodologies are based on mathematical programming. Linear Programming is also discussed in this course. Laboratory works on the use of optimization software to optimize various mechanical engineering designs will be given.

MEC642 – LUBRICATION AND MACHINES ELEMENTS (3 credit hours)

The course provides foundations of lubrication of machine elements in various aspects. The course covers several key areas of lubrication study including lubrication regime, selection of lubrication, lubrication related problems, lubrication management system. Machine elements such as bearings, gears, cams, chains, and seals all have moving parts. In machine operations, the surfaces of the moving parts will rub against each other and sometimes lubrication is introduced to reduce friction. Through this course, emphasis is given to design aspects of this lubrication mechanism. This is to prepare students with knowledge and ability to solve engineering problems related to industrial lubrication.

(Note: self-study and field work)

MEC651 – MECHANICS AND THERMODYNAMICS OF PROPULSION (3 credit hours)

In this course students will study and analyze the specific components of rocket and gas turbine systems. They will perform mathematical engineering analysis of the different types of propulsion elements and calculate their effect on the overall system performance. This will involve small conceptual design projects of a rocket, gas turbine, and/or ramjet propulsion systems that they will optimize to meet specified requirements.

MEC681 – MATERIALS FOR ENGINEERING APPLICATION (3 credit hours)

The course is design for the student who wishes to understand and learn about the exciting materials developments which are affecting us all in today's world. The course will introduce the structures and properties of metals, ceramics, polymers (plastics), composites, and materials in many engineering applications. Students will also gain an appreciation for the processing and design limitations of materials used in everyday applications.

MEM665 – ROBOTICS & AUTOMATION (3 credit hours)

The course will first focus on the importance of robotics and automation technology. Students will then be highlighted on robotics technology with a view for them to appreciate industrial robotics application in industry. They will also be taught on automation system mainly with the design and control of pneumatics, electrical and hydraulics as well as the study on fundamental of feedback control theory. Programmable Logic Controls

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that is part of the design of robotics and automation system will also be highlighted. Sensors and vision system that is an integral part of the robotics technology will be emphasized in this course.

MEC612 – FRACTURE MECHANICS (3 credit hours)

This course introduces the advanced concepts in mechanics of materials and fundamental principles of fracture mechanics and its applications to metallic materials. The principles are then extended to other materials, e.g. polymer and polymer matrix composite materials under various loading conditions.

MEC630 – FINITE ELEMENT METHOD (3 credit hours)

This course deals with the concept and analysis of finite element method. This course provides an effective tool/method to solve complex mechanical engineering problems which include structural analysis, vibration and heat transfer. Student will be trained to use finite element software to perform engineering analysis on industrial products.

MEC641 – COMPUTATIONAL FLUID DYNAMICS (3 credit hours)

Overview of Computational Fluid Dynamics, students need to do revision on basic equation; turbulence and its modelling, convection-diffusion problems; solution algorithms and characteristics of commercially available software.

MEC652 – WIND TURBINE DESIGN (3 credit hours)

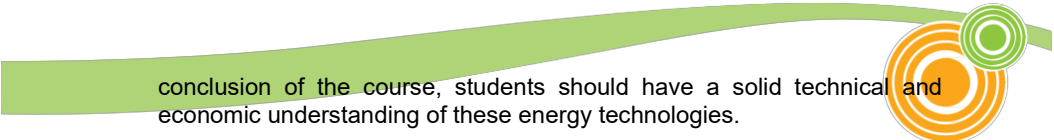
The course covers principles of wind power production, design of wind turbines from aerodynamics point of view, location and design of wind farms. The modeling and analysis aspect of the topics discussed in the class will be illustrated with examples and case studies.

MEC654 – FIRE PRECAUTION ENGINEERING (3 credit hours)

The course covers revision on British units and dimensions, SI and CGS units; local by law with respect to passive and active precaution requirement and automatic fire detection and alarm system; standard system requirement for various types of active precaution; evaluation of required safe evacuation time and application of Computational Fluid Dynamics towards estimation of available safe evacuation time for various emergency response scenarios.

MEC655–RENEWABLE AND SUSTAINABLE ENERGY AND TECHNOLOGY (3 credit hours)

This course provides education in the technological and economic assessments of the important current and emerging sustainable energy technologies. The topics covered focus on problems and solutions related to energy resources, extraction, conversion, storage and end-use related to the extent of sustainability of current energy practices and emphasizes meeting local and global energy needs in the 21st century in a sustainable manner. Energy savings potentials of the various consumption pathways will also be examined. The course will help students analyze problems on various practices of energy systems and to evaluate the feasibility of possible solutions to these problems which cover both areas: renewable energy and energy efficiencies. At the



conclusion of the course, students should have a solid technical and economic understanding of these energy technologies.

MEM634- ERGONOMIC DESIGN (3 credit hours)

This course provides the details about the human interaction with work task and technology. Guidelines are given for amplifying human capabilities, utilizing human abilities, facilitating human efficiencies and avoiding over-loading or under-loading. Details are presented about the human characteristics for the appropriate design of the living and work environment. Regulations governing safety and health aspects in working environment are presented.

MEM 661 – APPLIED WELDING ENGINEERING (3 credit hours)

The course covers fundamental knowledge and principles in Welding Engineering, Quality Assurance in Welding, Welding Automation and Simulation. The course includes Classification and Development of Welding Technologies, Weldability of Materials, Welding Cracks, Designation of Welding Electrodes, Acceptance Criteria of Discontinuities, Standard Welding Symbols, application of International Welding Standards and Codes of Practice, Rules and Regulation, Welding Inspection and Evaluation, Design, Automation and Simulation in welding.

MEM673 – WORLD CLASS MANUFACTURING (3 credit hours)

The course area covers from the historical event on how the Japanese struggle and survive after the Second World War to rebuilt their country's economy back on track through industrialization. It also covers on the various successful World-Class Japanese manufacturing techniques such as TQC, Kaizen, QCCs, Kanban, JIT-Zero Inventory, to name a few for this subject. The famous Toyota Production System will be highlighted and be the core reference in explaining the theory behind World-Class Manufacturing concept.

MEM677 – Project Management (3 credit hours)

This course discusses necessary factors for the successful project management. Topics include project management concepts, needs identification, the project manager, teams, project organizations, project communications, project planning, scheduling, control and associated costs. Project management software tools are an integral part of the course. Case studies and group work are also be employed

MEM678 – Total Quality Management (3 credit hours)

This course is organized according to traditional management topics. This organization helps students to see the parallels between TQM and management theories. The course is divided into six sections:

In the first part of the course students are introduced to fundamental principles of TQM. Second section turned the attention to the role of quality system, and how TQM relates to topics such as organizational design and change. Section 3 presents the themes of the tools and the improvement cycle in TQM. Section 4 discussed TQM in the context of organisational, communication, management role responsibilities and



teamwork requirement. In section 5, discussed the implementation of TQM on both the content and process of competitive strategy. In section 6 some cases in TQM are be discussed.

COURSE DESCRIPTION

B) BACHELOR OF MECHANICAL ENGINEERING (MANUFACTURING) (HONS) - EM221/EM241

SEMESTER 1

MEC400 – INTRODUCTION TO ENGINEERING AND PROBLEM SOLVING (3 credit hours)

This course introduces the engineering profession and aspects related to it, and the systematic approach, basic principles and selective computational tools for solving and presenting engineering problems. The following topics will be covered; Engineering profession, Introduction to mechanical engineering design, Engineering solutions, Data acquisition and representation, Engineering approximations, and Dimension, units and unit conversions. Group work introduces students to working in a team to collectively undertake and complete the assigned tasks. The computational tools useful for solving engineering problems are covered in the practical sessions. Industrial visit to expose students to the engineering world is recommended.

Prerequisite: None

MEC412 – ENGINEERING STATICS (3.5 credit hours)

This course covers basic principles in statics. The course begins with basic concepts of mechanics *i.e.* space, time, mass, and force, the concept of vectors and laws governing addition and resolution of vectors, and followed by the equilibrium of particles and rigid bodies. It then proceeds to simple practical applications involving the analysis of forces in structures, machines, and problems involving friction. The course also covers the first and second moments of area and mass.

Prerequisite: None

MEC431 – ENGINEERING DRAWING (3 credit hours)

This course introduces the basic concepts in technical and mechanical engineering drawing and familiarizes students with the use of drawing instruments and aids in preparing basic geometrical drawing of simple objects. Topics covered includes principles of orthographic projection, isometric drawings, sectioning drawing, development of part and product drawing, drawing standards and practices, fit and tolerances, working drawings, and fabrication drawings. Students will be trained to do manual drawing and CAD practices.

Prerequisite: None

**MEM460 – ENGINEERING WORKSHOP PRACTICE (2 credit hours)**

The course covers lectures on basic understanding and 'hands on' experiences on workshop related activities. The lectures are on the overall pictures of workshop practice, machines, materials and safety aspects. The 'hands on' experience covers the various basic workshop crafts, forming and metal cutting processes and fabrication methods such as hand tools, sheet metal working, lathe work, milling work, foundry and welding activities.

Prerequisite: None

MAT435 – CALCULUS FOR ENGINEERS (3.5 credit hours)

This course consists of three chapters: methods of integration, functions of two and three variables and differential equations. In the first chapter, methods discussed are by parts, trigonometric integrals, trigonometric substitution and integration of rational functions. In chapter three, first and second order differential equations will be discussed. Applications in engineering and sciences will be covered for chapter two and three.

Prerequisite: None

HBU111-NATIONAL KESATRIA I (1 credit hour)

State Kesatrias of the course emphasizes those aspects of a balanced proficiency of soft-skill namely self-discipline and skills. These two components will be applied to all students to be able to be the generation that has a high stage of self-discipline, spirit of competitiveness and a strong fighting spirit and national patriotism and next thankful to Allah and to thank the leader. This course cover the components developed discipline, management and construction of self and ethics in the content of implementing the national Kesatria military training.

SEMESTER 2**MEC441 – FLUID MECHANICS 1 (3.5 credit hours)**

This course covers the introduction of fundamental fluid mechanics theory including properties of fluid, hydrostatics and control volume analysis. Applied topics covering dimensional analysis and similarity, incompressible flow in pressure conduit and flow measurement are also taught.

Prerequisite: None

MEC451 – THERMODYNAMICS (3.5 credit hours)

The course is designed for students studying thermodynamics for the first time at degree level. Considerable emphasis is placed on the understanding and application of the first law and second laws of thermodynamics. Fundamental concepts and principles of various thermodynamics plants and machineries are covered in this course.

