UNIVERSITI TEKNOLOGI MARA (UiTM)

CAWANGAN TERENGGANU

KAMPUS BUKIT BESI

College of Mechanical Engineering

CEEM110 STUDENT HANDBOOK

2025 EDITION

Diploma in Mechanical Engineering (CEEM110)

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INTRODUCTION

COLLEGE INFORMATION

VISION

To establish UiTM as a Globally Renowned University of Science, Technology, Humanities and Entrepreneurship.

MISSION

To lead the development of agile, professional bumiputeras through state-of-the-art curricula and impactful research.

VALUES

- Excellence: Practicing internal quality standards to fulfil the stakeholders' requirements and expectations
- Synergy: Collaborating seamlessly to maximize productivity that benefits industry and society
- Integrity: Embracing honesty, respect, and transparency to achieve the highest ethical standard of professionalism

COLLEGE BACKGROUND

HISTORY

College of Mechanical Engineering of UiTM is the off-spring of the former School of Engineering (one of the oldest School of ITM/UiTM-established in 1967) which was formed in 1996 with three faculties, namely Civil, Electrical and Mechanical Engineering.

The establishment of the College of Mechanical Engineering (FKM) in University Teknologi MARA Terengganu branch, Bukit Besi Campus (UiTMCTKBB) is to increase the number of bumiputera students to meet the manpower needs of mechanical engineering throughout the country. It was established in line with the establishment of UiTMCTKBB in year 2013.

TEACHING STAFF

To ensure a high teaching standard, the college is very selective on the recruitment of lecturers and supporting staff. The college currently has 22 lecturers and 8 assistant engineers. Lecturers are required to upgrade their knowledge and skills by carrying out research and consultancy work. They can undertake short-term or long-term research projects and another relevant consultancy works. Besides teaching, lecturers are also encouraged to engage in industrial training to obtain a professional engineer status (PE). The lecturers are assessed for their career enhancement annually according to the university's policy.

COLLEGE FACILITIES

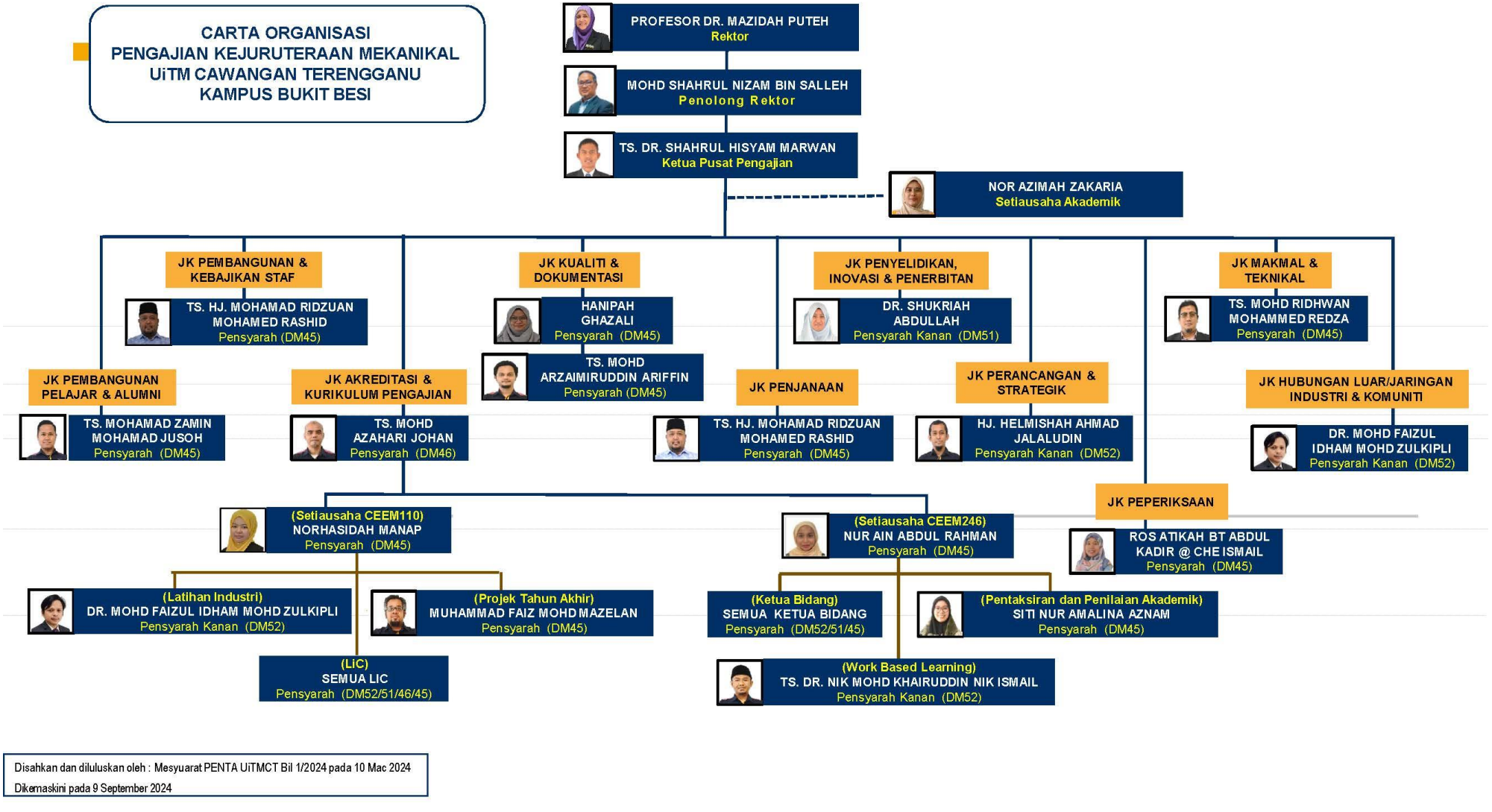
Below is a list of equipment available at our facilities, mainly in various Collage laboratories and workshops in the campus:

Workshop / Laboratories	Equipment
Advanced Machining Lab	CNC Router 5 Axis
	Ships Stability Apparatus
	Radial Drilling Machine
	CNC Milling Machine
Fluid Mechanics Lab	Personal Circulating Water Channel
	Hydrostatic Pressure Apparatus
	Base Module for Experiments in Fluid Mechanics C/W Measurement of Jet Force and Losses In Piping Elements, Valve And Fittings
	Hydrostatic & Properties of Fluid Apparatus
Thermodynamics & Heat Transfer Lab	Combustion Laboratory Unit
	Steam Motor & Energy Conversion Test
	Marcet Boiler
	Computer Linked Refrigeration Plant
	Cooling Tower Test Rig
	Concentric Tube Heat Exchanger
	Recirculating Air-Conditioning Unit
	Boyle's Law Demonstrationg Unit

