ACADEMIC GUIDEBOOK

Undergraduate Programmes
Faculty of Ocean Engineering Technology
Academic Session 2024/2025
for Local Students

ENGLISH VERSION

FOR LOCAL STUDENTS

ACADEMIC GUIDEBOOK

Undergraduate Programmes
Faculty of Ocean Engineering Technology
Academic Session 2024/2025
for Local Students

ACADEMIC GUIDEBOOK

Undergraduate Programmes
Faculty of Ocean Engineering Technology
Academic Session 2024/2025
for Local Students

ACADEMIC GUIDEBOOK Undergraduate Programmes Faculty of Ocean Engineering Technology Academic Session 2024/2025 for Local Students

Editor Committee

Chief Editor

Assoc. Prof. Ts. Dr. Salisa Abdul Rahman

Editors

Gs. Ts. Dr. Aliashim Albani

Dr. Siti Norbakyah Jabar
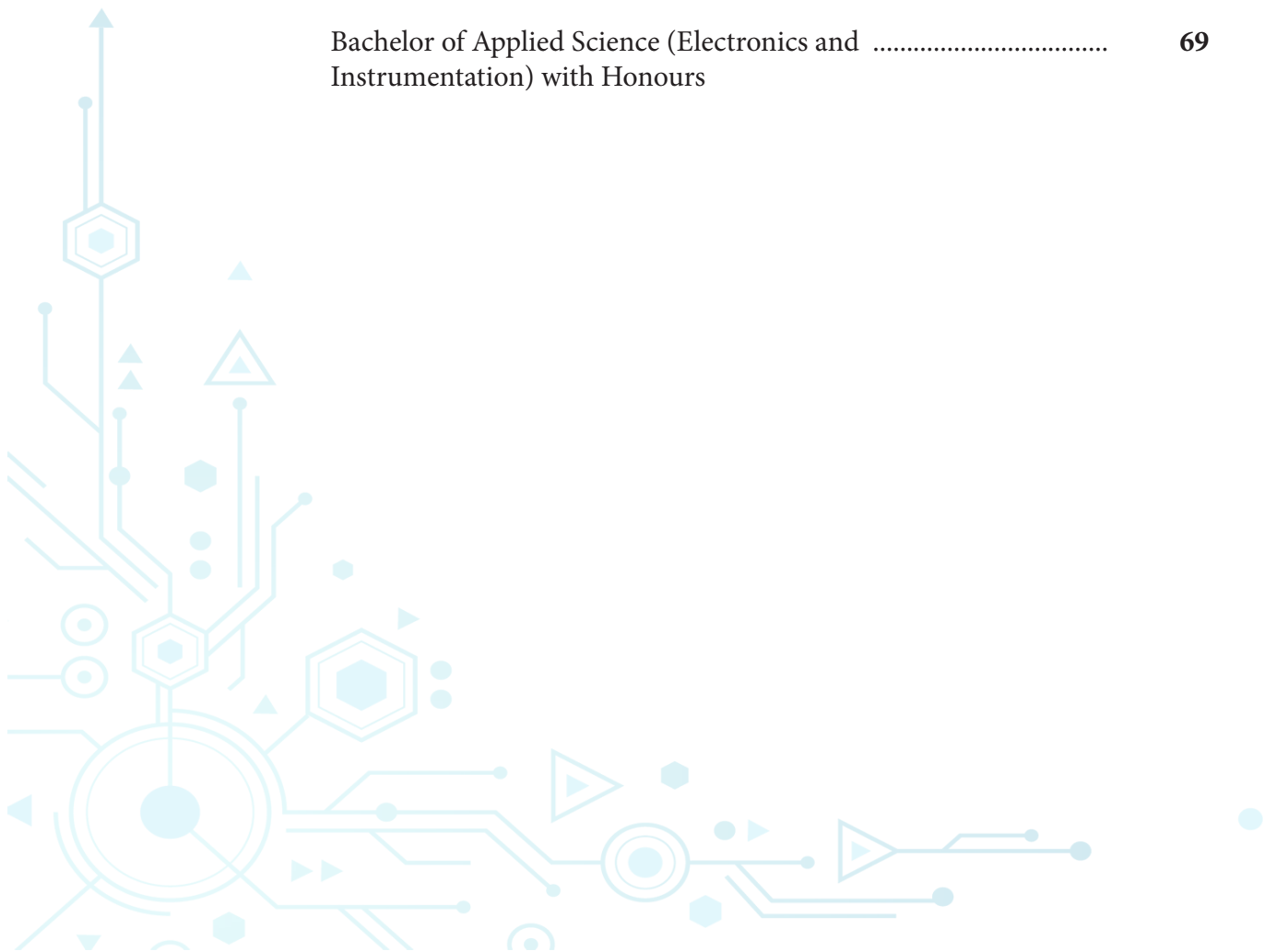
Dr. Syed Mohd Saiful Azwan Syed Hamzah

Nur Asyirah Mahadi

Mohd Zulkarami Endut

Mohd Rahime Fauze Abdul Rahman

Table of Contents

Remarks from the Dean

السَّلَامُ عَلَيْكُمْ وَرَحْمَةُ اللهِ وَبَرَكَاتُهُ

My gratitude and congratulations to the editors who have successfully prepared the 7th edition of the FTKK 2024 Pre-Graduate Guidebook. This book is digitally published every year and distributed specifically to new students for reference and guidance throughout their studies as pregraduates at FTKK.

I would like to take this opportunity to welcome the new students to the Faculty of Ocean Engineering Technology (FTKK), Universiti Malaysia Terengganu (UMT). As a faculty with the motto of Technology to Lead, students are very lucky to be part of the FTKK family because here is the knowledge garden to gain experience to change your family's destiny and life course.

Dear students,

The rapidly changing educational landscape has created new challenges in the era of higher education. Therefore, the role of universities is getting bigger in order to improve the quality of higher education in Malaysia in order to maintain the trust of the stakeholders to continue sending their children to universities to become knowledgeable graduates, mature thinkers, leaders and able to find the real truth to develop residents into a civilized country.

Universities in today's era are no longer limited to providing skilled graduates for the sake of a job market but focus more on providing future-proof skilled students with technological competence. With that determination, the prepared graduates will be able to meet the three (3) world trends that lead to High Art, High Tech and High Touch.

Therefore, I and the management committee of FTKK always strive to ensure that the study program and student talent development are organized and updated to prepare competitive students to meet current and future job requirements. The academic programmes offered by FTKK not only provides students with intellectual knowledge and skills but also connects theory, practice and soft skills to prepare graduates for the global arena. The latest teaching and learning facilities are provided in the faculty to guarantee the quality of teaching in addition to ensuring that teaching and learning meet the standards of the Malaysian Quality Agency (MQA) and recognized professional bodies.

Dear students,

The rapidly changing educational landscape has created new challenges in the era of higher education. Therefore, the role of universities is getting bigger in order to improve the quality of higher education in Malaysia in order to maintain the trust of the stakeholders to continue sending their children to universities to become knowledgeable graduates, mature thinkers, leaders and able to find the real truth to develop residents into a civilized country.

Universities in today's era are no longer limited to providing skilled graduates for the sake of a job market but focus more on providing future-proof skilled students with technological competence. With that determination, the prepared graduates will be able to meet the three (3) world trends that lead to High Art, High Tech and High Touch.

Therefore, I and the management committee of FTKK always strive to ensure that the study program and student talent development are organized and updated to prepare competitive students to meet current and future job requirements. The academic programmes offered by FTKK not only provides students with intellectual knowledge and skills but also connects theory, practice and soft skills to prepare graduates for the global arena. The latest teaching and learning facilities are provided in the faculty to guarantee the quality of teaching in addition to ensuring that teaching and learning meet the standards of the Malaysian Quality Agency (MQA) and recognized professional bodies.