Prerequisite: None



MEC454 – THERMOFLUIDS LAB (1 credit hour)

The course consists of two parts, *i.e.* topics in thermodynamics and fluid mechanics. It provides the opportunity for the students to operate under supervision various experimental equipment. Students shall complete with confidence all laboratory experiments and to relate them to theoretical understandings of thermofluids

Prerequisite: MEC441

MEC481 – MATERIALS SCIENCE (3.5 credit hours)

This course covers some fundamentals of materials science, which are necessary for the understanding of materials properties for their appropriate applications. The major families of materials such as metals, ceramics, polymers and composite are discussed for their structures, properties and applications.

Prerequisite: None

**CSC430 – COMPUTER PROGRAMMING AND APPLICATIONS
(3 credit hours)**

This course is designed for students to study engineering programming. Fundamental concepts and principles of the chosen computer programming software are covered in this course. Considerable emphasis is placed on the understanding and application of computer programming.

Prerequisite: None

**CTU551 – ISLAM CIVILIZATION AND ASIAN CIVILIZATION
(2 credit hours)**

This course describes the science of civilization that content introduction of a civilization studies and interaction between different civilization (Malay, Chinese & Indian). The role of Islam in Malay Civilization is major role in building society of Malaysia. The course focuses on contemporary issues of Islamic civilization and the civilization of Asia, Islam Hadhari and the development process.

HBU121-NATIONAL KESATRIA II (1 credit hours)

National Kesatria II is a continuation course of National Kesatria I which includes three major components, discipline, physical development and personal skills as well as spiritual development. This course will expose students to practice the method described above to create students who are competent, have the outstanding leader and a balanced personality in terms of mental, physical and spiritual in line with the demands of religion, race and country



SEMESTER 3

MEC411 – MECHANICS OF MATERIALS (3.5 credit hours)

The course deals with the study of stresses and strains in deformable bodies under axial loading, torsion, bending, and combined loadings. The study is restricted to the linear-elastic response of the bodies. It covers the transformations of plane stress and strain including the method of Mohr's circle, deflections of beams, buckling of columns, and strain energy.

Prerequisite: MEC410

MEC420- DYNAMICS (3.5 credit hours)

The course covers both kinematics and kinetics of particles and rigid bodies in planar and spatial motion. The course emphasizes the use of both scalar and vector approaches for solving 2D and 3D rigid bodies' problems in dynamics. The rigid body dynamics will be focused mainly in this course.

Prerequisite: MEC410/MEC421

MAT455 – FURTHER CALCULUS FOR ENGINEERS (3.5 credit hours)

This course consists of topics in finite series, partial derivative, multiple integral and vector calculus.

Prerequisite: MAT 435

EPE491 – ELECTRICAL POWER AND MACHINES (3.5 credit hours)

The course covers introduction to electrical supply system, single and three phase supply, elements of industrial power system, design, operation and maintenance, industrial applications of electrical machines and power transformers, and single phase motors.

Prerequisite: None

BAB401-ARAB LANGUAGE I (2 credit hours)

This course is beginning level 1. At this stage students will be guided to mastering basic Arabic. Expansion of the simple and appropriate course would serve to strengthen the language to the students in learning the four language skills at the beginning.

Prerequisite: None

HBU131-NATIONAL KESATRIA III (1 credit hour)

These courses will produce students who have personality perfectly in line with the demands of religion, race and nation. In addition, for

have to strengthen the foundation of soft skills in leadership, charisma and skills in social affairs and also has its own identity and spirit of the fighting spirit and heroism as well as sensitive to development efforts and well-being of their race, religion and country. Students are also able to practice the skills needed by all the time.



SEMESTER 4

MEC424 – APPLIED MECHANICS LAB (1 credit hours)

The course consists of three parts, *i.e.* topics in mechanics of materials; material science; and dynamics and vibrations. It provides the opportunity for the students to operate under supervision various experimental equipment. Students shall complete with confidence all laboratory experiments and to relate them to the theoretical understandings.

Prerequisite: MEC411/MEC420/MEC481

MEC435 – COMPUTER AIDED DESIGN (3 credit hours)

This course introduces and applies computer hardware, its peripherals and software that are essential for Computer Aided Design (CAD), Computer Aided Engineering (CAE) and Computer Aided Manufacturing (CAM) leading to design process and the role of CAD. The topics including the Parametric and Non-Parametric Profile, Constructive Geometric Modelling, Engineering Drawing, and Mechanical Assembly Design. The integration of steps in engineering design and manufacturing is described by applying the CAD model in design process.

Prerequisite: MEC431

MEC442 –FLUIDS MECHANICS II (3.5 credit hours)

This course is a continuation of Fluid Mechanics 1. The course covers the Differential Approach to Flow Analysis; Potential Flow; Flow Past Immersed Bodies; Compressible Flow; Boundary Layer and Fluid Machinery.

Prerequisite: MEC441

MEM461 – Manufacturing Processes 1 (3 credit hours)

This course provides the understanding of the different types of manufacturing processes usually employed in industries. It includes the processing of metal casting, metal forming and shaping processes, sheet-metal working, powder metallurgy, ceramics, glasses, polymers, rubber, polymer matrix composite and integrated circuits. This course also includes the competitive aspects of manufacturing processes.

Prerequisite: MEM460

MAT565 – ADVANCED DIFFERENTIAL EQUATION (3.5 credit hours)

This course consists of Laplace transforms, system of linear first order differential equation, Fourier series and boundary value problem. In Fourier series, the students will learn how to write any periodic functions in a Fourier series. The students will also learn

Laplace transform as a tool to solve ordinary differential equations and system of first order differential equation. The last chapter is to solve the boundary values problems which include the wave equation by using the method of separation of variables and Fourier series.

Prerequisite: MAT455



BAB451-ARABIC LANGUAGE II (2 credit hours)

This course is an advanced course II after level I in BAB401. At these stage students is motivated to continue their language skills on the basis that they have learned. Increase the appropriate course content is expected to member strengthening the language to the students in learning the four language skills at a moderate level.

CTU553 – ETHNIC RELATION (2 credit hours)

This course discusses the basic concepts of culture and ethnic relations, examines the development of ethnic relations in Malaysia, creating molded Malaysian society and the intricate relationship between the ASEAN regions, understand and address global challenges in cultural and ethnic groups in Malaysia and the Asia and introduce ethnic students from Islamic perspective.

SEMESTER 5

MEC 531 – MECHANICAL ENGINEERING DESIGN I (4 credit hours)

This course covers the Mechanical Design Process and Design of Mechanical Elements. It includes failure theories for both static and fatigue conditions. One integrated design project from concept to Blue Print/Production Drawing is also included.

Prerequisite: MEC411/MEC435

MEC551 – THERMAL ENGINEERING (3.5 credit hours)

The course begins with the introduction of thermodynamics and heat transfer and the relations with energy utilization and environment. The fundamentals of heat transfer mechanisms of conduction, convection, and radiation are introduced as analytical tools to solve various energy problems. Engineering systems with major heat transfer applications is analyzed. The principle of combustion, gas mixtures and stoichiometry are exposed to the students. Refrigeration and air conditioning principles are introduced with respect to major energy transfer applications.

Prerequisite: MEC451

MEC554 – THERMALFLUIDS LAB (1 credit hour)

The course consists of two parts, *i.e.* topics in thermodynamics and fluid mechanics. It provides the opportunity for the students to operate under supervision various experimental equipments. Students shall complete with confidence all laboratory experiments and to relate them to theoretical understandings of thermofluids.

Prerequisite: MEC442/MEC551



MEM561 – Manufacturing Processes 2 (3 credit hours)

This course deals with various aspects of manufacturing technology, machining and the tools used in manufacturing industry to convert the raw materials into usable products. It provides undergraduate students with an in-depth overview of production technology, applied mathematical tools and scientific principles to a variety of production technology problems. The course also includes the introduction of ergonomics and quality control related to production.

Pre-requisite: MEM461

MEM564 – MANUFACTURING PROCESSES LAB (1 credit hour)

The course provides students with hands-on experience on the operation, evaluation and overcoming problems related to basic manufacturing practices such as in metal casting, welding and thermal cutting, metal cutting, non-traditional machining and the use of metrological instruments in this field. Demonstration and practical on certain manufacturing practices will be carried out.

Prerequisite: MEM560

MEC521 – VIBRATIONS (3.5 credit hours)

The course emphasizes understanding of the fundamental concepts of vibrations. It begins with free vibration of single-degree-of-freedom for undamped and damped systems followed by forced vibration with harmonic excitation. Multi-degree-of-freedom systems, equations of motion and solution methods are introduced after which the determination of natural frequencies and mode shapes are further explored. The course concludes with the understanding of continuous media vibrations.

Prerequisite: None

BAB501-ARABIC LANGUAGE III (3.5 credit hours)

This Course is a continuation of the BAB401 and BAB451. Students at this level will be guided to strengthen and improve their language skills based on two stages that have been learned. Expansion of the teaching appropriate language is expected to make the strengthening of the students in the various language skills

SEMESTER 6

MEC500-NUMERICAL METHOD WITH APPLICATIONS (3 credit hours)

The course covers introduction to mathematical modeling and computing environment, numerical approximations and error analysis, solution methods of linear and nonlinear equations, system of linear algebraic equations, curve fitting, numerical differentiation and integration, and numerical solutions of ordinary differential equations, convergence and stability of the methods. Use of computer software in solving engineering problems is emphasized.



MEC522 – CONTROL ENGINEERING (4 credit hours)

The course covers introduction to mathematical modeling and control engineering, models of industrial control devices and systems, basic concepts and principles of feedback controls, system stability and its criteria, performance specifications, frequency response analysis, control system design via state-space formulation, and control design applications.

Prerequisite: MEC420

**MEC532- MECHANICAL ENGINEERING DESIGN III
(3 credit hours)**

This course is a continuation of MEC531. It incorporates and integrates previously acquired knowledge and skills in the study of mechanical engineering through a real-world and open-ended engineering project. Students will continue their design efforts until completion. Product design using and based on current standards, codes and practices is emphasized.

Prerequisite: MEC531

MEM575 – INDUSTRIAL MANAGEMENT (3 credit hours)

This course covers theoretical and practical aspects of industrial management. It is based on principal characteristics of the typical manufacturing industry. Topics include concepts of production and operation management with specific techniques in production planning and control, procurement and inventory control, and other aspects on industrial management such as project management, TQM and maintenance management.

Prerequisite: None

**MEC523 – APPLIED ELECTRONICS AND MICROPROCESSOR
(3.5 credit hours)**

This course is to provide essential knowledge and understanding to students on the operation and applications of diodes, transistors and operational amplifiers. It also covers the topics on digital principles and microprocessor system, programming, interfacing and applications.

MEC699 – INDUSTRIAL TRAINING (4 credit hours)

This is a 12 weeks (minimum) course of external, full-time, and mechanical-engineering-career-related experiences designed to enhance the student's understanding and readiness for an intended career with a business, industry, or government agency. It is aimed at helping them to improve their competency level with direct hands-on or related employment enrichment programs and with exposure to the actual working atmosphere which they will eventually face after graduation. During the training, the students must conduct their activities in accordance with the requirements as approved by the Faculty and shall abide by the personnel regulations of the industry. Students are assessed

Student **HANDBOOK 2020/2021**



by both, supervisor from the industry and the evaluating lecturer. A comprehensive written report on the industrial training is required.