Welding Workshop	Arc Welding Machine
	Arc welding bench c/w fume extractor
	TIG Welding Machine (Gas Tungsten Arc Welding)
	MIG Welding Machine (Gas Metal Arc Welding)
	Plasma Cutting Machine
	75 Ton Press Machine
	50 Ton Press Machine
	Hydraulics Shearing Machine
	Portable Gas cutting set c/w Cylinder and Torch
	Gas Cylinder (Oxygen & Acetylene)
	Horizontal Band Saw
	Pedestal Grinding Machine
	Disc Cutter Machine
	Bench Drilling Machine
	Vertical Band Saw
	Lab Drying Oven
Foundry and Sand Testing Lab	Sand Mixer
	Electric Bench Top Melting Furnace
	Jolt Squeeze
	Sand Mill
	Sand separator
	Sand Blasting Machine
	Flask Set
	Patterns
	Sand Rammer
	Permeability Meter
	Moisture Tester
	Sand Mixer Lab Type
	Digital Balance
	Sieve Shaker
	High Temperature Oven
	Sand Strength Machine
	Methylene Blue Clay Tester
	Laboratory Shifter
	Horizontal Band Saw
	Disc and Belt Sander
Engineering Workshop	Bench Drilling Machine
	Profile Bending Machine
	Petrol Engine Training Plant
	Diesel Engine Test Bed
	Thermal Imager
	Pedestal Grinding Machine
	Bench Drilling Machine
	Bending Machine (Metal Sheet)
	Foot Shearing Machine
	Plate Roller
	Hydraulic Swing Beam Shearing Machine
Hydraulics & Pneumatics Lab	Hydraulic & Electro-hydraulic Trainer Set
	Pneumatic & Electro-pneumatic Trainer Set
Strength of Materials Lab	Torsion Testing Apparatus
	Thin Walled Cylinder Apparatus
	Struts Apparatus (Buckling Tester)
	Deflection of Beam Apparatus
	Tensile Testing Machine

Material Science Lab	Abrasive Cutter
	Universal Polisher
	Specimen Dryer
	Vickers Micro-Hardness Tester
	Metallographic Microscope
	Automatic Mounting Press
	High Temperature Furnace
	Precision Cutter
Dynamics and Controls Lab	Slider Crank
	Flywheel Apparatus
	Wheel and Axle Apparatus
	Dependant Motion Apparatus
	Level control apparatus set
	Speed control apparatus set
	PLC Training Kit
	Pressure control apparatus set
Engineering Drawing Studio	Long Ship Drawing Table
Naval Architecture Studio	Long Ship Drawing Table
Marin CADEM Lab	Workstation
Mechanical CADEM Lab	Workstation
Machine Shop	Metal Lathe Machine
	Milling Machine
	Horizontal Band Saw

ORGANISATION CHARTS



Disahkan dan diluluskan oleh : Mesyuarat PENTA UiTMCT Bil 1/2024 pada 10 Mac 2024

Dikemaskini pada 9 September 2024

PROGRAM INFORMATION

ACADEMIC PROGRAMME

The collage offers two education programs, which is Diploma in Mechanical Engineering (CEEM110) and Bachelor of Mechanical Engineering Technology (Honours). The current CEEM110 program is MQA accredited and partially accredited by ETAC, while the newly offered program, EM246 is partially accredited by ETAC in Jun 2020

PROGRAMME LEVEL

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

- Diploma in Mechanical Engineering: A 3-year program, with an entry from SPM or any recognized certificate, tailored to meet the industry requirements for assistant engineers and engineering technicians, with the opportunity to continue to a bachelor's degree in engineering, B. Eng. (Hons.) program upon successful completion. In their fourth and fifth semesters, students are given optional modules to specialize in their area of interest. Among the choices are pure mechanical and marine engineering modules.
- Bachelor of Technology Program Mechanical Engineering with Honors is a 4-year program which is offered at MARA University of Technology, Terengganu Branch, Bukit Besi Campus. This program prepares the students to become an engineering technologist which suits the current demand in the mechanical engineering industry. Students of this program are trained to be competent and master basic skills and important knowledge in mechanical engineering technology. Graduates of this program can demonstrate good interpersonal development with a professional, ethical attitude, skilled in management and competitive globally either multinational or international engineering organizations.

COLLEGE'S STRENGTH

The college 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.
- Excellent laboratory facilities and equipment.
- A balanced structured curriculum for the program offered and recognized by professional bodies and accreditation boards locally and abroad.

PROGRAM PROFILE

Students are equipped with a firm foundation in engineering science, and other skills. The program incorporates Engineering mathematic, Mechanics, Material, Strength of Material, Thermo-fluids, Electrical systems, Manufacturing Design, Computer application, Management and Communication skills. There is a strong practical approach to the program and great emphasis is placed on laboratory work, industrial visits, and design projects. 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 control system and instrumentation, plant engineering, ship hydromechanics, ship structure, and a variety of other elective subjects, totaling in 6 subjects.

Teamwork practice such as project control, management techniques, personal interaction and team skills are 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.

Students are also required to undergo industrial training in various industries. This training lasts for a minimum of 16 weeks during the final semester of their Diploma program. The objective of this training is to provide students with exposure to a 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 throughout the semester.

DIPLOMA PROGRAMS

CEEM110 DIPLOMA IN MECHANICAL ENGINEERING

This program is offered to SPM school leavers, Polytechnics, IKM, and alike. The duration of this program is 3 years comprising of six semesters.

For SPM candidates, they need to have at least a minimum of three credit subjects, including Bahasa Melayu, Mathematics, Additional Mathematics, Physics, and English, and they must pass their Sejarah and Chemistry (applied for all SPM 2013 candidates until current). Candidates must also be able bodied without any disabilities that may hinder them from conducting labs during their study.

For candidates with certificates from Polytechnics or any other institution with similar education level, recognized by the Malaysian government, they need to obtain at least a B grade in Mathematics and Engineering Science, and fulfil the general university requirement of a credit in Mathematics, Additional Mathematics, Physics, and English with a pass for Chemistry. Candidates must also be able bodied without any disabilities that may hinder them from conducting labs during their study.