Therefore, I expect you to appreciate the huge open space and opportunity to build your identity, professional ethics and the latest technology skills. Make today's step a start to continue to achieve more sweet and meaningful success in the future with the commitment to become an excellent graduate that parents are proud of as well as a competitive human capital for the country.

Finally, I pray that you continue to study enthusiastically, practice a healthy lifestyle both physically and spiritually and prove to your family that you will be an outstanding holistic graduate in another 3.5 or 4 years. Increase self-excellence and always protect the good name of UMT. Let's all of you develop each other's potential as human beings so that this beloved country can be prospered with noble and good moral citizens.

Thank you and I wish you best of luck to all students.

Thank you and all the best.

Prof. Ir. Dr. Mohammad Fadhli Ahmad
Dean
Faculty of Ocean Engineering Technology

Academic Calendar (Degree)
Semester I : Session 2024/2025

ACADEMIC CALENDAR (DEGREE)
SEMESTER I: SESSION 2024/2025

DATE/WEEK

Date/Week	Activity	Public Holidays
1 – 5/10/2024	REGISTRATION AND ORIENTATION FOR NEW STUDENTS	
WEEK 1-4 6/10/2024 – 2/11/2024	CLASSES/ LECTURES - Course Registration (Add & Drop) - Application for Credit Transfer (First Year Student) - Application for Deferment of Study	**Deepavali** 31/10/2024 (Thursday)
WEEK 5-7 3 – 23/11/2024	CLASSES/ LECTURES - Course Registration (Drop)	
24 – 30/11/2024	MID SEMESTER BREAK	
WEEK 8 1 – 7/12/2024	CLASSES/ LECTURES - Course Registration (Drop)	
WEEK 9 8 – 14/12/2024	CLASSES/ LECTURES - Course Review and Confirmation	
WEEK 10-13 15/12/2024 – 11/1/2025	CLASSES/ LECTURES	**Christmas Day** 25/12/2024 (Wednesday)
WEEK 14 12 – 18/1/2025	CLASSES/ LECTURES - Issuance of Examination Slip - Online Teaching Evaluation (e-SPP/TEP)	
19/1/2025 – 1/2/2025	STUDY WEEK	**Israk Mikraj Holiday** 27/1/2025 (Monday) **Chinese New Year** 29 & 30/1/2025 (Wednesday & Thursday)
WEEK 15-16 2/2/2025 – 15/2/2025	FINAL EXAMINATION - Online Teaching Evaluation (e-SPP/TEP)	
16/2/2025 – 15/3/2025	SEMESTER BREAK	**Sultan Terengganu's Coronation** 4/3/2025 (Tuesday)

PUBLIC HOLIDAYS

REMINDER

- Students may check all academic information through the student's portal at https://mynemo.umt.edu.my
- Students are required to verify the courses that have been registered by week-9 of the current semester.
- For the final year students, please refer to Graduating Module (*Modul Layak Bergraduat)* in the student's portal.
- Students are required to refer to Academic Rules And Regulations, Latest Edition through the student's portal for detailed Course Registration Regulation.
- Visit Pusat Pembangunan & Pengurusan Akademik (PPPA), UMT Facebook at https://www.facebook.com/AkademikUMT/ for the latest news and update.

Note: All the above dates are subject to change.

Center for Academic Development and Management, UMT

UMT
OfficialUMT

ACADEMIC CALENDAR (DEGREE)
SEMESTER II: SESSION 2024/2025

DATE/WEEK

Date/Week	Classes/Lectures	Public Holidays
WEEK 1-3 16/3/2025 – 5/4/2025	CLASSES/ LECTURES - Course Registration (Add & Drop) - Application for Credit Transfer (First Year Student) - Application for Deferment of Study	Nuzul al-Quran 17/3/2025 (Monday) Hari Raya Aidilfitri 31/3/2025 - 1/4/2025 (Monday - Tuesday)
WEEK 4 6 – 12/4/2025	CLASSES/ LECTURES -Course Registration (Add & Drop) -Application for Credit Transfer (First Year Student) -Application for Deferment of Study	
WEEK 5-7 13/4/2025 – 3/5/2025	CLASSES/ LECTURES - Course Registration (Drop)	Birthday Of Sultan Terengganu 26/4/2025 (Saturday) Birthday Of Sultan Terengganu Holiday 27/4/2025 (Sunday) Labour Day 1/5/2025 (Thursday)
4 – 10/5/2025	MID SEMESTER BREAK	
WEEK 8 11 – 17/5/2025	CLASSES/ LECTURES - Course Registration (Drop)	Wesak Day 12/5/2025 (Monday)
WEEK 9 18 – 24/5/2025	CLASSES/ LECTURES - Course Review and Confirmation	
WEEK 10-13 25/5/2025 – 21/6/2025	CLASSES/ LECTURES	Birthday Of YDP Agong 3/6/2025 (Tuesday) Arafah Day & Hari Raya Aidiladha 5 - 8/6/2025 (Thursday-Sunday)
WEEK 14 22 – 28/6/2025	CLASSES/ LECTURES - Issuance of Examination Slip - Online Teaching Evaluation (e-SPP/TEP)	Awal Muharram 27/6/2025 (Friday)
29/6/2025 – 5/7/2025	STUDY WEEK	
WEEK 15-17 6 – 26/7/2025	FINAL EXAMINATION - Online Teaching Evaluation (e-SPP/TEP)	

PUBLIC HOLIDAYS

REMINDER
- Students may check all academic information through the student's portal at https://mynemo.umt.edu.my
- Students are required to verify the courses that have been registered by week-9 of the current semester.
- For the final year students, please refer to Graduating Module (*Modul Layak Bergraduat)* in the student's portal.
- Students are required to refer to Academic Rules And Regulations, Latest Edition through the student's portal for detailed Course Registration Regulation.
- Visit Pusat Pembangunan & Pengurusan Akademik (PPPA), UMT Facebook at https://www.facebook.com/AkademikUMT/ for the latest news and update.

Note: All the above dates are subject to change.

Center for Academic Development and Management, UMT

UMT
OfficialUMT

Reminder

- Students may check all academic information through the student's portal at https://mynemo.umt.edu.my

- Students are required to verify the courses that have been registered by week-9 of the current semester.

- Registration of courses for the next semester can be completed from week-12 to week-17 in the current semester.

- For the final year students, please refer to Graduating Module (Modul Layak Bergraduat) in the student's portal.

- Course Grade Review Appeals and Failed and Discontinued Appeals must be made within two weeks after the official results of the final examination are issued.

    Note: The above information is subject to current amendments. Students must always be sensitive to announcements issued by the Center for Academic Development and Management (PPPA) and faculty from time to time.

Section

A

Information
Faculty of Ocean
Engineering Technology

Background

Faculty of Ocean Engineering Technology was formally founded on 1st January 2024 through the rebranding of Faculty of Ocean Engineering Technology and Informatics (FTKKI).

This faculty was established to pool the experts in technology and engineering such as maritime engineering, mechanical, civil, electrical and electronic engineering, chemistry and environment under one organization with the aim to empower the knowledge and research disciple in a niche area related to ocean engineering which are parallel with the mission and vision of UMT.

The main aim of FTKK is to produce competitive graduates, as well as implementing teaching and learning activities, research and consultation work related to science, mathematics, technology and ocean engineering. The programmes offered in this field is a pragmatic step towards producing skilled human resources, competitive and have integrity to fulfill the needs of the country.

FTKK offered four undergraduate programmes with the duration of the study being 7 to 8 semesters (3.5 to 4 years). The programmes that FTKK offered is as follows: -

1) Bachelor of Applied Science (Maritime Technology) with Honours
2) Bachelor of Mechanical Engineering Technology (Naval Architecture) with Honours
3) Bachelor of Applied Science (Electronics and Instrumentation) with Honours
4) Bachelor of Technology (Environment) with Honours

Postgraduate Programmes
1. Master of Science (Research)
2. Doctor of Philosophy (Research)

UMT Vision, Mission, Functions and Slogan

UMT Vision
Becoming the Country's Leading and Globally Respected Marine-Focused University

UMT Mission
Generating Knowledge for the Community's Affluence and Environmental Sustainability

1. Supports the mission of the university to become the premier centre of learning and research by contributing to the progress of humankind and exploration of knowledge and also to the creation of wealth and national development.