SEMESTER 7

MEC600 – ENGINEERS IN SOCIETY (3 credit hours)

This course has been designed to accommodate the “Engineers in Society” syllabus of the Institute of Engineers (Malaysia). The course will comprise of topics that are examinable (Topics 1 – 9) and others that are non-examinable (Topics 10 – 11). Examinable topics cover a wide range of management theories and practices while the non-examinable topics would relate to current issues and the inter-relationships between the engineer and society. The non-examinable topics will be delivered in the form of guest lectures by professionals from both private and public sectors. Lectures for the examinable topics would be conducted in a normal classroom manner.

Prerequisite: None

MEC601 – FINAL YEAR PROJECT 1 (3 credit hours)

This course is the first part of the two-phase Final Year Project. It provides the opportunity for students to apply knowledge and skills acquired in all previous courses to undertake problem identification, formulation and solution of a real-world engineering problem. The course is aimed to foster independent thinking and develop problem-solving skills. It focuses on the ability of the students to first identify problem of their own interests and then formulate it for further development in the next following semester. The students will have to do a literature review and come up with project planning and proposal.

Prerequisite: MEC531

MEM603 – OCCUPATIONAL SAFETY AND HEALTH (3 credit hours)

This course covers the fundamentals of occupational safety and health in the working environment. These include the implementation and regulation of Occupational Safety and Health Act (OSHA) in Malaysia. The course also covers the identification of industrial hazards, the types and inspection of the industrial hazards concerned, and addresses the analysis and control of such hazards. The types of hazards included in this course are industrial hazard, mechanical hazard, chemical hazard, physical hazard and psycho-social hazard. Besides that, the course also emphasizes on industrial hygiene, accident causation, accident investigation and accident analysis. Safety and health management and implementation of health regulation will also be covered.

Prerequisite: None

ENT600 – TECHNOLOGY ENTREPRENEURSHIP (3 credit hours)

In this course, students will be exposed to concepts and philosophies of entrepreneurship. It is expected that they apply the knowledge gained above as a basis for the creation and development of technology based business venture.



SEMESTER 8

MEC602 – FINAL YEAR PROJECT II (4 credit hours)

This course is the second part of the two-phase Final Year Project. It provides an opportunity for students to apply knowledge and skills acquired in earlier courses to the solution of an engineering problem. The second part focuses on the execution of the project, project evaluation, testing, and analysis toward completion and achievement of the project objectives. Students will have to communicate their findings or project outcomes in both written and oral forms.

Prerequisite: MEC601

SPECIAL TOPIC

MEM631 – Design for manufacture and Assembly (3 credit hours)

This course covers theoretical and practical aspects of DFA and DFM. Students will cover the theory during lectures while the practical will be conducted in computer lab. Students will learn to use DFMA software and are expected to complete the lab assignment using the prescribed software.

MEM634- ERGONOMIC DESIGN (3 credit hours)

This course provides the details about the human interaction with work task and technology. Guidelines are given for amplifying human capabilities, utilizing human abilities, facilitating human efficiencies and avoiding over-loading or under-loading. Details are presented about the human characteristics for the appropriate design of the living and work environment. Regulations governing safety and health aspects in working environment are presented

MEM636 – Concurrent Engineering (3 credit hours)

This course provides an overview of the principle of concurrent engineering and its current industrial practice in new product development process. It looks closely at tools that facilitate the product development process. The students are exposed to the contemporary issues in Concurrent Engineering through a combination of directed reading and practical. The use of computational tools will be introduced to the students for hands-on applications of computer-aided concurrent engineering

MEM637 – Computer Modeling and Rapid Manufacturing (3 credit hours)

This course provides an overview of advance computer aided design applications in manufacturing industries. It looks closely on the design of product development with complex shapes available in the CAD systems. Rapid prototyping is also given emphasis.



MEM 661 – APPLIED WELDING ENGINEERING (3 credit hours)

The course covers fundamental knowledge and principles in Welding Engineering, Quality Assurance in Welding, Welding Automation and Simulation. The course includes Classification and Development of Welding Technologies, Weldability of Materials, Welding Cracks, Designation of Welding Electrodes, Acceptance Criteria of Discontinuities, Standard Welding Symbols, application of International Welding Standards and Codes of Practice, Rules and Regulation, Welding Inspection and Evaluation, Design, Automation and Simulation in welding.

MEM665 – ROBOTICS & AUTOMATION (3 credit hours)

The course will first focus on the importance of robotics and automation technology. Students will then be highlighted on robotics technology with a view for them to appreciate industrial robotics application in industry. They will also be taught on automation system mainly with the design and control of pneumatics, electrical and hydraulics as well as the study on fundamental of feedback control theory. Programmable Logic Controls that is part of the design of robotics and automation system will also be highlighted. Sensors and vision system that is an integral part of the robotics technology will be emphasized in this course.

MEM673 – WORLD CLASS MANUFACTURING (3 credit hours)

The course area covers from the historical event on how the Japanese struggle and survive after the Second World War to rebuilt their country's economy back on track through industrialization. It also covers on the various successful World-Class Japanese manufacturing techniques such as TQC, Kaizen, QCCs, Kanban, JIT-Zero Inventory, to name a few for this subject. The famous Toyota Production System will be highlighted and be the core reference in explaining the theory behind World-Class Manufacturing concept.

MEM677 – Project Management (3 credit hours)

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MEM678 – Total Quality Management (3 credit hours)

This course is organized according to traditional management topics. This organization helps students to see the parallels between TQM and management theories. The course is divided into six sections:

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In section 6 some cases in TQM are be discussed.



AWARDS AND GRADING SCHEME

AWARDS AND GRADING SCHEME

Award of Degree

Student will be awarded a Bachelor's degree for both EM220/EM221 when they fulfill all the following criteria:

- i. Obtained a minimum Cumulative Grade Point Average (CGPA) of 2.00;
- ii. Passed all courses as required by the programme of study;
- iii. Fulfilled all the conditions and requirements set by the University;
- iv. Approved by the University Senate.

CLASSIFICATION

All students registered for the Bachelor degree program are permitted to attempt the full honours program. The Bachelor degree classification is determined as follows:

Degree Classification	CGPA
First Class	3.50 - 4.00
Second Class Upper	3.00 - 3.49
Second Class Lower	2.20 - 2.99
Third Class	2.00 - 2.19



AWARDS AND GRADING SCHEME

Grading Scheme

After the final score has been finalized (inclusive of all assessments and final exam scores), the grade will be categorized according to the following marking scheme:

Range of Score	Grade	Grade Points	Result
90 - 100	A+	4.00	Pass
80 - 89	A	4.00	Pass
75 - 79	A -	3.67	Pass
70 - 74	B +	3.33	Pass
65 - 69	B	3.00	Pass
60 - 64	B -	2.67	Pass
55 - 59	C +	2.33	Pass
50 - 54	C	2.00	Pass
47 - 49	C -	1.67	Fail
44 - 46	D +	1.33	Fail
40 - 43	D	1.00	Fail
30 - 39	E	0.67	Fail
0 - 29	F	0.00	Fail



FINAL YEAR PROJECT

Final Year Project

Final Year Project (FYP) is part of the requirements for the Bachelor degree programme. The topic of the FYP are selected from many areas such as thermofluids, engineering management, mechanics, robotics, manufacturing and other research areas in mechanical engineering. The FYP is supervised by a project supervisor and coordinated by a Final Year Project Coordinator. The lecturer who offers the topics shall be appointed as the project advisor. Students who have finished industrial training may conduct their FYP based on their industrial training project.

The project is carried out in two semesters, semester 7 and semester 8. During these semesters, students are expected to integrate and implement their knowledge and skills obtained throughout their studies. Students will work under the supervision of a lecturer. The roles of a supervisor are to guide and monitor the progress of the student's works. All activities from planning, implementing and scheduling must be recorded in a log book.

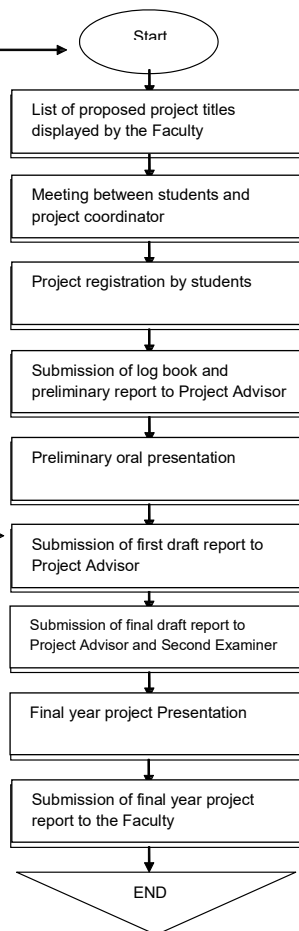
The assessment will be done at the end of semester 7 and 8. In semester 7, each student is required to defend their proposal through an oral presentation. In addition, assessment will be done based on the supervisor evaluation in log book and student's preliminary report. Students will continue and complete the project until the end of semester 8 and the assessment will be based on logbook, final report, poster presentation and second examiner of the final report.



FINAL YEAR PROJECT

Phase I (MEC601/MEM601)
1st semester of the Final Year Project

Phase II (MEC601/MEM601)
2nd Semester of the Final Year Project





INDUSTRIAL TRAINING

INDUSTRIAL TRAINING

1. Introduction

Industrial training refers to work experiences that are relevant for professional development prior to graduation. One of the requirements for the award of the Bachelor degree is that students must complete at least 8 weeks (semester break) of Industrial Training.

Students should note that the Industrial Training is an essential component in the development of the practical and professional skills required by engineers to support forthcoming graduate employment. Many employers regard this period as a chance to vet new employees for the future employment.

All students should make considerable effort and give sufficient thought in obtaining the most relevant and effective Industrial Training. It is desirable to experience a wide range of reentering activities. Developing an awareness of general workplace behavior and interpersonal skills are important objectives of the industrial training experience.

Normally students shall undergo Industrial Training during semester six and obtain places for Industrial Training in any appropriate company of their own choice. The Faculty's Coordinator of Industrial Training (CIT) will assist eligible students in the application process as well as responsible on the conduct of the Industrial Training cycle. Students are advised to contact the CIT's office for any inquiry and regularly check for latest information and updates on Industrial Training activities.

During the Industrial Training period, students are required to always observe the rule and regulation while attending the training and to record daily activities in the provided logbooks. At the end of the industrial training, each student is required to submit a full report, which contains detailed job description carried out by them. The academic staffs also help to monitor the students during the training sessions to assess the suitability of the training programme.