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. Students also could continue venturing into different interests during fourth and fifth semesters by selecting their elective courses, with topics related to pure mechanical engineering, and naval architecture.

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 students gain knowledge and experience in the related field.

Thestudentsarealsorequiredtoundergoindustrialtraininginindustry. This training is for a period of 14 weeks during their final semester. The objective of this training is to expose students to the real working environment in the industries.

All students undertake a major individual project in their fifth semester, as partial requirement for the Diploma Program. During the final project, students are involved in planning, designing, fabricating, testing, data collecting and 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 during the semester and final examination weeks at the end of each semester.

ADMISSION REQUIREMENTS

Diploma of Mechanical Engineering CEEM110 (3 years / 6 semesters)	UPU Code UE4521001
	College College of Mechanical Engineering
	Duration of Program 6 semesters
	Open to Science/Technical stream applicants Open to Melayu, Anak Negeri Sabah, Anak Negeri Sarawak dan Orang Asli
	General Requirements: ▪ Pass in SPM or equivalent ▪ Obtained a grade C in three subjects including Bahasa Melayu paper in SPM or equivalent ▪ Pass Sejarah paper in SPM (for SPM 2013 until current) ▪ Candidates MUST have MUET results that have been set before applying for the Bachelor level
	Additional program requirements – SPM holder Obtained a minimum grade C in the subject: o Mathematics AND ▪ Obtained a minimum grade C in ONE (1) of the subjects listed below: o Basics of Sustainability o Biology o Physics o Technical Communication Graphics o Chemistry o Engineering Drawing o Civil Engineering o Electrical and Electronics Engineering o Agricultural o Mechanical Engineering o Design o Computer Science o Sports Science o Additional Science o Science o Engineering Technology o Information Technology o Electrical Installation & Control o Electrical & Geometrical Drawings o Radio & Television Services o Electronic & Geometrical Drawings o Principles of Electricity & Electronics o Electrical & Electronic Applications o Information And Communication Technology o Electrical Technology o Building Materials o Construction Technology

AND

- Pass D in Two (2) of the following subjects that have not been taken into account:

  - Basics of Sustainability
  - Biology
  - Physics
  - Technical Communication Graphics
  - Chemistry
  - Engineering Drawing
  - Civil engineering
  - Electrical and Electronics Engineering
  - Mechanical Engineering
  - Agriculture
  - Design
  - Computer Science
  - Sports Science
  - Additional Science
  - Science
  - Engineering Technology
  - Information Technology
  - Electrical Installation & Control
  - Electrical & Geometrical Drawings
  - Radio & Television Services
  - Electronic & Geometrical Drawings
  - Principles of Electricity & Electronics
  - Electrical & Electronic Applications
  - Information And Communication Technology
  - Electrical Technology
  - Building Materials
  - Construction Technology

AND

No physical disability that will impede practical work

Additional program requirements – Certificate from Polytechnic/IKM/ Other institutions

- Passed a Polytechnic Certificate / Other Institution recognized as equivalent by the Malaysian Government with a minimum CGPA of 2.80 and a minimum Grade C at the Certificate level in subjects related to English, Mathematics and FOUR (4) other subjects related to the field applied.
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AND

- No physical disability that will impede practical work
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NOTE:

- For certificate holder only, a copy of the application and a certified copy of the certificate MUST be sent to the Head of Electrical Studies, College of Engineering Studies, UiTM, 40450 Shah Alam (no later than one week after the application closing date).
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	Additional program requirements – Graduate of Pra-Diploma UiTM Pass the Lulus Naik Taraf (LNT) of Pra-Diploma Science (PD007/PD008) or Pra-Diploma Science (STEM C & Literature) (AS002/AS003) program from UiTM with at least HPNG:3.00 AND ▪ No physical disability that will impede practical work

CURRICULUM STRUCTURE

SEM	NO	COURSE	CODE	PRE / CO - REQUISITE	CREDIT UNIT	LEC	TUT	LAB / PRAC	CONTACT HOUR
SEM 1	1	FUNDAMENTALS OF ISLAM	CTU101	-	2	2	0	0	2
	2	CO-CURICULUM I	XYZ111	-	1	0	0	2	2
	3	INTEGRATED LANGUAGE SKILLS I	ELC121	-	3	3	0	0	3
	4	MATHEMATICAL THINKING FOR NOVICES	UED101	-	0	0	0	0	0
	5	CALCULUS I	MAT183	-	3	3	1	0	4
	6	FUNDAMENTAL PHYSICS I	PHY133	-	3	2	1	2	5
	7	INTRODUCTION TO ENGINEERING	MEC101	-	3	2	0	2	4
	8	ENGINEERING DRAWING	MEC132	-	3	1	0	4	5
	TOTAL				18	13	2	10	25
SEM 2	1	VALUES AND CIVILIZATION	CTU152	-	2	2	0	0	2
	2	CO-CURICULUM II	XYZ121	-	1	0	0	2	2
	3	INTEGRATED LANGUAGE SKILLS II	ELC151	-	3	3	0	0	3
	4	FUNDAMENTALS OF COMPUTER PROBLEM SOLVING	CSC128	-	3	2	0	2	4
	5	CALCULUSIIFOR ENGINEERS	MAT235	MAT183	3	3	1	0	4
	6	STATICS	MEC111	PHY130	3	3	1	0	4
	7	MATERIAL SCIENCE	MEC281	-	3	3	1	0	4
	TOTAL				18	16	3	4	23
SEM 3	1	SCIENCE AND TECHNOLOGY IN ISLAM	CTU211	-	2	2	0	0	2
	2	CO-CURICULUM III	XYZ131	-	1	0	0	2	2
	3	INTEGRATED LANGUAGE SKILLS III	ELC231	-	3	3	0	0	3
	4	STRENGTH OF MATERIALS	MEC211	MEC111	3	3	1	0	4
	5	DYNAMICS	MEC221	MEC111	3	3	1	0	4
	6	FLUID MECHANICS	MEC241	PHY130	3	3	1	0	4
	7	MECHANICS AND MATERIALS LAB	MEC291	CO-REQ MEC211 / MEC221 / MEC281	1	0	0	2	2
	8	WORKSHOP PRACTICE	MEM160	-	2	1	0	3	4
	TOTAL				18	15	3	7	25