2. Provides trained manpower with professional skills, high self-discipline and positive work ethics.

3. Produces graduates who are sensitive to management ideas, responsive to change and become a role model for students and the community.

4. Serves society through the dissemination of ideas and new practices and seek solutions to current problems in society.

5. Establishes relationships with other universities, institutions and the industry for mutual benefit and the national development.

6. Supports the mission of the university to become an organised centre of research and learning as well as providing good services and exploring new technologies.

UMT Slogan

Ocean of Discoveries, for Global Sustainability.

FTKK Vision, Mission, Slogan & Objectives

FTKK Vision

Becoming a superior academic center of global engineering technology with universal sustainability

FTKK Mission

Driving the development and advancement of engineering technology by producing innovative and holistic high-performing graduates

FTKK Slogan

Technology to Lead

FTKK Objectives

1. Offer academic programs that meet the needs of the industry.

2. Produce graduates who are holistic, versatile, innovative and highly competitive in the job market.

3. Conduct research in the field of engineering technology that supports the development of knowledge and economy of the country.

4. Provide qualified academic talent and globally recognized expertise.

5. To be a reference center in addressing current issues and implementing knowledge transfer programs for community sustainability.

6. Fostering an entrepreneurial culture through the commercialization of expertise.

Management Committee
Faculty of Ocean Engineering Technology

Name : Professor Ir. Dr. Mohammad Fadhli Ahmad
Position : Dean/Professor
Qualification : PhD (Dundee University, Scotland), MSc (South Bank Univ. London),
          PEng, CEng, CMarEng, CMarTech, MIMarEST, MIEM, BEM
Expertise : Coastal Engineering (Physical/Modelling)
Phone No. : +609-6683215
Email : fadhli@umt.edu.my

Name : Associate Professor Ts. Dr. Salisa Abdul Rahman
Position : Deputy Dean (Academic and Student Affair)/Associate Professor
Qualification : PhD (UTS, Sydney), MSc, BEng (UTP)
Expertise : Electrical and Electronic Engineering (Energy Technology, Hybrid Electric
          Vehicle, Driving Cycle Development)
Phone No. : +609-6683447
Email : salisa@umt.edu.my

Name : Associate Professor Ts. Dr. Ahmad Nazri Dagang
Position : Deputy Dean (Talent and Research)/Associate Professor
Qualification : PhD, MEng, BEng (Ehime, Jepun)
Expertise : Electrical Engineering (Plasma Application, High Voltage, Mirowave Radiation,
          Antenna)
Phone No. : +609-6683440
Email : nazri.dagang@umt.edu.my

Name : Associate Professor Ts Dr. Suriani Mat Jusoh
Position : Head of Program Bachelor of Applied Science (Maritime Technology)
          Associate Professor
Qualification : PhD (UPM), MSc (UPM), BEng (UPM)
Expertise : Materials Engineering, Marine Corrosion
Phone No. : +609-6683716
Email : surianimatjusoh@umt.edu.my

Name : Associate Professor Dr. Mohd Asamudin A. Rahman
Position : Head of Programme Bachelor of Mechanical Engineering Technology
          (Naval Architecture)/Associate Professor
Qualification : PhD (UWA, Aus), BEng (UTM)
Expertise : Ocean Engineering
Phone No. : +609-6683698
Email : mohdasamudin@umt.edu.my

Name : Dr. Wan Rafizah Wan Abdullah @ Wan Abd. Rahman
Position : Head of Programme (Environmental Technology)/Lecturer
Qualification : PhD (UPM), MEng, BEng (UTM)
Expertise : Nanomaterial and Nanotechnology
Phone No. : +609-6683863
Email : wanrafizah@umt.edu.my

Name : Associate Professor Ts. Dr. Muhamad Zalani Daud
Position : Head of Programme Bachelor of Applied Science (Electronics and Instrumentation)
          with Honours/Associate Professor
Qualification : PhD (UKM), MEng (UoW, Aus), BEng (Ritsumeikan, Jepun)
Expertise : Electrical and Electronic Engineering (Renewable Energy System, Energy Efficiency)
Phone No. : +609-6683414
Email : zalani@umt.edu.my

Name : Muhamad Safre Muhamad Sani
Position : Senior Assistant Registrar
Qualification : BCOMM (UPM)
Phone No. : +609-6683134
Email : safre@umt.edu.my
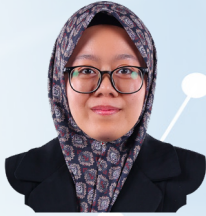
Name : Nur Asyirah Mahadi
Position : Assistant Registrar
Qualification : BAS (UiTM)
Phone No. : +609-6683605
Email : asyirah@umt.edu.my

Support Staff
Faculty Administration Office

Name : Nor Aslinda Razek
Position : Dean Secretary
Phone No. : +609-6683517
Email : noraslinda@umt.edu.my

Name : Rozita Muda
Position : Assistant Administrative Officer
Phone No. : +609-6683307
Email : rozita@umt.edu.my

Name : Mohd Rahime Fauze Abdul Rahman
Position : Senior Assistant Administrative (Clerical/Operations)
Phone No. : +609-6683172
Email : mrahime@umt.edu.my

Name : Norzaila Nordin
Position : Assistant Administrative (Clerical/Operations)
Phone No. : +609-6683307
Email : @umt.edu.my

Name : Nur Syatirah Mohamad
Position : Assistant Secretary Deputy Deans
Phone No. : +609-6683215
Email : n.syatirah@umt.edu.my

Name : Siti Aminah Ismail
Position : Operations Assistant
Phone No. : +609-6683172
Email : amiey@umt.edu.my

Academicians
Field of Environmental Technology

Name : Dr. Wan Rafizah Wan Abdullah @ Wan Abd. Rahman
Position : Head of Programme (Environmental Technology)/Lecturer
Qualification : PhD (UPM), MEng, BEng (UTM)
Expertise : Nanomaterial and Nanotechnology
Phone No. : +609-6683863
Email : wanrafizah@umt.edu.my

Name : Professor Ts. Dr. Mohd Zamri Ibrahim
Position : Vice Chancellor/Professor
Qualification : PhD (UKM), MSc (Warwick, UK), BEng (Sunderland, UK), PTech (MBOT)
Expertise : Renewable Energy, Hydrogen Energy System
Phone No. : +609-6683328
Email : zam@umt.edu.my

Name : Professor Ts. Dr. Che Mohd Ruzaidi Ghazali
Position : Professor
Qualification : PhD (UniMAP), MSc (USM), BTech (USM), PTech (MBOT)
Expertise : Material Engineering
Phone No. : +609-6683774
Email : ruzaidi@umt.edu.my

Name : Professor. Ts. Dr. Nora`Aini Haji Ali
Position : Professor
Qualification : PhD (UKM), MEng (UMIST, UK), BEng (UTM), PTech (MBOT)
Expertise : Separation Technology, Waste Separation, and Recovery Technology
Phone No. : +609-6683254
Email : noraaini@umt.edu.my

Name : Associate Professor Dr. Asmadi Ali @ Mahmud
Position : Associate Professor
Qualification : PhD (UMP), MEng, BEng (UTM)
Expertise : Separation Technology
Phone No. : +609-6683833
Email : asmadi@umt.edu.my

Name : Associate Professor Dr. Ir. Sofiah Hamzah
Position : Associate Professor
Qualification : PhD, MSc (UMT), BEng (IIUM)
Expertise : Separation Technology, Water & Wastewater Treatment
Phone No. : +609-6683971
Email : sofiah@umt.edu.my