Assessment for the industrial training are based on daily logbook, industrial training report, industrial supervisor and evaluation from appointed academic staffs.



INDUSTRIAL TRAINING

2. Objectives

Industrial training is one of the requirements for the award of a Bachelor degree. The objectives of the programme are:

1. To expose students to actual working culture and industrial practice.
2. To allow students to extend their theoretical knowledge into practice.
3. To motivate students to practice the right working attitudes and professionalism to increase their employability potential.
4. To facilitate students to potential employers.

At least three vital experiences to be provided by any Industrial Training Centre shall include but not limited to:

1. Basic skills of technical staff
2. Application skills of engineers
3. Management skills

3. Rules and Regulations

3.1 Company/ Industry Selection

All students should make considerable effort and give sufficient thought into obtaining the most relevant and effective Industrial Training in order to achieve the objective of the industrial Training. The selection for place/company/organization for Industrial Training shall meet the following criteria;

- a) The organisation and the training programme/project it offers are accepted by the faculty.
- b) The organisation is able to provide supervision and conduct assessment on the student during the training period according to the faculty evaluation system.
- c) The duration of the industrial training meets course requirement.
- d) The organisation indicates its preference to have the particular student for attachment.
- e) The student is not associated with the company and has no immediate family members, close relatives or friends either working in the organisation or issuer director's or substantial shareholders of the



organization which may give rise to conflict of interest. Failure to abide to these requirements will render the industrial training invalid.

INDUSTRIAL TRAINING

3.2 Attending Industrial Training

- a) Student attending industrial training is considered as a fulltime UiTM student thus must abide by the University rules and regulations.
- b) Student must give full attention and behave professionally as a University student during the training period.
- c) Student must adhere to the supervisor instruction regarding to any work related assignment.
- d) Student must attend the training on time according to usual office hours of the company. In case of emergency, inform the supervisor and the coordinator of industrial training as soon as possible with a valid document.
- e) Student is not allowed to misuse company's properties.
- f) Student who receives allowance from the company must inform the coordinator industrial training.
- g) Student who behaves unconditionally and against the company rules and regulation can be summoned to attend a trial in the university court for further action.
- h) Student is expected to keep the secrecy of the company while and after attending the industrial training.
- i) Student is not allowed to take any leave during industrial training period. In case of emergency or sickness, a valid Medical Certificate (MC) must be submitted to the supervisor and the Faculty.

3.3 Failure in Industrial Training

Students may fail their industrial training under any of the following conditions:

- a) Poor evaluation and comments from industrial supervisor and visiting lecturer.
- b) Do not follow Industrial Training procedure.
- c) Late or fail to submit final report to the visiting lecturer.
- d) Absence to industrial training without permission from the industry.
- e) Changed industrial training placement without permission from the faculty.
- f) Do not comply with the company/industry rule and regulations.

g) Any act or behavior that against the UiTM regulation.



INDUSTRIAL TRAINING

4. Industrial Expectation

Organizations participating in this Industrial Training are encouraged to provide a structured attachment programme with emphasis on applications, management and hands-on experience to the students:

- a) Apply knowledge learned
- b) Acquire practical skills in a real project-based assignment
- c) Strengthen working values
- d) Gain interpersonal skills by involving in a team-work activities
- e) Utilize safety practice

Host companies are solicited to provide necessary recommendations to improve the programme by filling the evaluation form.

5. Process Flow of Industrial Training

Process	Activities	Time / Duration
Application	Briefing I (Industrial Training Application)	Early March
	Student Application to companies/ industries	Early March
	Application status	June
	Briefing II (Industrial Training Activities) - Log book distribution	Early July
Training	Start Industrial Training	Mid of July
	Submit Reporting Form (on-line)	Week 1
	Visit by Faculty members	Week 6 – 8
	Finish Industrial Training	Week 8
Registration	Student Registration for Industrial Training (MEC698)	Pre-Registration Period
Post-Training	Submit Log book, Industrial Training Report & Evaluation forms	Early October
	Results of Industrial Training	January / February



INDUSTRIAL TRAINING

6. Industrial Training Assessment

The Industrial Training is graded based on evaluation of the logbooks and final reports, evaluations by industrial supervisor and visiting lecturer.

Contributions of each assessment are as follows:

a) Reporting Form

Students are required to fill up On-line Reporting Form within a week after registration at the company/organization.

b) Daily Logbook (20%)

The criteria for logbook evaluation are based on logbook maintenance contents and verifications by industrial supervisor.

Students should be able to:

- i. maintain clear, concise and relevant entries in log-book
- ii. analyze and interpret information in the work place
- iii. demonstrate a good understanding of the job assigned
- iv. explain practical and technical knowledge
- v. provide evidence of written communication, memo, technical drawing etc.

c) Final Report (30%)

The assessments are based on several factors such as industrial environment, industrial experience, industrial project and recommendations. Students must follow the Industrial Training Report Writing Guideline provided by the faculty.

d) Industrial Supervisor Evaluation (40%)

The main criteria are discipline, attitude, communication skills, work efficiency, quality of work, leadership, technical competency and creativity.

e) Visiting Lecturer Evaluation (10%)

Representative of the Faculty of Mechanical Engineering, namely visiting lecturer, will visit the student to evaluate the company and student performance at least once per training session. The criteria are discipline, scope of work, work efficiency, communication skills, achievement and overall performance.



INDUSTRIAL TRAINING

7. Industrial Training Report Writing Guideline

The industrial training report should demonstrate knowledge, practical and engineering skills acquired during the training period pertaining to course and programme outcomes. Development of engineering experience, communication skills and leadership are part of the training expectations. In addition, students are trained to adapt and practice professional engineering ethics and should be portrayed while preparing the technical report. Students should seek advice from their company to ensure that no confidential material is included in the report. The student should be able to present the report to prospective employers, as a complement to their degree.

A copy of report should be submitted to the faculty (through the respective visiting lecturer). Students are strongly encouraged to submit a copy of the report to the Industrial Supervisor and retain a personal copy for themselves.

The report shall follow the following formats:

- a) Front Cover
- b) General Report

The report has to be type-written on white 80 gsm high quality A4 size papers. All pages should be set according to specified margin. The left margin should be 4 cm (for binding purposes) and 2.5 cm for the top, right and bottom margins. Font type 'Times New Roman' with font size 12 should be used with line spacing of 1.5. The text must be printed on one side only. Each page must be page numbered at the mid-bottom. The report has to be properly bound.

- c) Abstract/ Preface

This section is limited to a single (one) paragraph in a single (one) page only. It should consist of brief descriptions of the following:

- i. Activity of the organization
- ii. Summary of the report

- d) Table of Contents

This section should consist of:

- i. Titles



- ii. Sub-Titles
- iii. Page numbers

INDUSTRIAL TRAINING

e) Introduction

Brief and concise description of the company/industry where the student is undertaking the industrial training. The main descriptions are (not more than 3 pages):

- i. History
- ii. Structural of main activity
- lii Objective of practical training
- iv. Scope of training/ schedule
- v. Others deemed necessary

f) Industrial Environment

This section should be the discussion on the industrial environment during the training. The main items are:

- i. Adaptation and adjustment to the industry
- ii. Practice of occupational safety and health environment

g) Industrial Experience

This section should be the description of duties and tasks carried out during the training. It should comply with the training schedule.

h) Industrial Projects

In this section, the student must describe and discuss several selected tasks carried out during the training. The adaptive items to considered are:

- i. Relation between the tasks to the mechanical engineering course
- ii. Integrating the theoretical knowledge with practical works

i) Summary

Student should provide an overall discussion and conclusion with regards to the industrial training undergone. Besides, students should present their views and recommendations to the training programme and/or to the company.



j) References

References should be made in the text to books, technical papers, and standard regulations/laws etc., used during the training period. A complete list of the references must be included.

INDUSTRIAL TRAINING

k) Appendix

Additional information considered appropriate to support the main text such as:

- i. Technical and/or project report during the training
- ii. Technical drawing etc.

Student may also attach a copy of a testimonial or confirmation letter obtained from the company upon completing the practical training.



OUTCOME BASED EDUCATION

Outcome Based Education

Outcome Based Education (OBE) is the paradigm shift resulting from the re-evaluation of Traditional Education (TE). TE narrowly focused on the content and produced students with varying degrees of achievement levels (stratification of achievers). Thus this model did not produce learners, which could perform effectively in the work place. OBE has changed the focus of learning institutions from the content to the learner. According to William Spady, (1998,1999) a major proponent of OBE, three goals drive this approach to creating academic curricula. 1) All students can learn and succeed, but may not be on the same day or in the same way. 2) Each success achieved by a student breeds more success. 3) Academic institutions control the conditions of success.

Curriculum Design for OBE

OBE is a methodology of curriculum design and teaching that focuses on what students can actually do after they are taught. OBE focuses on these key questions as to:

- a) What should the students learn?
- b) What is the motivation for the students to learn it?
- c) How can the academic institution and its resources help students learn it?
- d) How will it be determined what the students have learned (assessment)?

Thus, the OBE's instructional planning process is a reverse of that associated with traditional educational planning. The desired outcome is determined first and the curriculum, instructional materials and assessments are designed around to support and facilitate the intended outcome (Spady 1988; 1993). All curriculum and teaching decisions are made based on how best to facilitate the desired final outcome.



OUTCOME BASED EDUCATION

Sample of Bloom's Taxonomy

Cognitive Skills (C)

KNOWLEDGE

Arrange, define, duplicate, identify, label, list, match, memorize, name, order, outline, recognize, recall, relate, repeat, reproduce, select, state

COMPREHENSION

Classify, convert, defend, describe, distinguish, estimate, explain, express, extend, generalize, give example, identify, indicate, infer, locate, paraphrase, predict, recognize, report, review, rewrite, select, summarize, translate

APPLICATION

Apply, change, choose, compute, demonstrate, discover, dramatize, employ, illustrate, interpret, manipulate, modify, operate, practice, predict, prepare, produce, relate, schedule, show, sketch, solve, use, write

ANALYSIS

Analyze, appraise, break down, calculate, categorize, compare, contrast, criticize, diagram, differentiate, discriminate, distinguish, examine, experiment, identify, illustrate, infer, model, outline, point out, question, relate, select, separate, subdivide, and test.