SEM	NO	COURSE	CODE	PRE / CO - REQUISITE	CREDIT UNIT	LEC	TUT	LAB / PRAC	CONTACT HOUR
SEM 4	1	BASIC ELECTRICAL ENGINEERING	ELE291	-	3	2	0	2	4
	2	THERMODYNAMICS	MEC251	PHY130	3	3	1	0	4
	3	THERMOFLUIDS LAB	MEC294	CO-REQ MEC241 / MEC251	1	0	0	2	2
	4	MANUFACTURING PROCESSES AND TECHNOLOGY	MEM360	-	3	2	0	2	4
	5	FINAL YEAR PROJECT I	MEC299	-	2	0	2	0	2
	6	ELECTIVE 1	MEX3YY	-	3	2	0	2	4
	TOTAL				15	9	3	8	20
SEM 5	1	FUNDAMENTALS OF ENTREPRENEURSHIP	ENT300	-	3	3	0	0	3
	2	FINAL YEAR PROJECT II	MEC300	-	4	0	1	6	7
	3	MACHINE ELEMENT DESIGN	MEC331	CO-REQ MEC211	3	3	1	0	4
	4	ELECTIVE 2	MEX3XX	-	3	2	0	2	4
	5	ELECTIVE 3	MEX3XX	-	3	2	0	2	4
	TOTAL				16	10	2	10	22
SEM 6	1	INDUSTRIAL TRAINING	MEC390	-	8	0	0	20	20
	TOTAL				8	0	0	20	20
GRAND TOTAL					93	63	13	59	135

Electives Offered

ELE	SEM	COURSE	CODE	PRE / CO - REQUISITE	CREDIT UNIT	LEC	TUT	LAB / PRAC	CONTACT HOUR
MECHANICAL	4	CONTROL SYSTEM AND INSTRUMENTATION	MEC322	NONE	3	2	0	2	4
	5	PLANT ENGINEERING	MEM376	NONE	3	2	0	2	4
	5	FLUID POWER TECHNOLOGY	MEM341	MEC241	3	2	0	2	4
NAVAL ARCHITECTURE	4	SHIP HYDROMECHANICS	MES374	NONE	3	2	0	2	4
	5	SHIP PRODUCTION & REPAIR	MES362	NONE	3	2	0	2	4
	5	SHIP STRUCTURE	MES311	NONE	3	2	0	2	4

COURSE DESCRIPTION

SEMESTER 1

CTU101 – FUNDAMENTALS OF ISLAM

This course explains to students the Islamic worldview and connects faith (aqidah) with daily practices. It also discusses the application of shariah, worship (ibadah), and ethics (akhlaq) in life, as well as identifies current issues and challenges. Skills in reading, memorizing, and analyzing the Quran are also instilled.

XYZ111 – CO-CURICULUM

Rujuk senarai kurikulum.

ELC121 – INTEGRATED LANGUAGE SKILLS I

This course is designed to build the listening, speaking and reading skills to help students perform effectively and competently in social and academic contexts. This is done through the integration of language skills with an emphasis on listening. It aims to raise students' proficiency to the intermediate level. This course focuses on enhancing the students' abilities to use the language by exploiting a variety of materials in varied situations. Appropriate consideration is given to the development of higher-level grammatical construction, vocabulary expansion and extensive reading activities which are intended to increase students' lexical density.

UED101 – MATHEMATICAL THINKING FOR NOVICES

One of the major aims of mathematical learning is the development of mathematical thinking. This course embarks on this endeavor by using problem solving as the central tool towards this development. It involves the acquisition and application of mathematics concepts and skills in a wide range of situations, including non-routine and real-world problems to provide an opportunity for students to become problem solvers. Students will participate in a variety of exercises, problems, and investigations as they explore mathematics concepts from a problem-solving perspective in an interactive manner. The emphasis will be on exploration of various mathematics contexts to learn mathematics, to solve problems, and to communicate mathematical ideas through multiple representations

MAT183 – CALCULUS I

This is the first course in the calculus series. It starts with topics on functions and graphs, limits and continuity, techniques of differentiation and integration and its applications.

PHY133 – FUNDAMENTAL PHYSICS I

This course will interactively engage students cognitively and scientifically in areas of system of units, linear kinematics, dynamics of motion, mechanics of solid and fluid, rotational kinematics and heat and thermodynamics. Students will define concepts, state, and write laws and theories, perform investigations via laboratory exercises, discuss the results and relationships with peers and facilitators. Lecture hours consist of a mixture of lectures and active learning. The outcomes shall be assessed through a variety of tools which include the traditional paper examination and classroom engagement.

MEC101 – INTRODUCTION TO ENGINEERING

The course covers the engineering profession in general and mechanical engineering in particular. Students will be introduced to the various disciplines in engineering and particularly mechanical engineering, basic problem-solving methods, laboratory report writing and the use of computers in engineering solutions, engineering estimations and approximations, dimensions, units and unit conversions, and representation of technical information. 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.

MEC132 – ENGINEERING DRAWING

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 include 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 practice.

SEMESTER 2

CTU152 – VALUES AND CIVILIZATION

This course explains the concept of ethics and civilization, as well as the systems, stages of development, social progress, and cultural advancement across ethnicities within the context of their appreciation according to the Malaysian framework. The course also differentiates the challenges posed by Western ideologies on human life in terms of economics, politics, society, culture, and the environment.

XYZ121 - CO-CURICULUM II

Refer to the curriculum list.

ELC151 – INTEGRATED LANGUAGE SKILLS II

This course is designed to help students become confident and independent readers. Specifically, students will be exposed to intensive reading skills which include skimming and scanning, recognizing structures and mechanics used in texts, summarizing, and evaluating texts. By exposing them to a variety of reading materials and short stories, extensive reading strategies are introduced to create enjoyable reading experiences outside the classroom and to enrich and strengthen their knowledge of words. In addition, speaking and listening skills are integrated into the course to help students perform effectively and competently in social and academic interaction. This course aims to raise their proficiency to high intermediate level by exploiting a variety of materials in varied situations

CSC128 – FUNDAMENTALS OF COMPUTER PROBLEM SOLVING

This course is an introduction to problem solving using computers. It emphasizes various aspects of problem solving, mainly consisting of the problem domain, phases of problem solving and basic techniques in designing a solution. The approach to problem solving is via top-down design, structured and modular programming. The emphasis is on solving problems using a computer rather than the syntactical aspects of the chosen programming language.