Name : Associate Professor Dr. Nurul Adyani Ghazali
Position : Associate Professor
Qualification : PhD, MEng, BEng (USM)
Expertise : Air Quality Modelling, Air Pollution and Monitoring Technology
Phone No. : +609-6683356
Email : nurul.adyani@umt.edu.my
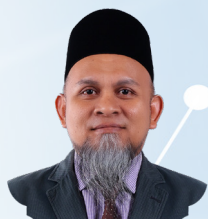
Name : Associate Professor Ts. Dr. Shahrul Ismail
Position : Associate Professor
Qualification : PostDoc (TU Delft), PhD (Wageningen, NL), MEng (UTM),
　　　　　　　BTech (USM), PTech (MBOT), MyBIOGAS
Expertise : Waste Treatment (Waste Water & Solid Waste)
Phone No. : +609-6683324
Email : shahrul.ismail@umt.edu.my

Name : Associate Professor Ts. Dr. Samsuri Abdullah
Position : Associate Professor
Qualification : PhD, BTech (UMT), PTech (MBOT)
Expertise : Air and Noise Pollution
Phone No. : +609-6683491
Email : samsuri@umt.edu.my

Name : Associate Professor Dr. Nazaitulshila Rasit
Position : Associate Professor
Qualification : PostDoc, PhD (UPM), MEng, BEng (UTM)
Expertise : Solid Waste Management, Water and Wastewater Treatment Technology
Phone No. : +609-6683418
Email : nazaitulshila@umt.edu.my

Name : Ts. Dr. Noor Zaitun Yahaya
Position : Lecturer
Qualification : PhD (Leeds, UK), MSc (USM), BTech (UTM), AHEA (UK), PTech (MBOT)
Expertise : Civil Engineering, Transportation & Environment, Aerial Modeling
Phone No. : +609-6683972
Email : nzaitun@umt.edu.my

Name : YM Dr. Tengku Azmina Engku Ibrahim
Position : Lecturer
Qualification : PhD (Aberdeen, UK), MEnv. Mgmt (UKM), BTech (USM)
Expertise : Industrial Hygiene
Phone No. : +609-6683741
Email : tengkuazmina@umt.edu.my

Name : Dr. Wan Salida Wan Mansor
Position : Lecturer
Qualification : PhD (Bath, UK), MEng, BEng (UTM)
Expertise : Nanomaterial and Nanotechnology
Phone No. : +609-6683349
Email : wansalida@umt.edu.my

Nama : Ts. Dr. Sunny Goh Eng Giap
Position : Lecturer
Qualification : PostDoc (NCSU), PhD (Meiji, Jepun), MSc (CEU, Manchester, Lund, Aegean),
　　　　　　　BTech (KUSTEM), PTech (MBOT)
Expertise : Soil Physics
Phone No. : +609-6683216
Email : sunnyg@umt.edu.my

Name : Dr. Mohd Sofiyan Sulaiman
Position : Lecturer
Qualification : PhD, MEng, BEng (UiTM)
Expertise : Hydraulic and Hydrology, Erosion and Sedimentation
Phone No. : +609-6683637
Email : sofiyan@umt.edu.my

Name : Gs. Ts. Dr. Aliashim Albani
Position : Lecturer
Qualification : PhD, MSc, BTech (UMT), PDip (UMP), PTech (MBOT), M-IGRSM
Expertise : Renewable Energy, Environmental Technology, Applied Geospatial
Phone No. : +609-6683261
Email : a.albani@umt.edu.my

Name : Dr. Nurul Ashraf Razali
Position : Lecturer
Qualification : PhD (Sheffield, UK), MEng (Belfast, UK)
Expertise : Carbon Dioxide Utilisation, Catalyst
Phone No. : +609-6683746
Email : nrazali@umt.edu.my

Name : Dr. Md. Nurul Islam Siddique
Position : Lecturer
Qualification : PhD, MSc (UMP), BSc (KUET, Bangladesh)
Expertise : Renewable Energy, Water and Wastewater Treatment Technology
Phone No. : +609-6683614
Email : m.nurul@umt.edu.my

Name : Dr. Mohamed Shahrir Mohamed Zahari
Position : Lecturer
Qualification : PhD (UMT), MSc, BTech (USM), ISCC EU & PLUS Auditor, MyCAS (Lifetime
                Member) HRDCorp Certified Trainer
Expertise : Biofuels, Sustainability
Phone No. : +609-6683353
Email : shahrir@umt.edu.my

Name : Zalina Mat Nawi
Position : Lecturer
Qualification : MEng, BEng (UTM)
Expertise : Process Design and Energy Analysis
Phone No. : +609-6683307
Email : zalina@umt.edu.my

Name : Dr. Mohammad Hakim Che Harun
Position : Lecturer
Qualification : PhD, MSc (Sheffield, UK), BEng (Nottingham, UK)
Expertise : Separation Technology, Fluid Dynamics (Microbubbles)
Phone No. : +609-6683204
Email : m.hakim@umt.edu.my

Name : Dr. Rohani Mustapha
Position : Lecturer
Qualification : PhD (UTM), M.Sc, B.Tech (UMT)
Expertise : Bio-based Polymer Composite
Phone No. : +609-6683533
Email : rohani.m@umt.edu.my

Name : Dr. Nurul Atikah Che Hasan
Position : Lecturer
Qualification : PhD, MSc, BSc (UPM)
Expertise : Occupational Safety and Health (OSH)
Phone No. : +609-6683334
Email : ikatikah@umt.edu.my

Laboratorian Staff
Field of Environmental Technology

Name : Mohd Zulkamal Radzi
Position : Deputy Chief Science Officer
Phone No. : +609-6683178
Email : mzradzi@umt.edu.my

Name : Mahmood Sulaiman
Position : Senior Science Officer
Phone No. : +609-6683378
Email : mahmood@umt.edu.my

Name : Mohd Redhuan Mohd Noor (Study Leave)
Position : Senior Science Officer
Phone No. : +609-6683307
Email : redhuan@umt.edu.my

Name : Nik Nur Farah Fashihah Nik Mohd Nidzam
Position : Vocational Training Officer
Phone No. : +6016-430 3232
Email : fashihah@umt.edu.my

Name : Noriayati Awang
Position : Senior Assistant Science Officer
Phone No. : +609-6683937
Email : noriayati@umt.edu.my

Name : Rozimi Awang
Position : Assistant Engineer
Phone No. : +609-6683403
Email : rozimi@umt.edu.my

Name : Siti Zalaikhar Alias
Position : Assistant Engineer
Phone No. : +609-6683403
Email : zalaikhar@umt.edu.my

Name : Mohd Rahmat Muda
Position : Lab Assistant
Phone No. : +609-6683937
Email : m.rahmat@umt.edu.my

Name : Mohd Khairi Abdullah
Position : Lab Assistant
Phone No. : +609-6683936
Email : khairi.abdullah@umt.edu.my

Academicians
Field of Maritime Technology & Naval Architecture

Name : Associate Professor Ts. Dr. Suriani Mat Jusoh
Position : Head of Program Bachelor of Applied Science (Maritime Technology)/
            Associate Professor
Qualification : PhD (UPM), MSc (UPM), BEng (UPM)
Expertise : Materials Engineering, Marine Corrosion
Phone No. : +609-6683716
Email : surianimatjusoh@umt.edu.my

Name : Associate Professor Dr. Mohd Asamudin A. Rahman
Position : Head of Programme Bachelor of Mechanical Engineering Technology
            (Naval Architecture)/Associate Professor
Qualification : PhD (UWA, Aus), BEng (UTM)
Expertise : Ocean Engineering
Phone No. : +609-6683698
Email : mohdasamudin@umt.edu.my

Name : Professor Ir. Dr. Mohammad Fadhli Ahmad
Position : Dean/Professor
Qualification : PhD (Dundee University, Scotland), MSc (South Bank Univ. London),
                PEng, CEng, CMarEng, CMarTech, MIMarEST, MIEM, BEM
Expertise : Coastal Engineering (Physical/Modelling)
Phone No. : +609-6683215
Email : fadhli@umt.edu.my