SYNTHESIS

Arrange, assemble, categorize, collect, combine, comply, compile, compose, construct, create, devise, design, develop, explain, formulate, generate, integrate, manage, modify, organize, plan, propose, repair, rearrange, reconstruct, relate, reorganize, revise, rewrite, set-up, summarize, synthesize, tell, write

EVALUATION

Appraise, argue, assess, attach, choose, compare, conclude, contrast, criticize, defend, discriminate, evaluate, judge, justify, interpret, predict, rate, relate, select, summarize, support, value



OUTCOME BASED EDUCATION

Affective Skills (A)

RECEIVING (willingness to attend)

ask, choose, describe, follow, give, hold, identify, locate, name, point to, select, reply, use

RESPONDING (active participation)

answer, assist, compile, comply, conform, discuss, greet, help, label, perform, practice, present, read, recite, report, select, tell, write

VALUING (worth or value a student attaches to a particular object)

complete, describe, differentiate, explain, follow, form, initiate, invite, join, justify, propose, read, report, select, share, study, work

ORGANIZATION (bringing together different values)

adhere, alter, arrange, combine, compare, complete, defend, explain, generalize, identify, integrate, modify, order, organize, prepare, relate, synthesize

CHARACTERIZATION BY A VALUE

act, discriminate, display, influence, listen, modify, perform, practice, propose, qualify, question, revise, serve, solve, use, verify

Psychomotor Skills (P)

PERCEPTION

Choose, describe, detect, differentiate, distinguish, identify, isolate, relate, select, separate

MECHANISM

Assemble, build, calibrate, construct, dismantle, display, dissect, fasten, fix, grind, heat, manipulate, measure, mend, mix, organize, sketch

COMPLEX OR OVERT RESPONSE

Assemble, build, calibrate, construct, dismantle, display, dissect, fasten, fix, grind, heat, manipulate, measure, mend, mix, organize, sketch

ADAPTATION

Adapt, alter, change, rearrange, reorganize, revise, vary

ORIGINATION

Student **HANDBOOK 2020/2021**



PEO & PO

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEOs are specific attributes expected in graduate within 3 to 5 years after graduation during their career and professional life. These attributes are consistent with the mission and vision of Institute of Higher Learning (IHL).

PEO1 - Engineers adapt and transform the acquired knowledge in public and private sectors with respect to related professional fields.

(KPI: 70% employers' satisfaction on alumni career progression; 25% of alumni holding leadership position having authority and subordinates)

PEO2 - Engineers are expert and competent in their professional fields.

(KPI: 5% of alumni are registered professional engineers or engineering experts or equivalent after five (5) years of employment; 70% of alumni work in related engineering job functions)

PEO3 - Engineers are globally competitive and professionally employed in multinational/international organizations.

(KPI: 30% of alumni work in multinational/international companies or equivalent international levels)

PEO4 - Engineers practice ethical and professional values in their respective fields.

(KPI: 90% of stakeholders/respondents are satisfied with alumni ethical and professional values; 90% of the alumni have received salary increment when time due)



PEO & PO

PROGRAMME OUTCOMES (PO)

Statements that describe what students are expected to know and be able to perform or attain upon graduation. These relate to the skills, knowledge and behaviour that students acquire through the programme. Key Performance Indicator (KPI) for the PO attainment: 75% out of total students should achieve a minimum of 50% marks for each PO at the end of the programme

PO1 - Able to apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to the solution of complex engineering problems.

PO2 - Able to identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences. (WK1 to WK4)

PO3 - Able to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations. (WK5)

PO4 - Able to conduct investigations of complex problems using research-based knowledge (WK8) and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5 - Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, with an understanding of the limitations. (WK6)

PO6 - Able to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems. (WK7)

PO7 - Able to understand and evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental contexts. (WK7)

PO8 - Able to apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice. (WK7)

PO9 - Able to communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.


PO10 - Able to function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.



PO11 - Able to recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PO12 - Able to demonstrate knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PEO & PO

 PEO-PO Mapping Bachelor of Engineering (Hons.) Mechanical (EM220) Bachelor of Engineering (Manufacturing) (Hons.) (EM221/241)		PEO Description			
		Engineers adapt and transform the acquired knowledge in public and private sectors with respect to related professional fields.	Engineers are expert and competent in their professional fields.	Engineers are globally competitive and professionally employed in multinational/international organizations.	Engineers practice ethical and professional values in their respective fields.
	PO Description	PEO1	PEO2	PEO3	PEO4
P01	able to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.	√			
P02	able to identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.	√		√	
P03	able to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations		√		
P04	able to conduct investigation into complex problems using research based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions	√	√		
P05	able to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering activities, with an understanding of the limitations		√		
P06	able to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.				√
P07	able to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development	√	√		
P08	able to apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.		√		√
P09	able to communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions	√		√	
P010	able to function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.			√	
P011	able to recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			√	
P012	able to demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work (including as an entrepreneur), as a member and leader in a team, to manage projects and in multidisciplinary environments.			√	√

MAPPING OF PEO TO PLO AND 9 MOHE LO

PEO	12 PO (EAC REQUIREMENTS)	9 LOD (MOHE)
Engineers adapt and transform the acquired knowledge in public and private sectors with respect to related professional fields. (PEO1)	PO1	LOD1 - Knowledge in specific area (Cognitive)
	PO2	LOD3 - Thinking and Scientific Skills (Cognitive)
	PO4	LOD3 - Thinking and Scientific Skills (Cognitive)
Engineers are expert and competent in their professional fields. (PEO2)	PO3	LOD3 - Thinking and Scientific Skills (Cognitive)
	PO4	LOD3 - Thinking and Scientific Skills (Cognitive)
	PO5	LOD2 - Practical Skills (Psychomotor)
	PO7	LOD6 - Values, Ethics, Moral and Professionalism (Affective)
	PO8	LOD6 - Values, Ethics, Moral and Professionalism (Affective)
Engineers are globally competitive and professionally employed in multinational/international organizations. (PEO3)	PO2	LOD3 - Thinking and Scientific Skills (Cognitive)
	PO10	LOD9 - Leadership Skills (Affective)
	PO11	LOD7 - Information Management and Life-Long Learning (Affective)
Engineers practice ethical and professional values in their respective fields. (PEO4)	PO6	LOD5 - Social Skills, Teamwork and Responsibilities (Affective)
	PO8	LOD6 - Values, Ethics, Moral and Professionalism (Affective)
	PO9	LOD4 - Communication Skills (Affective)



RULES AND REGULATIONS

RULES AND REGULATIONS

General rules

Students should always refer to the Academic and Student handbook regarding academic matters and while in the university.

Students should always be aware of the updated information and announcements posted on the notice boards in the faculty.

Attire and Discipline

Proper and formal attire must be worn during lectures and other programmes conducted by the faculty and university.

Male students must wear neck-tie on every Monday during lectures.

No round-neck T-shirt, sandals, or slippers being worn while attending lectures and other official activities.

Remember the University's compound is a Non Smoking Zone.

Students should oblige to the rules and regulations to avoid any disciplinary action taken by the University/faculty.

Examination Rules

Sitting for the final examination papers is compulsory to all students.

Students must check the examination schedule regarding the date, time and venue.

Students must ensure that the examination slip is correct as per registered courses.



RULES AND REGULATIONS

Students must bring together the examination statement and identification card when sitting for the examinations.

Students must adhere to the University's rules and regulations for the final examination before entering the exam hall.

Industrial Training

Industrial training is compulsory to all EM220 and EM221 / EM241 students after passing all the required courses in semesters 1 to 6.

Students must be in good health and fit enough before they can perform industrial internship.

Safety Issues

Students are advised to be aware of all safety rules and regulations of the University/faculty to avoid unnecessary accidents.

The University/faculty is not responsible for any accident occurred due to violation of the rules and regulations.

Student Activities

Students are strictly prohibited from indulging in activities that violate the University Act.

Please refer to the respective Head of Programmes before involving in any activity outside the university.



RULES AND REGULATIONS

Plagiarism

The Faculty of Mechanical Engineering in upholding its professionalism and academic integrity by all means is against all acts and forms of plagiarism by the students. Proper citation and copyright compliance must be adhered by students at all times in their academic work. Students must be aware that stealing someone else's work is wrong and is deemed as intellectual dishonesty which carries stern disciplinary penalties. Some examples amounted to plagiarism but not limited to are:

- i. Copy an article or a paper from the website or an online data base, or from books or journals without a proper citation.
- ii. Cut and paste to create a paper from several sources without proper acknowledgement.
- iii. Quote less than all the words copied. A students quotes a sentence or two and then continues copying from the sources without citing it.
- iv. Fake a citation. Give a citation when one does not actually quote from it.

The following guidelines provide the basic requirements for the acknowledgement of sources in your academic work.

Bibliographies and footnotes

All the sources - printed materials such as books and journals, or electronic materials such as websites, CD-ROM, and electronic mails, and other sources which have been consulted in the preparation of your academic work should be listed in a bibliography shall not be considered as adequate for the specific use of that source within the report. Therefore, the extent of indebtedness to the source must be made clear.



RULES AND REGULATIONS

Quotations

Any sentence or phrase, however small, which is not your original work must be properly acknowledged. It must be placed in quotation marks or clearly indented beyond the regular margin.

Paraphrasing

Any material which is paraphrased or summarized must also be specifically acknowledged in a footnote or in the text.

Facts, Formulas and Ideas

Any facts, formulas, ideas and other kinds of information which are borrowed should be specifically acknowledged in a footnote or in the text. However, those which are widely known and are considered to be in the “public domain” of common knowledge do not always require citation. Students when in doubt should consult any of the faculty member.

Homework, Laboratory Work, Problem Sets and Computer Programmes

The organization and presentation of laboratory and computational courses may vary from one course to another. Often students work in a group and as such, a proper acknowledgement of the extent of the collaborated work must appear when submitting the reports.

In the cases where there are two or more signatories to a submitted report, each student’s signature is sufficient to signify that the student has contributed fairly in the submitted work’

Multiple Submissions

Occasionally the student may be permitted to rewrite an earlier work or to satisfy two academic requirements by producing a single piece of work more extensive than that which would satisfy either requirement on its own. In such cases, the student must obtain a prior written permission of each instructor. In cases where the previously submitted work, or a portion of it, is submitted in its original or revised form to another instructor, the student must also submit the original work with the revised version. If a single extended work is written for

more than one course, a student must clearly indicate that at the beginning of the report.



RULES AND REGULATIONS

Oral Reports

In such cases where written notes for oral reports is to be submitted, students must clearly acknowledge any work that is not of their own in accordance with the requirements stated earlier.

Standard Forms of Reference

Students should refer to sample sheets provided by the faculty for standard format for acknowledgement of sources of references. In general, a precise indication of the source of reference must include the author, title, place and date of publication, and page number.

Definitions of Academic Violations under the Jurisdiction of the Faculty of Mechanical Engineering on Discipline.

With regard to written assignments such as essays, laboratory reports or any other written work submitted officially to fulfill the academic requirements, the following acts are considered as academic infractions:

Unauthorized Multiple Submission

Failure to obtain a prior written permission from relevant instructors for the submission of any work that has been submitted before in identical or similar form in fulfillment of any academic requirement at any institution.

False Citation

Citation of a source from which the material is in question is not truly obtained.