MAT235 – CALCULUS II FOR ENGINEERS

This course consists of four chapters: methods of integration, L'Hospital's rule and improper integrals, functions of two and three variables, and ordinary differential equations. In the first chapter, the integration methods covered include integration by parts, trigonometric integrals, trigonometric substitutions, and the integration of rational functions. Chapter two focuses on the limits of indeterminate forms and improper integrals. In the third chapter, students will be introduced to partial derivatives and their applications in engineering and science. The final chapter covers methods for solving first- and second-order differential equations along with their applications.

PRE-REQUISITE: MAT183

MEC111 – STATICS

The course begins with basic concepts of mechanics i.e. space, time, mass, and force, 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 areas and masses.

PRE-REQUISITE: PHY130

MEC281 – MATERIAL SCIENCE

The course covers some fundamentals of material sciences, 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.

SEMESTER 3

CTU211 – SCIENCE AND TECHNOLOGY IN ISLAM

This course explains the concept of science and technology in Islam and its historical development. It also discusses the miraculous nature of the Quran and Sunnah, as well as the application of fiqh methods and maqasid shariah to address ethical issues in science and technology.

XYZ131 – CO-CURICULUM III

Refer to the curriculum list.

ELC231 – INTEGRATED LANGUAGE SKILLS III

This course is designed to equip students with the necessary writing skills to help them improve their written English. This is conducted by integrating reading and speaking skills with the emphasis is on writing skills. This course also aims to equip students with the necessary skills to discuss arguments and issues effectively. It focuses on enhancing the students' abilities to use the language by exploiting a variety of materials in varied situations. Appropriate consideration is given to the development of higher-level grammatical construction and vocabulary expansion which are intended to help increase students' lexical density.

MEC211 – STRENGTH OF MATERIALS

The course covers stresses and strains of deformable bodies in tension, compression, bending, and torsion. Topics covered include axial stresses and strains; thermal stress; simple statically determinate and indeterminate systems; torsional stresses; power transmission in shafts; bending stresses in beams; transformation of plane stresses; and elastic buckling in columns.

PRE-REQUISITE: MEC111

MEC221 – DYNAMICS

Dynamics is a second course in engineering mechanics. It deals with the conditions of motion of a body which may be treated as a particle or a rigid body. It covers both kinematics and kinetics of rigid bodies in planar motion. The course emphasizes the use of scalar and graphical approach to problem solving in dynamics.

PRE-REQUISITE: MEC111

MEC241 – FLUID MECHANICS

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.

PRE-REQUISITE: PHY130

MEC291 – MECHANICS AND MATERIALS LAB

The course consists of practical work involving the investigations and analysis in the area of mechanics and material science.

CO-REQUISITE: MEC211/MEC221/MEC281

MEM160 – WORKSHOP PRACTICE

This subject aims to introduce a real mechanical engineering environment represented on a workshop scale to the students. The students will be exposed to workshop rules and regulations, safety, and ethics, which guarantee mechanical engineering good practice. The students will also be exposed to measurement tools, benchwork tools, cutting tools, joining tools, casting tools, various machine tools especially for metal removal processes and sheet metal works. Various types of materials commonly used in workshop practice has also been introduced. Students will be given responsibility to produce one manufacturing product start from a technical drawing until the finished product.

SEMESTER 4

ELE291 – BASIC ELECTRICAL ENGINEERING

The course deals with the fundamentals of electrical engineering, working principles of the electrical motor and its performance. It covers DC and AC circuits, DC machines, transformers, and induction motors. It also covers fundamentals in power electronics such as power diodes and rectifiers.

MEC251 – THERMODYNAMICS

This course is designed for students studying thermodynamics for the first time. Considerable emphasis is placed on the understanding and application of the first law and second law of thermodynamics. Fundamental concepts and principles of various thermodynamics systems and plants are also covered in this course.

PRE-REQUISITE: PHY130

MEC294 –THERMOFLUIDS LAB

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

CO-REQUISITE: MEC241/MEC251

MEM360 – MANUFACTURING PROCESSES AND TECHNOLOGY

The course covers the various aspects of processes employed in the production of metallic, polymeric, and ceramic components. Students will be exposed to various manufacturing processes.

MEC299 – FINAL YEAR PROJECT I

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 well-defined engineering problem. The course is aimed at fostering independent thinking and develop problem-solving skills. It focuses on the ability of the students to identify a 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.

MEX3YY – ELECTIVE 1

Refer to Elective List 1.

SEMESTER 5

ENT300 – FUNDAMENTALS OF ENTREPENEURSHIP

This course provides an overview of the requirements for launching an entrepreneurial career and starting up an entrepreneurial venture. After an appreciation of the concept of entrepreneurship, students will be exposed to the critical role of opportunity recognition and evaluation. The course also shed light on the entrepreneur as the main success factor in the new venture formation and development. The central focus of the course is to prepare the students with the essence of entrepreneurship and business planning skills that is essential for the success of new ventures. The subject delivery combines both theoretical and practical aspects of entrepreneurship. Theoretical aspect is looking at the important elements in understanding entrepreneurship, while practical aspect is engaging the student to develop and propose a viable Business Plan.

MEC300 – FINAL YEAR PROJECT II

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.

MEC331 – MACHINE ELEMENT DESIGN

This course introduces the important machine elements encountered in machine design. It covers mechanical joints such as power screws, fasteners, riveted and power transmission units such as bearings, shaft and its associated parts, belt, gears, clutches and brakes as well as given elementary exposure to design analysis of some of these machine elements

CO-REQUISITE: MEC211

MEX3XX - ELECTIVE 2

Refer to Elective List 2.

MEX3XX – ELECTIVE 3

Refer to Elective List 3.

SEMESTER 6

MEC390 – INDUSTRIAL TRAINING

This is a 16 weeks (minimum) course of external, full-time, and mechanical/manufacturing 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 College 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.

SPECIAL TOPICS (ELECTIVES)

MEC322 – CONTROL SYSTEM AND INSTRUMENTATION

The course emphasizes basic concepts, principles and practical aspects of control systems and instruments. It covers basic control principles and the usage of instrumentation tools in various industrial and commercial applications, relay control systems, industrial digital computers, and automatic control systems. Emphasis is given to pressure, flow, torque, power, temperature, level measurements, and computer control.