Name : Professor Dr. Wan Mohd Norsani Wan Nik
Position : Professor
Qualification : PhD (UTM), MSc (Bath UK), BEng (GWU USA) CSci, CMarSci,
                CMarEng, MIMarEST
Expertise : Marine Corrosion, Fluid Power, Mechanical Engineering
Phone No. : +609-6683342
Email : niksani@umt.edu.my

Name : Associate Professor Ir. Dr. Eng. Ahmad Fitriadhy
Position : Associate Professor
Qualification : Dr. Eng (Hiroshima), MEng (UTM), BEng (UNHAS, Indonesia)
Expertise : Naval Architecture
Phone No. : +609-6683856
Email: a.fitriadhy@umt.edu.my

Name : Associate Professor Dr. Ahmad Faisal Mohamad Ayob
Position : Associate Professor
Qualification : PhD (UNSW, Sydney), BEng (UM) MRINA, SNAME, MIMarEST
Expertise : Mechanical Engineering, Marine Design and Instrumentation
Phone No. : +609-6683807
Email : ahmad.faisal@umt.edu.my

Name : Associate Professor Dr. Mohd Hairil Mohd
Position : Associate Professor
Qualification : PhD (PNU, Busan) MEng, BEng (UTM)
Expertise : Offshore Structure
Phone No. : +609-6683830
Email : m.hairil@umt.edu.my

Name : Dr. Anuar Abu Bakar
Position : Senior Lecturer
Qualification : PhD (Newcastle), BSc (ITTHO/UTM), Adv Dip (VUT,Aus) PG Dip (RMIT,Aus)
                Certificate (Polytechnics) CEng, CMarEng, MIMarEST
Expertise : Marine Structure
Phone No. : +609-6683831
Email : anuarbakar@umt.edu.my

Name : Dr. Mohd Azlan Musa
Position : Senior Lecturer
Qualification : PhD (UMT), MEng, BEng (UTM) MIMarEST
Expertise : Marine Technology
Phone No. : +609-6683696
Email : mohdazlan@umt.edu.my

Name : Dr. Mohammad Fakhratul Ridwan Zulkifli
Position : Lecturer
Qualification : PhD, BASc (UMT)
Expertise : Maritime Technology (Marine Corrosion)
Phone No. : +609-6683305
Email : fakhratulz@umt.edu.my

Name : Dr. Wan Nurdiyana Wan Mansor
Position : Senior Lecturer
Qualification : PhD (CSU, USA), M.Eng (UTHM), B.Eng (USM) BEM, IEM
Expertise : Dual Fuel Engine
Phone No. : +609-6683495
Email : nurdiyana@umt.edu.my

Name : Ts. Dr. Che Wan Mohd Noor Wan Othman
Position : Senior Lecturer
Qualification : PhD (UMP), MEng, BEng (UTM), MBOT, MIMarEST, BEM, IEM
Expertise : Marine Technology
Phone No. : +609-6683837
Email : che.wan@umt.edu.my

Name : Ts. Dr. Shahrizan Jamaludin
Position : Senior Lecturer
Qualification : PhD (UKM), MEng (UKM), BEng (UTeM), BEM, IEM, MBOT
Expertise : Electronics & Computer Engineering
Phone No. : +609-6683678
Email : shahrizanj@umt.edu.my

Name : Dr. Sayyid Zainal Abidin Syed Ahmad
Position : Senior Lecturer
Qualification : PhD (UTM-KL), MSc (UTM-JB), BET (UniKL-MIMET), Dip (UiTM)
Expertise : Offshore Structural Analysis
Phone No. : +609-6683116
Email : s.zainal@umt.edu.my

Name : Ts. Dr. Mohd Faizal Ali Akhbar
Position : Senior Lecturer
Qualification : PhD (UMP), MEng (UTM), BEng (Yamanashi, JPN)
Expertise : Mechanical Engineering
Phone No. : +6013-9278846
Email : mfaizalaa@umt.edu.my

Name : Dr. Syed Mohd Saiful Azwan Syed Hamzah
Position : Lecturer
Qualification : PhD (UTM), BET (UniKL-MIMET)
Expertise : Material Engineering & Manufacturing (Composite Material)
Phone No. : +6019-4260775
Email : syedmsazwan@umt.edu.my

Name : Dr. Mohd Afifi Jusoh
Position : Lecturer
Qualification : PhD (UMT), MSc (UMT), BEng (UiTM)
Expertise : Electrical, Electronic and Renewable Energy
Phone No. : +6014-3629337
Email : afifi@umt.edu.my

Laboratorian Staff
Field of Maritime Technology & Naval Architecture

Name : Mohd Fadhil Md Shukor
Position : Senior Science Officer
Phone No. : +609-6683652
Email : m.fadhil@umt.edu.my

Name : Zulkifly Mohamed Adnan
Position : Senior Science Officer
Phone No. : +609-6683658
Email : zulkifly@umt.edu.my

Name : Sheikh Alif Ali
Position : Vocational Training Officer
Phone No. : +6012-9092893
Email : sheikh_alif@umt.edu.my

Name : Mohd Zulkarami Endut
Position : Senior Assistant Science Officer
Phone No. : +609-6683236
Email : zulkarami@umt.edu.my

Name : Zulkarnain Yahya@Mohamad
Position : Senior Assistant Science Officer
Phone No. : +609-6683654
Email : zulkarnain@umt.edu.my

Name : Mohd Harisan Gozali
Position : Assistant Engineer
Phone No. : +609-6683936
Email : harisan@umt.edu.my

Name : Wan Mohd Yusuf Wan Hassan
Position : Assistant Engineer
Phone No. : +609-6683672
Email : wmyusuf@umt.edu.my

Name : Mohamad Arif Abdul Razak
Position : Lab Assistant
Phone No. : +609-6683672
Email : arif@umt.edu.my

Academicians
Field of Electronics and Instrumentation

Name : Associate Professor Ts. Dr. Muhamad Zalani Daud
Position : Head of Programme Bachelor of Applied Science (Electronics and Instrumentation) with Honour/Associate Professor
Qualification : PhD (UKM), MEng (UoW, Aus), BEng (Ritsumeikan, Jepun)
Expertise : Electrical and Electronic Engineering (Renewable Energy System, Energy Efficiency)
Phone No. : +609-6683414
Email : zalani@umt.edu.my

Name : Associate Professor Ts. Dr. Salisa Abdul Rahman
Position : Deputy Dean (Academic and Student Affair)/Associate Professor
Qualification : PhD (UTS, Sydney), MSc, BEng (UTP)
Expertise : Electrical and Electronic Engineering (Energy Technology, Hybrid Electric Vehicle, Driving Cycle Development)
Phone No. : +609-6683447
Email : salisa@umt.edu.my

Name : Associate Professor Ts. Dr. Ahmad Nazri Dagang
Position : Deputy Dean (Talent and Research)/Associate Professor
Qualification : PhD, MEng, BEng (Ehime, Jepun)
Expertise : Electrical Engineering (Plasma Application, High Voltage, Mirowave Radiation, Antenna)
Phone No. : +609-6683440
Email : nazri.dagang@umt.edu.my

Name : Professor Ts. Dr. Mohammad Ismail
Position : Professor
Qualification : PhD (UoW, Aus), BSc (Malaya)
Expertise : Applied Physics (Solid-state Hydrogen Storage, Advanced Materials)
Phone No. : +609-6683487
Email : mohammadismail@umt.edu.my

Name : Associate Professor Ts. Dr. Nurul Hayati Idris
Position : Associate Professor
Qualification : PhD (UoW, Aus), MSc, BSc (Malaya)
Expertise : Computational Physics and Electronics (Advanced Materials for Energy Storage)
Phone No. : +609-6683185
Email : nurulhayati@umt.edu.my