False Data

Use and submission of false data or information



LIST OF FORMS

Borang BP 89-3(1) Pin FKM

BAHAGIAN PEPERIKSAAN UNIVERSITI TEKNOLOGI MARA

PERMOHONAN SEMAKAN SEMULA KEPUTUSAN PEPERIKSAAN

- PERHATIAN :**
1. Borang isi perlu diisi dengan lengkap.
 2. Sila kembalikan kepada Pejabat Am Fakulti dalam tempoh yang ditetapkan.
 3. Sila sertakan Resit bayaran sebanyak RM50.00 bagi setiap matapelajaran.
 4. Pelajar tidak dibenarkan memohon semakan untuk mendapatkan markah belas kasihan dengan tujuan menaikkan PNG/HPNG.

Nama :	No. KP UiTM :
Fakulti : Kejuruteraan Mekanikal	Kod Kursus : EM
Alamat :	
Tel :	

Bil	Kod & Nama Matapelajaran	Nama Pemeriksa	Kumpulan
1.			
2.			
3.			
4.			
5.			

Tandatangan Pelajar

Tarikh: _____

Student **HANDBOOK 2020/2021**

Tandatangan Dekan

Tarikh: _____



LIST OF FORM

Borang BP 89-3(2) Pin FKM

BAHAGIAN PEPERIKSAAN
UNIVERSITI TEKNOLOGI MARA

BORANG PERMOHONAN SEMAKAN SEMULA KEPUTUSAN PEPERIKSAAN
(Diisi Oleh Penyemak Dalam 2 Salinan)

Nama :	No KP UiTM:
Kursus : EM :	
Nama Matapelajaran :	Kod M/P :

Keputusan Peperiksaan Bulan : _____

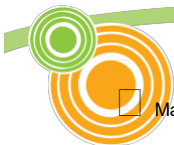
No Soalan	Markah sebelum semakan	Markah Selepas Semakan	Sebab Perubahan Markah
Jumlah			
Markah Kerja Kuliah			
Jumlah Besar %			
Gred			
Ulasan Pemeriksa Kedua :			

Tandatangan Pemeriksa Pertama
Nama :

Tandatangan Pemeriksa Kedua
Nama :

Setelah dibincangkan diperingkat Fakulti, adalah dicadangkan supaya :

Markah Asal Dikekalkan



Markah Asal Berubah dari ____ kepada _____

Tandatangan & Cop Dekan

LIST OF FORMS

BORANG PRPK 03-02(Pind.2009)



UNIVERSITI TEKNOLOGI MARA
BAHAGIAN PENGURUSAN REKOD PELAJAR DAN KONVOKESYEN
40450 SHAH ALAM, SELANGOR DARUL EHSAN.
Tel: 03-55443115/3118/3112 Fax: 03-55443111 E-mail: prpk@salam.uitm.edu.my

BORANG RAYUAN MENERUSKAN PENGAJIAN (RMP)

PERHATIAN:

1. Permohonan hendaklah disertakan dengan bayaran **RM50.00** melalui Wang Pos/Kiriman Wang dibayar atas nama "Bendahari UITM". Bayaran juga boleh dibuat secara tunai di kaunter Bendahari Fakulti/Cawangan. (Resit bayaran perlu disertakan).
2. Permohonan hendaklah dikemukakan kepada **Dekan Fakulti/Pengarah Kampus** masing-masing. Bagi pelajar-pelajar e-PJJ atau PLK Kampus Shah Alam, permohonan hendaklah dimajukan kepada **Ketua, Pusat Pendidikan Jarak Jauh** atau **Ketua, Pusat Pengajian Luar Kampus**, Institut Perkembangan Pendidikan (InED), Intekma Resort & Convention Centre, Seksyen 7, Shah Alam.
3. Tarikh tutup permohonan ialah **14 hari** selepas keputusan rasmi peperiksaan akhir semester diumumkan.
4. Sila sertakan salinan slip keputusan peperiksaan dan dokumen sokongan, sekiranya ada.

Nama Penuh :

Fakulti/Cawangan/Pusat :

No. Pelajar : No. K/Pengenalan :

Program : Kod. Program :

Alamat Surat-Menyurat :

.....

.....No Telefon:

Status Pemberhentian :
(Sila tandakan pada petak berkenaan)

D3	D4	D5	D6	D7	D8	GT
----	----	----	----	----	----	----

Sebab-sebab membuat rayuan untuk meneruskan pengajian. (Sila sertakan lampiran sekiranya ruangan ini tidak mencukupi)

.....

.....

.....

Saya mengaku bahawa segala maklumat yang diberi adalah benar dan bertanggungjawab ke atasnya.

.....
Tandatangan Pelajar

.....
Tarikh

Untuk Kegunaan Pejabat Fakulti/Cawangan/Pusat:

1. Tarikh Permohonan Diterima :

2. Tandatangan Pegawai Penerima :

3. Status Permohonan :
Permohonan dibawa ke Lembaga Akademik Fakulti (LAF) /
Jawatankuasa Akademik Cawangan (JAC).
Permohonan ditolak kerana lewat diterima.
Permohonan ditolak kerana tidak memenuhi syarat.

LIST OF FORM



LIST OF FORMS



**FAKULTI KEJURUTERAAN MEKANIKAL
UNIVERSITI TEKNOLOGI MARA**

APPEAL FOR COURSE REGISTRATION – ADD/DROP

This form is for the use of students who need assistance by the Academic Affairs Division in their add/drop processes.

TO BE FILLED IN BY STUDENT	
Name:	Student ID No.:
Faculty:	Handphone No.:
Program/Code:	Campus:
e-mail:	Graduating Student? Yes / No
Problem:	
Request:	
Signature:	Date:
ADD COURSE: DETAILS OF COURSE/GROUP	
1. Course Code:	Group:
2. Course Code:	Group:
3. Course Code:	Group:
4. Course Code:	Group:
DROP COURSE: DETAILS OF COURSE	
1. Course Code:	3. Course Code:
2. Course Code:	4. Course Code:
TO BE FILLED IN BY OFFICE OF FACULTY/CAMPUS/CENTRE/INSTITUTE	
Comment on this request:	
Suggested action:	
Signature and Stamp:	Date:
TO BE FILLED IN BY OFFICE OF ACADEMIC AFFAIRS DIVISION	
Note/Action Taken:	
Signature and Stamp:	Date:



LIST OF FORMS

APPEAL FOR REINSTATEMENT OF STATUS AS STUDENT

This form is for the use of those who have been dismissed (given GT status) to appeal for reinstatement of their status as student.

Instruction: Please submit your mini transcript and supporting documents with this form.

TO BE FILLED IN BY APPLICANT	
Name:	Student IC No.:
Faculty:	Handphone No.:
Program/Code:	Campus:
e-mail:	Current CGPA:
Mode of Study: Full Time / PLK / e-PJ]	Semesters completed:
Are you in your final semester of study? Yes / No	
Reason for being given GT (Gugur Taraf) status from UiTM: (Please tick one or both, as applicable.)	
<input type="checkbox"/> I did not register my courses <input type="checkbox"/> I did not pay my fees	
Request:	
Justification of request: <i>(Please attach supporting documents, if any.)</i>	
Applicant's Signature:	Date:
TO BE FILLED IN BY OFFICE OF FACULTY/CAMPUS/CENTRE/INSTITUTE	
Comment on this request:	
Suggested action:	
Name:	
Position:	Staff Number:
Signature and Stamp:	Date:
TO BE FILLED IN BY OFFICE OF ACADEMIC AFFAIRS DIVISION	
Note/Action Taken:	
Signature and Stamp:	Date:



UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, SELANGOR DARUL EHSAN.

BORANG PERMOHONAN CUTI KHAS

Fakulti/Negeri/Caw./Pusat:

Nama Penuh :

No. Pelajar : No. K/Pengenalan:

Program : Kod Program :

Bahagian : Semester :

Alamat Surat- Menyurat :

.....

.....No. Telefon :

Sebab-sebab memohon cuti khas. **(Sila sertakan Lampiran sekiranya ruangan ini tidak mencukupi)**

.....

.....

Senarai dokumen yang dikepikan. **(Salinan perlu disahkan oleh pihak yang berkaitan)**

.....

.....

Saya mengaku bahawa segala maklumat yang diberi adalah benar dan bertanggungjawab ke atasnya.

Untuk Kegunaan Fakulti/ UiTM Negeri/ UiTM Kampus Cawangan/Pusat:

KEPUTUSAN PERMOHONAN

Keputusan permohonan di atas adalah seperti berikut:

Diluluskan

Tidak Diluluskan

*Cuti hanya diberikan untuk semester ini sahaja. Pelajar perlu mendaftar semula pada semester hadapan.

Sekiranya gagal mendaftar, status sebagai pelajar akan gugur.

Tandatangan dan Cop Rasmi Dekan/Rektor

Tarikh



Bahagian Hal Ehwal Akademik,
UITM Negeri Sembilan
Tel : 06-6342247, 06-6342074
Faks : 06-6335811



PRPK 08/Pind. 2011

UNIVERSITI TEKNOLOGI MARA

BORANG MENARIK DIRI DARI UITM

(Borang ini hanya perlu diisi oleh pelajar yang sedang belajar dan ingin menarik diri daripada pengajian di UITM sahaja. Pelajar yang TAMAT pengajian atau DIBERHENTIKAN tidak perlu mengisi borang)

(Lengkapkan dalam 2 salinan untuk simpanan HEA dan Pelajar sendiri)

Sila lengkapkan borang ini dan dapatkan pengesahan daripada semua bahagian terlibat sebelum dimajukan kepada Bahagian Hal Ehwal Akademik, UITM Negeri Sembilan.

NAMA :

NO. PELAJAR UITM : NO. KAD PENGENALAN :

KOD PROGRAM : SEMESTER/BAHAGIAN :

NO. TELEFON : E-MEL :

SEBAB MENARIK DIRI : (Tandakan \times pada kotak berkenaan)

- | | | | | | |
|----------------------------|----------------------------------|----------------------------|------------------|----------------------------|---------------------------|
| 1 <input type="checkbox"/> | Tidak minat bidang pengajian | 2 <input type="checkbox"/> | Masalah kewangan | 3 <input type="checkbox"/> | Bertukar Universiti/Kolej |
| 4 <input type="checkbox"/> | Masalah kesihatan | 5 <input type="checkbox"/> | Masalah peribadi | 6 <input type="checkbox"/> | Mendapat pekerjaan |
| 7 <input type="checkbox"/> | Lain-lain sebab (nyatakan) | | | | |

1) 4)
Ketua Pusat Pengajian (KPP) Unit Pengurusan Kolej (UPK)

2) 5)
Bendahari (Zon Kewangan Fakulti masing-masing) Bahagian Hal Ehwal Akademik (HEA)

3)
Bahagian Perpustakaan

Alamat Pelajar :
.....
.....
.....
.....

PENGAKUAN PELAJAR

Saya akui semua maklumat yang diberikan adalah benar.