MEM376 – PLANT ENGINEERING

This course covers theoretical practical knowledge on maintenance management, industrial building, and facilities system. The contents also include the operating principles and general maintenance work of industrial facilities such as air conditioning, ventilation, boiler, and firefighting system. The students are also provided with knowledge on industrial safety, health, and hazard.

MEM341 – FLUID POWER TECHNOLOGY

This course covers the fundamental topics for understanding the principle, design, and operation of fluid power systems. Topics are classified into hydraulic and pneumatic. Practical sessions give students better views on the working principle of individual components as well as analysis of the relationship between pressures, forces, flow, and velocity.

MES374 – SHIP HYDROMECHANICS

This course presents an introduction to ship hydromechanics and relevant analysis in naval architecture. Students will learn to calculate hydrostatics data, longitudinal stability, transverse stability, and resistance prediction. Students will work in a group to design a boat/ship and perform all relevant design estimates and analysis to ensure stability requirement is satisfied and resistance is predicted.

MES362 – SHIP PRODUCTION & REPAIR

This course comprises of two subjects, which are ship production and ship repair. Ship production covers the understanding of the shipbuilding and construction process using metal and non-metal materials. While ship repair covers the basic understanding of marine plants, especially marine diesel engines. In addition, it also covers the basic information necessary related to ship repair and maintenance facilities. Students will work in a group to construct a ship/boat prototype/model using ship production theory.

MES311 – SHIP STRUCTURE

This course presents an introduction to ship structure analysis. Students will learn to determine ship structural loads, stresses, and strength. Students will expose to the criteria developed by classification societies. Students will work in a group to design a boat/ship and perform all relevant design estimates and analysis to ensure ship structural reliability requirement is satisfied.

AWARDS AND GRADING SCHEME

AWARD OF DIPLOMA

Student will be awarded a Diploma in Mechanical Engineering, CEEM110 when they fulfill all the following criteria:

- obtained a minimum Cumulative Grade Point Average (CGPA) of 2.00.
- passed all courses as required by the program of study.
- fulfilled all the conditions and requirements set by the University.
- approved by the University Senate.

CLASSIFICATION

The Diploma 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

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 (FYP) is part of the requirements for the awarding of the Diploma degree to a student. The topic of the FYP is selected from areas such as engineering management, mechanics, robotics, manufacturing, thermofluids, and other research areas related to 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.

The project is carried out in two semesters, semester 4 and semester 5. 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 work. All activities from planning, implementing, and scheduling must be recorded in a logbook. The assessment will be done at the end of semester 4 and 5.

INDUSTRIAL TRAINING

Industrial training or internship refers to work experiences that are relevant for professional development prior to graduation. One of the requirements for the award of the Diploma is that students must complete at least 16 weeks (one semester) of Industrial Training.

Students should note that 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 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 re-entering activities. Developing an awareness of general workplace ethics 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 College's Coordinator of Industrial Training (CIT) will provide an internship briefing prior to applying for internship placement with the help of appointed lecturers to provide deeper understanding on internship process and procedure. During this briefing, students are given general guidelines on how to apply, what to do before, during, and after Industrial Training, and rules and regulations pertaining to the Industrial Training.

The objectives of the program are:

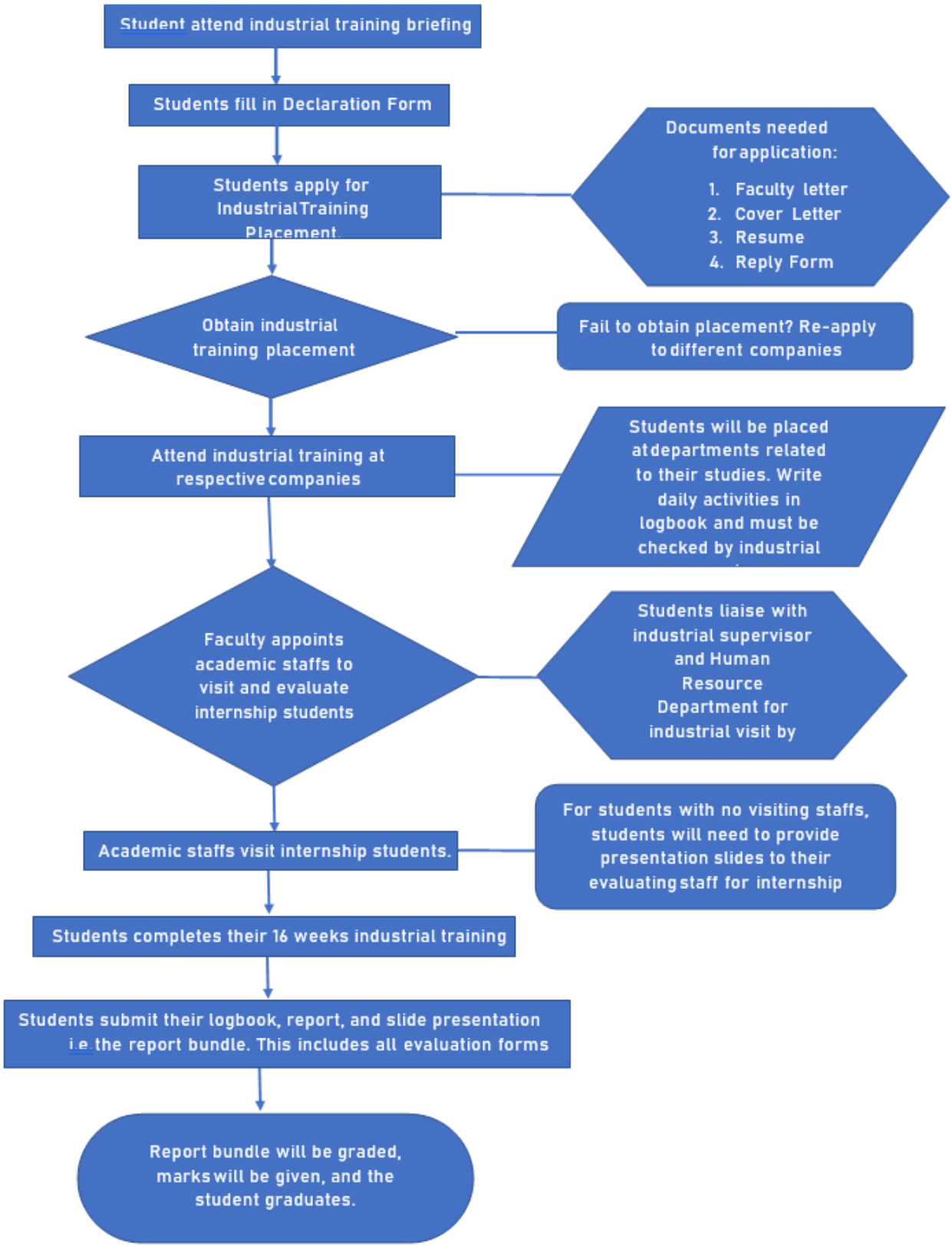
- To expose students to actual working culture and industrial practice.
- To allow students to apply their theoretical knowledge into practice.
- To motivate students to practice the right working attitudes and professionalism to increase their employability potential.
- To facilitate students to potential employers.