Name : Associate Professor Datin Ts. Dr. Nurul Adilah Abdul Latiff
Position : Associate Professor
Qualification : PhD (UniMAP), MSc (Newcastle), BEng (USM)
Expertise : Electrical and Electronic Engineering (Wireless Communications Technology, Telecommunications Network, LoRA and Sensor Network)
Phone No. : +609-6683727
Email : nurul_adilah@umt.edu.my

Name : Associate Professor Dr. Wan Mariam Wan Muda
Position : Associate Professor
Qualification : PhD (UWA, Perth), MSc, BEng (USM)
Expertise : Electrical and Electronics Engineering (PV System, Control Theory)
Phone No. : +609-6683872
Email : w.mariam@umt.edu.my

Name : Dr. Hidayatul Aini Zakaria
Position : Senior Lecturer
Qualification : PhD (Queensland, Aus), BEng (Malaya)
Expertise : Bio-medical Engineering (Terahertz Technology, Drug Delivery)
Phone No. : +609-6683815
Email : hidayatul@umt.edu.my

Name : Ts. Dr. Nur Farizan Munajat
Position : Senior Lecturer
Qualification : PhD (KTH, Stockholm), MSc, BSc (UTM)
Expertise : Industrial Physics (Energy Technology, Heat and Power Technology)
Phone No. : +609-6683977
Email : nurfarizan@umt.edu.my

Name : Dr. Ahmad Zaki Annuar
Position : Senior Lecturer
Qualification : PhD (Edinburgh), MEng (UTM), BEng (UiTM)
Expertise : Power Electronics, Wireless Sensor Network, Internet of Things
Phone No. : +609-6683869
Email : zannuar@umt.edu.my

Name : Dr. Wan Hafiza Wan Hassan
Position : Senior Lecturer
Qualification : PhD (Victoria, Melbourne), MSc (UPM), BEng (MMU)
Expertise : Electronic Engineering (Telecommunications, Optical and RF Communications)
Phone No. : +609-6683973
Email : whafiza@umt.edu.my

Name : Dr. Muhammad Syarifuddin Yahya
Position : Lecturer
Qualification : PhD (UMT), MSc (Oxford), MEngSc(Curtin University), BSc (UKM)
Expertise : Physics (Material Science, Solid State Hydrogen Storage, Hydrogen Production)
Phone No. : +609-6683886
Email : syarif_yahya@umt.edu.my

Name : Hasiah Haji Salleh
Position : Lecturer
Qualification : MSc, BSc (UKM)
Expertise : Physics (Solid State Physics, Solar Energy)
Phone No. : +609-6683468
Email : hasiah@umt.edu.my

Name : Mohd Fairuz Affandi Aziz
Position : Lecturer
Qualification : MSc, BSc (USM)
Expertise : Medical Physics (Radiation Silica, Activated Carbon)
Phone No. : +609-6683821
Email : fandy@umt.edu.my

Name : Dr. Md. Rabiul Awal
Position : Lecturer
Qualification : PhD (UniMAP), MSc (IIUM), BSc (IIUC,BD)
Expertise : Electrical and electronic Engineering (Wireless Power Transfer, Vibration Energy Harvesting)
Phone No. : +609-6683173
Email : rabiul.awal@umt.edu.my

Name : Dr. Nurul Shafikah Mohd Mustafa
Position : Lecturer
Qualification : PhD, MSc, BSc (UMT)
Expertise : Physics Electronics and Instrumentation (Material Science, Solid State
              Hydrogen Storage)
Phone No. : +609-6683126
Email : nurulshafikah@umt.edu.my

Name : Dr. Siti Norbakyah Jabar
Position : Lecturer
Qualification : PhD, MSc, BSc (UMT)
Expertise : Physics Electronics and Instrumentation (Hybrid and Electric Vehicle)
Phone No. : +609-6683898
Email : bakyahjabar@umt.edu.my

Name : Dr. Nurafnida Afrizal
Position : Lecturer
Qualification : PhD (Liverpool, UK), MSc (Strathclyde, UK), BEng (UniKL)
Expertise : Electrical Engineering (Electrical Measurement, Condition Monitoring,
              Signal Processing)
Phone No. : +609-6683792
Email : nurafnida@umt.edu.my

Name : Dr. Zulkifli Mohd Yusop
Position : Lecturer
Qualification : PhD, B. Eng (UTM)
Expertise : Electrical Engineering (Control, Mechatronics and Robotics)
Phone No. : +609-6683143
Email : zulkifli.yusop@umt.edu.my

Laboratorian Staff
Field of Electronics and Instrumentation

Name : Dr. Mohd Shamsul Ali
Position : Vocational Training Officer
Phone No. : +609-6683307
Email : mohdshamsul@umt.edu.my

Name : Nor Faizah Adam
Position : Senior Science Officer
Phone No. : +609-6683365
Email : norfaizah@umt.edu.my

Name : Nurhayati Ishak
Position : Science Officer
Phone No. : +609-6683411
Email : n.ishak@umt.edu.my

Name : Mohd Razman Ngah
Position : Senior Assistant Science Officer
Phone No. : +609-6683657
Email : razman@umt.edu.my

Name : Mohd Khairul Amilin Yusof@Abdul Rahman
Position : Senior Lab Assistant
Phone No. : +609-6683557
Email : amilin@umt.edu.my

Name : Zulbairuddin Alias@Yahya
Position : Senior Lab Assistant
Phone No. : +609-6683557
Email : zulbairuddin@umt.edu.my

Name : Najmul Munirah Mat Hassan
Position : Senior Lab Assistant
Phone No. : +609-6683657
Email : najmul@umt.edu.my

Section
B

General Information, Dress Code and Student Appearances

General Information

Studying System

UMT practices semester-based system. There are two common semesters for each academic year and the duration for each semester is 19 weeks, the breakdown is as follows:

Activity	Semester I	Semester II
Lecture	7 Weeks	7 Weeks
Mid semester break	1 Week	1 Week
Lecture	7 Weeks	7 Weeks
Revision break	1 Week	1 Week
Final examination	3 weeks	3 weeks

Programme Curriculum Structure

The curriculum structure for undergraduate students is designed in accordance to the UMT philosophy and vision, which is to produce knowledgeable graduates, competent with multiple skills including entrepreneurship and leadership. There are three course components in the programme curriculum namely University Core, Programme Core and University Elective.

University Core

The university core components comprise several courses which are compulsory for all UMT undergraduates to enroll and pass the courses. These courses aim to provide general knowledge to students.

Core Programme

Core programme components comprise courses related to the majoring programme and determined by the corresponding faculty which is offering the respective programme. The students are compulsory to undertake their respective core programme courses.

University Elective

University Elective components comprise selected courses chosen by students after discussing with their academic advisor/mentor/head of programme. The credit hours for elective courses are counted and the score point is given.

Course Exemption System

Students are allowed to apply for course exemption by completing Course Exemption Form AD-2 (12th version) through online MyNemo Student portal (subject to conditions and approval from Deputy Dean Academic and Students).

Mentor-mentee System

Mentor-mentee system is introduced in UMT to replace the academic advisor system. A mentor is an academician who is responsible to provide consultation on academic matters to the students (mentees) and also to advise the students if the students encounter any problem pertaining to their studies or personal issues. Each student is obliged to meet their mentor for consultation and the appointment can be set in advance, depending on the availability of the mentor.

Implementation

Faculty will assign a lecturer as a mentor for each student who enrolls the programme. The students can meet their mentor to seek advice on academic matters or any other matter.

Mentor Roles

- Assisting students to understand curriculum, semester system, registration system, examination system and course exemption.

- Assisting students to plan their studies structure, to select courses and giving advice on academic issues faced by students.

- Identify problems which may affect the academic progress of the student and directly refer to an expert who has the skill to solve the encountered problems.

- Sign and certify certificates and any documents regarding student academics.

- Become a mentor and motivate students.

- Hold meetings with students at least twice each semester.

- Keep and update student records and files.

Grading System, Grade and Grade Point Average

Grading scheme, Alphabetical Grade, Grade Point Value and Grade Description are as shown in the following table.