.....
Tandatangan Pelajar Tarikh

Untuk Kegunaan Bahagian Pengurusan Rekod Pelajar, Bahagian Hal Ehwal Akademik UITM Negeri Sembilan

Pengesahan Menarik Diri

.....
Tandatangan Tarikh Cop Jabatan



LIST OF STAFF

Lecturer

BIL	NAMA	POSITION	ROOM NO	OFFICE NO
1.	Abdul Hakim Bin Abdullah	Pensyarah Kanan	T1-A14-01A	03-55442862
2.	Abdul Halim Bin Abdullah (Dr)	Pensyarah Kanan	T1-A16-01A	03-55436468
3.	Abdul Rahman Bin Omar (Prof)(Ir)(Dr)(Hj)	Profesor	PEJABAT TNC (P&I) T1-A18-13A	03-55442255 03-55435120
4.	Ahmad Azlan Bin Mat Isa (Prof)(Dr)	Profesor	T-A18-09C	03-55436286
5.	Ahmad Hussein Bin Abdul Hamid (Dr)	Pensyarah Kanan	T1-A18-11C	03-55436284
6.	Ahmad Kamil Bin Hussain (Prof)(Madya)	Profesor Madya	UiTM PUNCAK ALAM T1-A12-10A	03-32584927 03-55436258
7.	Ahmad Khushairy Bin Makhtar (Dr.)	Pensyarah	T1-A11-05A	03-55435185
8.	Ahsana Aqilah Binti Ahmad	Pensyarah (Sementara)	T1-A14-02C	03-55442854
9.	Aidah Binti Jumahat (Prof)(Madya)(Dr)	Profesor Madya	T1-A12-11C	03-55435135
10.	Alhassan Salami Tijani (Dr)	Pensyarah Kanan (K29000 B.W.Negara)	T1-A18-07C	03-55435177
11.	Alias Bin Mohd Saman (Dr)	Pensyarah Kanan	T1-A16-16A	03-55435136
12.	Amalina Binti Amir	Pensyarah	T1-A10-10C	03-55436230
13.	Aman Mohd Ihsan Bin Mamat (Dr)	Profesor Madya	T1-A16-04C	03-55436268



BIL	NAMA	POSITION	ROOM NO	OFFICE NO
14.	Amir Radzi Bin Ab. Ghani (Ir)(Dr)	Pensyarah Kanan	T1-A12-16A	03-55435279
15.	Amirul Bin Abd. Rashid (Ir) (Dr)	Pensyarah Kanan	T1-A16-08A	03-55436467
16.	Anizah Binti Kalam (Dr)	Pensyarah Kanan	T1-A16-09C	03-55436271
17.	Azli Bin Abd Razak (Dr)	Pensyarah Kanan	T1-A16-07C	03-55436203
18.	Azlin Binti Mohd Azmi (Dr)	Pensyarah Kanan	T1-A16-07C	03-55436221
19.	Baljit Singh A/L Bhathal Singh (Dr)	Pensyarah Kanan	T1-A18-01C	03-55436464
20.	Bibi Intan Suraya Binti Murat (Dr)	Pensyarah	T1-A11-01-C	03-5543 5224
21.	Bulan Binti Abdullah (Ir.)(Dr)	Pensyarah Kanan	T1-A11-09A	03-55435122
22.	Che Faridah Binti Mat Taib	Pensyarah Kanan	T1-A16-08C	03-55436270
23.	Eli Nadia Binti Abdul Latip	Pensyarah	T1-A18-07A	03-55436148
24.	Farrahshaida Binti Mohd Salleh	Pensyarah Kanan	T1-A14-02A	03-55438426
25.	Fauziah Binti Jerai @ Junaidi (Dr)	Pensyarah Kanan	T1-A12-03C	03-55436458
26.	Fauziah Bt Md Yusof	Pensyarah	T1-A12-08C	03-55436252
27.	Firdaus Bin Mohamad	Pensyarah Kanan	T1-A14-03A	03-55442977
28.	Freddawati Binti Rashiddy Wong	Pensyarah	T1-A10-04C	03-55211274
29.	Hafizan Bin Hashim	Pensyarah	T1-A14-04A	03-55438427
30.	Hafizi Bin Lukman	Pensyarah Kanan	T1-A10-06C	03-55211827
31.	Hanafiah Bin Yussof (Prof)(Madya)(Dr)	Profesor Madya	T1-A12-02A	03-55436455
32.	Hazran Bin Husain	Pensyarah Kanan	T1-A12-07A	03-55435192
33.	Helmi Bin Rashid	Pensyarah Kanan	T1-A16-01A	03-55436201
34.	Idris Bin Saad (Dr)	Pensyarah Kanan	T1-A16-13A	03-55436281
35.	Irnle Azlin @ Nur Aqilah Zakaria	Pensyarah Kanan	T1-A14-12C	03-5543 5242



BIL	NAMA	POSITION	ROOM NO	OFFICE NO
	(Dr)			
36.	Izdihar Binti Tharazi	Pensyarah Kanan	T1-A14-05A	03-55442883
37.	Jamaluddin Bin Mahmud (Prof)(Madya) (Ir)(Dr)	Profesor Madya	T1-A12-09A	03-55436257
38.	Juri Bin Saedon (Dr)	Pensyarah Kanan	T1-A18-13C	03-55436285
39.	Kausalyah A/P Venkatason (Dr)	Pensyarah Kanan	T1-A16-02A	03-55436275
40.	Khairul Imran Bin Sainan	Pensyarah Kanan	T1-A14-06A	03-55442863
41.	Mardziah Binti Che Murad	Pensyarah Kanan	T1-A16-05C	03-55436269
42.	Mimi Azlina Bt Abu Bakar (Dr)	Profesor Madya	T1-A12-09C	03-55435137
43.	Mohamad Ali Ahmad (Dr)	Pensyarah Kanan	T1-A11-07A	03-5543 6250
44.	Mohamad Mazwan Bin Mahat	Pensyarah Kanan	T1-A11-06A	03-55436248
45.	Mohammad Azzeim Bin Mat Jusoh (Dr.)	Pensyarah	T1-A10-02C	03-55211823
46.	Mohd Afzan Bin Mohd Anuar (Dr)	Pensyarah Kanan	T1-A18-09A	03-55436149
47.	Mohd Azman Bin Yahaya (Dr)	Pensyarah Kanan	T1-A12-14A	03-55436260
48.	Mohd Azmi Bin Yunus (Ir)(Dr)	Pensyarah Kanan	T1-A16-09A	03-55436202
49.	Mohd Faizal Bin Mohamad (Dr)	Pensyarah Kanan	T1-A18-05A	03-55436440
50.	Mohd Hafiz Bin Mohd Noh (Dr.)	Pensyarah Kanan	T1-A18-06C	03-55211829
51.	Mohd Hanif Bin Mat @ Muhammad	Pensyarah	T1-A14-07A	03-55442834
52.	Mohd Hanif Bin Mohd Ramli (Dr.)	Pensyarah	T1-A14-08A	03-55442987
53.	Mohd Nor Azmi Bin Ab Patar (Dr.)	Pensyarah	T1-A18-08C	03-55436289
54.	Mohd Saiful Bahari Bin Shaari	Pensyarah Kanan	T1-A14-03C	03-55442981
55.	Mohd Shahrman Bin Adenan (Dr)	Pensyarah Kanan	T1-A12-02C	03-55436457



BIL	NAMA	POSITION	ROOM NO	OFFICE NO
56.	Mohd Suhairil Bin Meon	Pensyarah Kanan	T1-A18-12C	03-55436296
57.	Mohd Syahar Bin Mohd Shawal	Pensyarah Kanan	T1-A10-05C	03-55436237
58.	Muhad Rozi Bin Mat Nawi (Dr)	Pensyarah Kanan	T1-A14-09C	03-55435141
59.	Muhamad Azhan Bin Anuar	Pensyarah Kanan	T1-A18-08A	03-55435172
60.	Muhamad Fauzi Bin Othman	Pensyarah	T1-A10-13C	03-55436235
61.	Muhamad Norhisham Bin Abdul Rani (Dr)	Pensyarah Kanan	T1-A11-15A	03-55435228
62.	Muhammad Azmi Bin Ayub (Prof)(Ir)(Dr)	Profesor	T1-A18-02C	03-55436295
63.	Muhammad Fairuz Bin Remeli (Dr)	Pensyarah Kanan	T1-A16-13C	03-55435124
64.	Muhammad Hussain Bin Ismail (Dr.)	Pensyarah	T1-A9-TDPJI T1-A11-08A	03-55435218 03-55436249
65.	Muhammad Zaiyad Bin Muda @ Ismail	Pensyarah	T1-A14-07C	03-55442980
66.	Muhd Azimin Bin Ab Ghani	Pensyarah	T1-A14-09A	03-55438002
67.	Muhd Faiz Bin Mat @ Muhammad	Pensyarah Kanan	T1-A14-10C	03-55432843
68.	Nik Roselina Binti Nik Roseley	Pensyarah Kanan	T1-A14-10A	03-55442884
69.	Nik Rosli Bin Abdullah (Prof)(Madya)(Dr)	Profesor Madya	T1-A11-13A	03-55435187
70.	Nik Rozlin Binti Nik Mohd Masdek (Dr)	Pensyarah Kanan	T1-A11-02C	03-55436239
71.	Noor Ayuni Binti Che Zakaria (Dr)	Pensyarah Kanan	T1-A10-12C	03-55436234
72.	Noor Azlina Binti Mohd Salleh (Dr)	Pensyarah Kanan	T1-A14-08C	03-55442978
73.	Noor Leha Binti Abdul Rahman	Pensyarah	T1-A18-04A	03-554236223
74.	Nor Affiah Bt Yahaya (Dr)	Pensyarah Kanan	T1-A18-10C	03-55436283
75.	Nor 'Aini Bt Wahab	Profesor Madya	T1-A16-10C	03-55436272