During the Industrial Training period, students are required to always observe the rule and regulation set by both the College and the Company. They are required to record daily activities in the provided logbooks. At the end of the industrial training, each student is required to submit a full report, containing detailed job description carried out by them as stated in the report bundle bought by the students. Academic staffs are assigned to each of the students to evaluate students and assess the company's suitability to the training program. The CIT monitors all student during their industrial training. Any matters pertaining to the industrial training should be referred to the CIT before any decision is made.

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

INDUSTRIAL TRAINING FLOWCHART

Below shows a flowchart on what needs to be done before, during, and after industrial training



INTERNSHIP TIMELINE

Students are also provided with an industrial training guideline for them to follow throughout the semester. Adhering to these dates is crucial for the College to be able to fill in their grades by the end of the semester. Below is an example of a timeline provided to the students. The timeline is provided every semester and the dates are adjusted accordingly as per the University Academic Calendar.

UNIVERSITI TEKNOLOGI MARA

CEEM110 MEC390 - INDUSTRIAL TRAINING TIMELINE

PERSON IN CHARGE	DESCRIPTION	ACTION TO BE DONE	DATE/s	SUBMISSION MODE
STUDENT	Internship starts	Student starts internship with their chosen company	EARLY START: 2 FEBRUARY 2020 FINAL LATE START: 23 FEBRUARY 2020	-
STUDENT	Subject Registration (MEC390 – INDUSTRIAL TRAINING)	Student must register and pay the fees for the subject to receive final grade at the end of the semester	19 February – 15 March 2020	Online through Student Portal
STUDENT & INDUSTRIAL SUPERVISOR	Reporting form	Student must submit the reporting form (attached with the LI file) to their supervisor for proof of training at the company. NO INTERN PROOF, NO VISIT, DEDUCT MARKS.	Submit by 26 February 2020 (or earlier if the student wishes to do so)	1. Soft copy document to Industrial Training Google Drive 2. Hardcopy attached to the LI document and must be submitted at the end of the semester
INDUSTRIAL TRAINING COORDINATOR	Check reporting form	Coordinator checks the reporting form submitted by Students for documentation	27 February – 1 March	N/A

STUDENT	Subject Validation	Student must check that they have registered for the subject and validate accordingly.	16 March – 29 March	N/A
STUDENT	Pay UITM fees	Student must pay their fees for their final grades to appear by the end of the semester. NO PAY, NO GRADE, FAIL INTERN AND REPEAT AGAIN.	Pay by 22 March 2020	University Bursary (Bendahari)
STUDENT & INDUSTRIAL SUPERVISOR	Logbook for Industrial Training	Student must update their Logbook and must be checked by their supervisor include official stamp and sign	Between 2 February – 16 June 2020	To be completed daily and must be attached to the LI document and submitted at the end of the semester
INDUSTRIAL TRAINING COORDINATOR	Notification for visit	Coordinator delegates Industrial visits to college lecturers	2 – 6 March 2020	An email/ announcement will be circulated among the lecturers for industrial visits
STUDENT & INDUSTRIAL SUPERVISOR	Notification for visit	Student must notify their industrial supervisor on lecturer visits	Starting 7 March 2020	Notification will be made through Telegram Channel for Industrial Training
STUDENT & LECTURER	Industrial visit from lecturers	Student must prepare for industrial visit evaluation from lecturers. Students must liaise with their evaluating lecturers to decide on the date of visit Lecturers must communicate with respective students to decide on visiting dates.	16 March – 22 May 2020	Use lecturer's Evaluation form (that is attached with the LI binder file). Attach the form with the LI document and submit at the end of the semester

STUDENT & INDUSTRIAL SUPERVISOR	Industrial Supervisor Evaluation	Student sends an evaluation form to their industrial supervisor.	To be completed before student finishes their internship	Use Industrial supervisor evaluation form (thatis attached withtheLIbinder file). Attach the form with the LI document and submit at the end of thesemester.
STUDENT	Complete industrial training	Student should complete their industrial training with a minimum of 16 weeks in the industry.	EARLY END INTERNSHIP: 22 MAY 2020 FINAL END INTERNSHIP: 16 JUNE 2020	N/A
STUDENT	Report, Logbook, and Evaluation(LI Document) Submission	Student must complete all required documents to receive final grade for the semester	19 June 2020	BindHardcopyto the College of Mechanical EngineeringUITM Bukit Besi

STUDENT PORTFOLIO

As a UiTM student, students must keep a portfolio that descript you experience, achievements, result and anything related to you during your time studying in the University. This portfolio can then be an extension to your personal portfolio in your future achievements. University has prepared an electronic system that you use and can be access via istudent portal under myE-Portfolio. The direct link to myE-Porfolio is http://myeportfolio.uitm.edu.my/.

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 workplace. 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 breed 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 students' capability of applying what has been taught to them. OBE focuses on these key questions which are:

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 outcome.

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

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 attach 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

Arrange, combine, compose, construct, create, design, originate.

PROGRAM EDUCATIONAL OUTCOME (PEO) & PROGRAM OUTCOMES (PO)

PROGRAM 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).