Marks	Alphabet Grade	Grade Point Value	Grade Description
80 - 100	A	4.00	Excellent
75 - 79	A-	3.75	Excellent
70 - 74	B+	3.50	Good
65 - 69	B	3.00	Good
60 - 64	B-	2.75	Good
55 - 59	C+	2.50	Satisfactory
50 - 54	C	2.00	Satisfactory
45 - 49	C-	1.75	Poor
40 - 44	D	1.00	Poor
Less than 39	F	0.00	Fail

CGPA	Degree Classification	
	In Bahasa Melayu	In English
3.67 - 4.00	Cemerlang	Distinction
2.00 - 3.66	Kepujian	Honours

Admission and Graduation Requirements

MUET

Entry Requirements:

Stream	Minimum MUET Band Requirement by JPT	Current Implementation of Minimum MUET by UMT	New Minimum MUET Band Requirement by UMT
Arts and Social Sciences	Band 2	Band 1	Band 2.0
Science, Technology, Engineering, and Mathematics (STEM)	Band 3	Band 2	Band 3.0

Graduation Requirements:

Method 1:

Stream	Minimum MUET Band Requirement by JPT	Current Implementation of Minimum MUET by UMT	New Minimum MUET Band Requirement by UMT
Arts and Social Sciences	Band 2	Band 1	Band 2.0
Science, Technology, Engineering, and Mathematics (STEM)	Band 3	Band 2	Band 3.0

If students have achieved the minimum MUET Band required for graduation, they are considered to have met the graduation requirements for MUET achievement.

OR

Method 2:

The minimum MUET Band requirement for graduation can be equated with any English language course at UMT that is aligned with the Common European Framework of References (CEFR) grades, where students must achieve the minimum grades specified.

Survival and Water Safety Program

Students are required to undertake the Survival and Water Safety Program as a condition to graduate.

General Rules for Dress Code and Student Appearances
Universiti Malaysia Terengganu

General Rules

- It is mandatory for all students to show their matric card while on campus.

- All students are prohibited from wearing clothing or accessories that signifies certain groups or association that might cause disharmony in campus.

- All students are prohibited from showcasing any elements that might contradict with ethics and morale or wearing any attire that might contain designs of words or phrase that is not parallel with good norms or values.

- All students are restricted with dress code rules as specified by laboratory guidelines or any other place on campus with its own specified guidelines.

Example of Appearances of Students with Matric Card

Hair

- Students hair must always be smart not sloppy.

- Male students are not allowed to have long hair or brandishing ponytails the front or the back. Hair must not reach the shirt collar.

- Excessive hair fashion for male and female students are prohibited.

- Dyed hair is not allowed at all.

Faculty Policy
Appropriate Attire While In Campus and Attending Formal Events

Examples of Appropriate Students' Attire

- All students must wear proper attire befitting as a university student.

- Students must wear appropriate attire (shirt, collared T-shirt, shoes, long pants, skirts below the knee level) while in class/ laboratory/library/office or cafeteria and outside of the residential room.

- Students are not allowed to wear clothing that is tight or sheer, body-revealing (from the chest to knee) or basically inappropriate clothing. Students are not allowed to wear such clothing listed below during classes or at any formal event:

    - Skirts above the knee level
    - Jeans
    - Slippers
    - Tight, form-fitting skirts or pants
    - Sleeveless

    (The above list is not final and subjected to current University rules)
    Due to security reason, the use of niqab or face mask during examination/academic evaluation or at any formal events is prohibited.

- In any formal event, it is compulsory for male students to wear formal attire which includes a long-sleeved shirt, tie, long pants and formal shoes. Female students must wear *baju kurung* or any decent attire with the blouse surpassing the hip level, skirt below the knee level or loose long pants and formal shoes.

- Students must also abide by the dress code as dictated by the University or the organizer from time to time depending on the events being organized.

- While on official business with any of the offices in the University or in the lecture hall, students are not allowed to wear hats or bandanas.

- Students are prohibited from getting a tattoo for any parts of the body. Body piercing for male students is strictly prohibited as well as excessive body piercing for female students. Male students are also not allowed to wear hand bangles or dress in a manner resembling females.

Section

C

Academic Programmes Offers

Bachelor of Technology
(Environment)
with Honours

Bachelor of Technology (Environment) with Honours

Introduction

Bachelor of Technology (Environment) with Honours is a four-year undergraduate programme that was first introduced in the year 2000. In this programme, students will be equipped with a wide range of knowledge, attitude and skills in environmental sciences, technology, engineering, and management which will enable them to effectively meet the needs of industry and community.

The programme is taught by lecturers from different areas of expertise and each course is delivered through face-to-face or online lectures, discussion, tutorials as well as problem-based projects according to the course learning objectives. In the third year of study, every student will be given the opportunity to conduct a final year research project under the supervision of an appointed supervisor. This research training will expose students to relevant digital and numeracy skills for data analysis, technical presentation and system modelling. Students also learn essential practical and problem-solving skills in managing their projects.

In the final year, students are required to undergo industrial training for 24 weeks at selected local or international organisations endorsed by the faculty in the field related to environmental technology. The training will enable students to combine their knowledge and soft skills gained to tackle environmental issues at the workplace.

Program Educational Objective (PEO)

The educational objective for this programme is to produce graduate technologist who has the following qualities:

PEO1: Possess basic knowledge and technical skills in science, technology, engineering and environmental management.

PEO2: Ability to solve the environmental problems creatively and innovatively using a sustainable approach and application of numeracy and digital technology skills.

PEO3: Ingenious, competitive, and skilled in communicating effectively and have good leadership qualities in an organization.

PEO4: Always practice the qualities of professionalism and integrity in line with professional ethics and practice.

PEO5: Able to identify and take advantage of entrepreneurial, business, consulting, and lifelong learning opportunities.

Career Prospect

Graduates of this programme will have the opportunity to pursue careers in various sectors. Among the prominent careers are:

Environmental Scientist, Hazardous Materials Consultant and Manager, Environmental Compliance Managers, Environmental Investigator Officer, Environmental Coordinator, Waste Management Consultant, Site Rehabilitation Consultant, Wastewater Treatment Operator, Pollution Control Consultant, Environmentalist, Environmental Activist, Occupational Health Consulting Officer, and Educator in the field of environment.

Curriculum

Total of Credit for Graduation

The minimum number of credits to graduate is 133 credit hours. The distribution of credit hours by course category is as follows:

Categories	Credits	Percentages
University Core	20	15
Programme Core	77	58
University Elective	36	27
Total	**133**	**100**

University Core (20 Credit Hours)

Course Code	Course Name	Credit Hours	Prerequisite
BBB3013	Academic Writing Skills	3 (3+0)	None
BBB3033	English for Occupational Purposes	3 (3+0)	None
MPU3142	Philosophy and Current Issues	2 (2+0)	None
MPU3132	Appreciation of Ethics & Civilization	2 (2+0)	None
MPU3223	Basic Entrepreneurship	3 (3+0)	None
COM3112	Communication Arts	2 (2+0)	None
CCM3011	Community Care	1 (0+1)	None
CCXXXXX	Co-Curriculum	2 (0+2)	None
MPU3352	Integrity and Anti-Corruption	2 (2+0)	None

Programme Core (77 Credit Hours)