BIL	NAMA	POSITION	ROOM NO	OFFICE NO
	(Prof)(Madya)			
76.	Nor Fazli Bin Adull Manan	Pensyarah Kanan	T1-A18-12A	03-55436291
77.	Nor Hafiez Bin Mohamad Nor (Dr)	Pensyarah Kanan	T1-A12-03A	03-55435217
78.	Nor Hayati Binti Saad (Prof)(Madya)(Dr)	Profesor Madya	T1-A11-10A	03-55435226
79.	Nor Merlisa Binti Ali	Pensyarah	T1-A12-04C	03-55436255
80.	Noriah Binti Yusoff (Ir)	Pensyarah Kanan	T1-A16-06C	03-55211821
81.	Norliana Binti Mohd Abbas (Dr)	Pensyarah Kanan	T1-A11-06C	03-55436147
82.	Nursalbiah Binti Nasir	Pensyarah	T1-A11-13C	03-55435199
83.	Nurul Hayati Binti Abdul Halim	Pensyarah	T1-A14-12A	03-55442848
84.	Nurzaki Bin Ikhsan	Pensyarah	T1-A14-13A	03-55435221
85.	Rahani Binti Abdul Rahman	Pensyarah	T1-A11-01C	03-55435224
86.	Ramlan Bin Kasiran	Pensyarah Kanan	T1-A16-11A	03-55435290
87.	Ramlan Bin Zailani (Prof)(Madya)(Dr)	Profesor Madya	T1-A18-03A	03-55443502
88.	Ramzyzan Bin Ramly (Dr)	Pensyarah Kanan	T1-A11-09C	03-55435194
89.	Razali Bin Hassan (Ir)	Pensyarah	T1-A14-14A	03-55432850
90.	Rizal Effendy Bin Mohd Nasir (Dr)	Pensyarah Kanan	T1-A16-04A	03-55436207
91.	Rosnadiyah Binti Bahsan	Pensyarah	T1-A12-01C	03-55436261
92.	Sahril B Kushairi	Pensyarah Kanan	T1-A11-08C	03-55435244
93.	Salmiah Binti Kasolang (Prof)(Dr)	Profesor	T1-A16-12C	03-55436273
94.	Shaharudin Bin Ahmad (Dr)	Pensyarah Kanan	PSMB T1-A12-12A	03-55211337 03-55436259
95.	Shahrul Azam Bin Abdullah @ Ab Aziz (Dr-Ing)	Pensyarah Kanan	T1-A11-07C	03-55436243



BIL	NAMA	POSITION	ROOM NO	OFFICE NO
96.	Siti Mariam Binti Abdul Rahman (Dr)	Pensyarah Kanan	T1-A14-01C.	03-55442976
97.	Solehuddin Bin Shuib (Prof)(Madya)(Dr)	Profesor Madya	T1-A12-05A	03-55436256
98.	Solehuddin Bin Shuib (Prof)(Madya)(Dr)	Profesor Madya	T1-A16-14A	03-55436471
99.	Sukarnur Bin Che Abdullah (Dr)	Pensyarah Kanan	T1-A12-08A	03-55435179
100.	Tajuddin Bin Md. Jahi	Pensyarah Muda	T1-A16-03C	03-55436267
101.	Valliyappan David A/L Natarajan (Dr)	Pensyarah Kanan	RMI T1-A11-12C	03-55442097 03-55435158
102.	Wahyu Kuntjoro (Prof)(Ir)(Dr)	Profesor (Kontrak 29000 B.W.Negara)	T1-A18-06A	03-55436288
103.	Wan Ahmad Najmi Bin Wan Mohamed (Dr)	Pensyarah Kanan	T1-A16-05A	03-55436277
104.	Wan Emri Bin Wan Abdul Rahaman (Dr)	Pensyarah Kanan	T1-A18-02A	03-55435169
105.	Wan Mazlina Binti Wan Mohamed	Pensyarah Kanan	T1-A11-11A	03-55435212
106.	Wan Sulaiman Bin Wan Mohamad	Pensyarah	T1-A14-02C	03-55211274
107.	Wirachman Wisnoe (Prof)(Dr)	Profesor (Kontrak 11000 B.W.Negara)	T1-A11-14A	03-55435121
108.	Ya'kub Bin Md. Taib (Prof)(Madya)	Profesor Madya	T1-A18-05C	
109.	Yupiter Harangan Prasada Manurung (Prof)(Madya)(Dr-Ing)P.Eng	Prof.Madya (Kontrak 29000 B.W.Negara)	T1-A16-07A	03-55436204
110.	Zainal Abidin Kamarul Baharin (Ir)	Pensyarah Kanan	T1-A12-13A	03-55435155
111.	Zainoor Hailmee Bin Solihin	Pensyarah	T1-A10-07C	03-55436233
112.	Zamri Bin Abdul Rahman	Profesor Madya	T1-A18-10A	03-55436289



BIL	NAMA	POSITION	ROOM NO	OFFICE NO
	(Prof)(Madya)			
113.	Zulkifli Bin Mohamed (Dr)	Pensyarah Kanan	T1-A11-04A	03-55448246
114.	Zuraidah Bt Salleh (Dr)	Pensyarah Kanan	T1-A16-10C	03-55436253

Assistant Lecturer

BIL	NAMA	POSITION	ROOM NO	EXT NO
1.	Mohamad Firhan Bin Morni	Penolong Pensyarah	T1-A12-01a	03-55435362
2.	Mohamad Tolha Bin Subhi	Penolong Pensyarah	T1-A11-03a	03-55436247
3.	Mohd Ghazali Bin Sikin	Penolong Pensyarah Tertinggi	T1-A11-05c	03-55436242
4.	Sulaiman B Mohamad	Penolong Pensyarah	T1-A11-03c	03-55436241
5.	Ziyadi Bin Zamri	Penolong Pensyarah	T1-A16-10a	03-55436279

Assistant Engineer, Technician and Lab Assistant

BIL	NAMA	POSITION	ROOM NO	PHONE NO
1.	Ameran Bin Saiman	Pegawai Sains Kanan	T1-A10-04c	03-55435130
2.	Hazimin Safiq Bin Mohd Mahsop	Pegawai Sains	Makmal Laser (A4-B2)	03-55436472
3.	Abd Karim B Daud	Penolong Jurutera	Makmal Fluid (A4-B2)	03-55436219
4.	Abdul Halim Bin Minar	Penolong Jurutera Kanan	T1-A12-15a	03-55436251



BIL	NAMA	POSITION	ROOM NO	PHONE NO
5.	Ahmad Dahari Bin Ishak	Penolong Pegawai Sains	Makmal Foundri (A3-B3)	03-55436222
6.	Ahmad Faiz Bin Nawawi	Penolong Jurutera	Bengkel Kimpalan (A2-B2)	03-55436218
7.	Ahmad Nazeman Bin Mohamed	Penolong Jurutera	Makmal Komposit (A5-B2)	03-55436479
8.	Aminuddin Bin Zulkifli	Penolong Jurutera	Makmal Automotif (A3-B2)	03-55436213
9.	Amir Shahrul Bin Ishak	Penolong Jurutera	Makmal Foundri (A3-B3)	03-55436222
10.	Arzuan Bin Kasim	Penolong Jurutera	Bengkel Pemesinan Am (A3-B2)	03-55436216
11.	Elwan Bin Salleh	Penolong Jurutera	Makmal Mekatronik (A4-B2)	03-55436298
12.	Fazlin Suhaina Binti Mamat	Pembantu Makmal	Makmal Mekatronik (A4-B2)	03-55436298
13.	Fazly Zaimie Bin Yaacob	Penolong Jurutera	Bengkel Pemesinan Am (A3-B2)	03-55436216
14.	Hazmi Bin Md Saad	Penolong Jurutera	Makmal Ergonomik (A4-B2)	03-55436477
15.	Kamarizal Bin Kamaruddin	Penolong Jurutera	Makmal Fluid (A4-B2)	03-55436219
16.	Mahmud Bin Mahat	Pembantu Makmal	Makmal Rawatan Haba (A5-B2)	03-55435197
17.	Mohamad Asrul Bin Mahamad Razali	Juruteknik Komputer	Makmal Komputer 4 (B3-A7-19)	03-55436227



BIL	NAMA	POSITION	ROOM NO	PHONE NO
18.	Mohamad Suhairi Bin Zainudin	Pembantu Makmal	Makmal Bahan Lanjutan (A6-B2)	Will Be Update
19.	Mohd Alif Bin Jalaluddin	Penolong Jurutera	Makmal Kekuatan Bahan (A3-B2)	03-55436209
20.	Mohd Azerif Bin Md Ali	Penolong Jurutera	Bengkel Pemesinan Am (A3-B2)	03-55436216
21.	Mohd Azrol Bin Zulkefli	Penolong Pegawai Sains	Makmal Rawatan Haba (A5-B2)	03-55211830
22.	Mohd Emy Azly Bin Mohd Arnawi	Penolong Jurutera	Makmal Sains Bahan (A5-B2)	03-55436220
23.	Mohd Ezzuan Bin Salleh	Penolong Jurutera	Makmal Propulsion (A3-B2)	03-55436476
24.	Mohd Fadhli Bin Mohamed Basir	Penolong Jurutera	Makmal Termodinamik (A3-B2)	03-55436211
25.	Mohd Faizazairi Bin Mohamad Riduan	Penolong Jurutera	Makmal Termodinamik (A3-B2)	03-55436211
26.	Mohd Fami Bin Abu	Penolong Jurutera	Makmal Cadem (A5-B3)	03-55442804
27.	Mohd Farid Bin Mohd Saad	Penolong Jurutera	Bengkel Kimpalan (A2-B2)	03-55436218
28.	Mohd Hafizul Bin Yusof	Penolong Jurutera	Makmal Hidraulik (A4-B2)	03-55436297
29.	Mohd Harysham Bin Zainal Abidin	Penolong Jurutera	Makmal Metronologi (A5-B2)	03-55435157
30.	Mohd Helmi Bin Omar	Penolong	Makmal Advance	03-55436473



BIL	NAMA	POSITION	ROOM NO	PHONE NO
		Jurutera	Manufacturing (A2-B2)	
31.	Mohd Rahimi Bin Abdul Rahman @ Mohd Salleh	Penolong Jurutera	Makmal Sains Bahan (A5-B2)	03-55436220
32.	Muhammad Israr Bin Abu Hassan	Penolong Jurutera	Makmal Cadem (A5-B3)	03-55442804
33.	Muhammad Shahrizal Bin Mohd Suboh	Penolong Jurutera	Makmal Aerospace (A3-B3)	03-55436474
34.	Nor Aida Binti Hamzah	Juruteknik Komputer Kanan	Makmal Komputer 2 (B3-A6-15)	03-55436225
35.	Nor Azizi Bin Che Soh	Penolong Jurutera	Makmal Tribologi (A4-B2)	03-55436402
36.	Norazman Bin Nordin	Penolong Jurutera	Makmal Kekuatan Bahan (A3-B2)	03-55436209
37.	Nur Shahrul Nizam Bin Shaari	Juruteknik Komputer	Makmal Komputer 5 (B3-A7-16)	03-55436484
38.	Shahidan Bin Mohamad	Penolong Jurutera	Makmal Advance Manufacturing (A2-B2)	03-55436473
39.	Shaiful Amri Bin Ramli	Penolong Jurutera	Bengkel Pemesinan (A2-B2)	03-55436216
40.	Shamsuhaidi Bin Mohamad	Penolong Pegawai Teknologi Maklumat	Makmal Komputer 3 (B3-A6-14)	03-55436229
41.	Suzaili Shah Bin Baharuddin	Pembantu Makmal	Makmal Automotif (A3-B2)	03-55436213



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