Graduates who apply scientific knowledge and technical skills in mechanical engineering related industry.	PEO1
Graduates who have the abilities for leading, communicating and working in a team with professional and sustainable practices.	PEO2
Graduates who demonstrate effective information management, entrepreneurial skills and engage in life-long learning.	PEO3

PROGRAM OUTCOMES (PO)

Program outcomes are 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 behavior that students acquire through the program. The 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 program

Apply knowledge of applied mathematics, applied science, engineering fundamentals and an engineering specialization to wide practical procedures and practices (C)	PO1
Identify and analyze well-defined engineering problems reaching substantiated conclusions using related methods of analysis specific to their field of activity (C)	PO2
Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations (C)	PO3
Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements (P)	PO4
Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations (P)	PO5
Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technician practice and solutions to well-defined engineering problems (A)	PO6
Understand and evaluate the sustainability and impact of engineering technician work in the solution of well-defined engineering problems in societal and environmental contexts (A)	PO7
Understand and commit to professional ethics and responsibilities and norms of technician practice (A)	PO8
Function effectively as an individual, and as a member in diverse technical teams (A)	PO9
Communicate effectively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions (A)	PO10
Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage engineering project (A)	PO11
Recognize the need for and have the ability to engage in independent updating in the context of specialized technical knowledge (A)	PO12

MAPPING OF COURSES TO PROGRAM LEARNING OUTCOMES (PO)

SEM	COURSE CODE	COURSE NAME	Apply knowledge of applied mathematics, applied science, engineering fundamentals and an engineering specialization to wide practical procedures and practices	Identify and analyze well-defined engineering problems reaching substantiated conclusions using related methods of analysis specific to their field of activity	Design solutions for well-defined technical problems and assist with the design of systems, components, or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations	Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements	Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations	Demonstrate knowledge of the societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to engineering technician practice and solutions to well-defined engineering	Understand and evaluate the sustainability and impact of engineering technician work in the solution of well-defined engineering problems in societal and environmental contexts	Understand and commit to professional ethics and responsibilities and norms of technician practice	Function effectively as an individual, and as a member in diverse technical teams	Communicate effectively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give	Demonstrate knowledge and understanding of engineering management principles and apply these to one' sown work, as a member or leader in a technical team and to manage engineering project	Recognize the need for and have the ability to engage in independent updating in the context of specialized technical knowledge
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	CTU101	Fundamentals of Islam						√	√	√		√		
	XYZ111	Co-curriculum I						√	√	√				
	ELC121	Integrated Language Skills I										√		
	MECXXX	Engineering Drawing	√			√	√							
	MEC101	Introduction to Engineering	√				√			√	√	√		
	PHY130	Fundamentals Physics I	√	√	√							√		
	MAT183	Calculus 1	√	√	√									√

	UED101	Mathematical Thinking for Novices		√	√							√		
2	CTU152	Islamic Thought and Civilization						√	√	√		√		
	XYZ121	Co-curriculum II						√	√		√			
	ELC151	Integrated Language Skills II										√		
	CSC128	Fundamentals of Computer Problem Solving	√	√	√									
	MAT235	Calculus II for Engineers	√	√	√									
	MEC111	Statics	√	√										
	MEC281	Material Science	√	√										
3	CTU211	Science and Technology in Islam						√	√	√		√		
	XYZ131	Co-curriculum III						√	√	√				
	ELC231	Integrated Language Skills III										√		
	MEC211	Strength of Materials	√	√										
	MEC221	Dynamics	√	√										
	MEC241	Fluid Mechanics	√	√										
	MEC291	Mechanics and Materials Lab				√					√			
	MEM160	Workshop Practice	√			√		√	√		√			
4	ELEXXX	Basic Electrical Engineering	√			√	√							
	MEC251	Thermodynamics	√	√										
	MEC294	Thermofluids Lab				√					√			
	MEM360	Manufacturing Processes and Technology	√	√		√						√		
	MECXXX	Final Year Project I			√		√					√	√	√
	MEX3XX	ELECTIVE 1	√				√					√		
5	ENT300	Fundamentals of Entrepreneurship										√	√	√
	MECXXX	Final Year Project II			√		√					√	√	
	MEC331	Machine Element Design	√		√									
	MEX3XX	ELECTIVE 2	√				√		√			√		
	MEX3XX	ELECTIVE 3			√		√					√		√
6	MEC390	Industrial Training					√	√		√		√		

List of Elective (Mechanical)														
MEX3XX	MEC322	Control System and Instrumentations	√				√					√		
MEX3XX	MEM376	Plant Engineering	√				√		√			√		
MEX3XX	MEM341	Fluid Power Technology			√		√					√		√
List of Elective (Naval Architecture)														
MEX3XX	MES374	Ship Hydromechanics	√				√					√		
MEX3XX	MES362	Ship Production & Repair	√				√		√			√		
MEX3XX	MES311	Ship Structure			√		√					√		√

RULES AND REGULATIONS

GENERAL RULES

- Students should always refer to the Academic and Student handbook regarding academic matters and while in the university. The latest Academic Handbook can be access from the link below: https://hea.uitm.edu.my/v1/index.php?option=com_content&view=article&id=84:academic-regulations&catid=58:academic-regulations

- Students should always be aware of the updated information and announcements posted on the notice boards in the college and also at istudent portal.

ATTIRE AND DISCIPLINE

- Proper and formal attire must be worn during lectures and other programs conducted by the college and university.
- Male students must wear necktie 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/college.

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 statements (slip penyata peperiksaan) are correct as per registered courses.
- 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 CEEM110 students as part of their requirement for graduation.
- Students go for industrial training for the whole semester during Semester 6 or above.
- 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/college to avoid unnecessary accidents.
- The University/college 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 violates the University Act.
- Please refer to the respective Head of Program (*Ketua Program*) before involving in any activities outside the university programs.

PLAGIARISM

The College of Mechanical Engineering upholds its professionalism and academic integrity by all mean and is against all acts and forms of plagiarism by the students. Students must comply to proper citation and copyright at all time in their academic work. Students must aware that stealing someone else's work is wrong and is deemed as intellectual dishonesty which carries stern disciplinary penalties. These are some examples amounted to plagiarism but not limited to:

- Copying an article or a paper from the website or an online data base, or from books or journals without a proper citation.
- Conducting cut and paste to create a paper from several sources without proper acknowledgement.
- Quoting copied words whether in a full or part sentence. A student who quotes a sentence or two and then continues copying from the same source without citing it.
- Faking a citation. Giving a citation when one does not actually quote from it.

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

1. BIBLIOGRAPHIES AND FOOTNOTES

   All 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.

2. 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.

3. PARAPHRASING

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

4. 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 college member.

5. HOMEWORK, LABORATORY WORK, PROBLEM SETS AND COMPUTER PROGRAMS

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 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'.

6. 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.

7. 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.

8. STANDARD FORMS OF REFERENCE

Students should refer to sample sheets provided by the college 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 College of Mechanical Engineering on Discipline.

Regarding 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 for min 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.