Course Code	Course Name	Credit Hours	Prerequisite
KAS3013	Introduction to Environmental Technology	3 (3+0)	None
KAS3023	Environmental Statistics	3 (3+0)	None
KAS3032	Principles of Environmental Analysis	2 (2+0)	None
KAS3213	Water Treatment Technology	3 (3+0)	None
KAS3223	Wastewater Treatment Technology	3 (2+1)	KAS3313
KAS3313	Quality and Air Pollution	3 (3+0)	KAS3313
KAS3323	Meteorology and Environment	3 (2+1)	None
KAS3513	Occupational Safety and Health	3 (3+0)	None
KAS3523	Environmental Laws and Regulations	3 (3+0)	None
KAS3533	Environmental Management	3 (3+0)	None
KAS3723	Hydrology and Water Resource	3 (2+1)	KAS3513
KAS4113	Environmental Design	3 (1+2)	KAS3513
KAS4413	Solid Waste Management	3 (3+0)	None
KAS4423	Hazardous and Scheduled Waste Management	3 (3+0)	None
KAS4553	Environmental Impact Assessment	3 (2+1)	None
KAS49712	Industrial Training	12 (0+12)	None
KAS4983	Final Year Project I	3 (0+3)	None
KAS4993	Final Year Project II	3 (0+3)	None
KEJ3123	Materials Engineering	3 (2+1)	None
KEJ3133	Engineering Drawing for Environmental Technology	3 (1+2)	None
KEJ3143	Fluid Mechanics	3 (2+1)	None
KEJ3163	Chemical Process Principles	3 (3+0)	None
KEJ3173	Mathematics for Technology	3 (3+0)	None

University Elective (36 Credit Hours)

Students are free to register for any course offered as appropriate based on student interest and maturity. Students are also required to take at least 21 credit hours from the list of elective courses below, or subject to the approval by the Programme Chairman:

Course Code	Course Name	Credit Hours	Prerequisite
KAS4213	Urban Drainage and Sewerage	3 (3+0)	None
KAS4223	Advanced Wastewater Treatment	3 (3+0)	None
KAS4233	Wetlands	3 (3+0)	None
KAS4243	Industrial Effluent and Activated Sludge Treatment	3 (3+0)	None
KAS4313	Air Pollution Control Technology	3 (3+0)	KAS3313
KAS4323	Indoor Air Quality	3 (3+0)	KAS3313
KAS4333	Emission from Combustion Process	3 (3+0)	None
KAS4343	Air Quality Monitoring and Instrumentations	3 (3+0)	None
KAS4353	Environmental Noise and Vibration	3 (3+0)	None
KAS4513	Geotechnical Engineering	3 (3+0)	None
KAS4533	Industrial Hygiene	3 (3+0)	KAS3513
KAS4543	Occupational Safety Health Management and Audit	3 (3+0)	KAS3513
KAS4563	Life Cycle Assessment	3 (3+0)	None
KAS4573	Sustainability Operation and Management	3 (3+0)	None
KAS4713	Groundwater and Pollution	3 (3+0)	None
KAS4723	Surface Water Hydrology	3 (3+0)	None
KAS4733	Coastal Environment	3 (2+1)	None
KAS4743	Soil Physics	3 (3+0)	None
KAS4753	Watershed Management	3 (3+0)	None
KAS4763	Soil Nature and Physical Properties	3 (3+0)	None
KAS4773	Applied Geographic Information System (GIS) For Environment	3 (2+1)	None
KEJ4113	Unit Operations	3 (3+0)	None
KEJ4123	Chemical Reaction Technology	3 (3+0)	None
KEJ4133	Heat Transfer	3 (3+0)	None
KEJ4143	Mass and Energy Balances	3 (3+0)	None
KEJ4513	Engineering Economics	3 (3+0)	None
KEJ4523	Chemical Process Safety	3 (3+0)	None
KEJ4613	Renewable Energy Technology	3 (3+0)	None
KEJ4623	Membrane Technology	3 (3+0)	None
KEJ4633	Clean Technology	3 (3+0)	None
KEJ4643	Polymer and Environment	3 (3+0)	None
KEJ4653	Environmental Nanotechnology	3 (3+0)	None
KEJ4663	Thermochemical Treatment and Biomass Recovery	3 (3+0)	None
KEJ4673	Anaerobic Digestion Process Technology	3 (3+0)	None
KEJ4683	Energy and Climate Change	3 (3+0)	None
KEJ4693	Energy Management and Audit	3 (3+0)	None

Course Scheme
Bachelor of Technology (Environment) with Honours

Code	Course Name	Credit Hours	Pre-requisite	Code	Course Name	Credit Hours	Pre-requisite
Semester 1				**Semester 2**			
COM3112	Communication Arts	2(2+0)	-	BBB3013	Academic Writing Skills	3(3+0)	-
KEJ3173	Mathematics for Technology	3(3+0)	-	MPU3132	Appreciation of Ethics and Civilizations	2(2+0)	-
KAS3013	Introduction to Environmental Technology	3(3+0)	-	MPU3142	Philosophy and Current Issues	2(2+0)	-
KAS3523	Environmental Law and Regulations	3(3+0)	-	KAS3023	Environmental Statistics	3(3+0)	-
KEJ3123	Materials Engineering	3(2+1)	-	KAS3032	Principles of Environmental Analysis	2(2+0)	-
MPU3352	Integrity and Anti-Corruption	2(2+0)	-	CCXXXXX	Co-Curriculum	2(0+2)	-
				CCM3011	Community Care	1(0+1)	-
					Elective 1	3	
	Total Credit	**16**			**Total Credit**	**18**	
Semester 3				**Semester 4**			
KAS3213	Water Treatment Technology	3(3+0)	-	KAS3223	Wastewater Treatment Technology	3(2+1)	KAS3213
KAS3313	Quality and Air Pollution	3(3+0)	-	KAS3533	Environmental Management	3(3+0)	-
KEJ3163	Chemical Process Principles	3(3+0)	-	KAS3723	Hydrology and Water Resources	3(2+1)	-
KEJ3143	Fluid Mechanics	3(2+1)	-	KAS4413	Solid Waste Management	3(3+0)	-
KEJ3133	Engineering Drawing for Environmental Technology	3(1+2)	-	KAS3323	Meteorology and Environment	3(2+1)	-
	Elective 2	3	-		Elective 3	3	-
	Total Credit	**18**			**Total Credit**	**18**	
Semester 5				**Semester 6**			
KAS4423	Hazardous and Scheduled Waste Management	3(3+0)	-	BBB3033	English for Occupational Purposes	3(3+0)	-
KAS3513	Occupational Safety and Health	3(3+0)	-	KAS4553	Environmental Impact Assessment	3(2+1)	-
KAS4113	Environmental Design	3(1+2)	KAS3223	KAS4983	Final Year Research Project I	3(0+3)	-
	Elective 4	3	-		Elective 7	3	-
	Elective 5	3	-		Elective 8	3	-
	Elective 6	3	-		Elective 9	3	-
	Total Credit	**18**			**Total Credit**	**18**	
Semester 7				**Semester 8**			
MPU3223	Basic Entrepreneurship	3(3+0)	-	KAS49712	Industrial Training*	12(0+12)	-
KAS4993	Final Year Research Project II	3(0+3)	KAS4983				
	Elective 10	3	-				
	Elective 11	3	-				
	Elective 12	3	-				
	Total Credit	**15**			**Total Credit**	**12**	
Total Credit to Graduate : 133							

Notes :

* KAS49712 Industrial Training will be implemented throughout Semester 8 (students are required to return to UMT for presentations and to submit reports. Marking and grading will be completed according to the schedule like other courses).

1. The number of elective course credit hours that must be taken by students in the programme of study is subject to the number of elective credit hours set by the programme of study to meet graduate qualifications and is not subject to the number of elective courses taken.

2. The list of elective courses that can be taken by students in the programme of study refers to the course offerings listed in the handbook of the study programme of the faculty and other faculties.

Course Synopsis
Bachelor of Technology (Environment) with Honours

KAS3013   : Introduction to Environmental Technology
Credit   : 3 (3+0)
Prerequisite : None
This course provides the student with fundamental knowledge about the environmental elements and the overview of environmental technology scopes. The topics covered in the course explain about the basic concepts of environmental technology, introduction to hydrology and ecosystem. The main emphasis is on the application aspect of pollution prevention and control strategies for protecting the quality of air, water and soil.

KAS3023   : Environmental Statistics
Credit   : 3 (3+0)
Prerequisite : None
This course exposes students to an approach oriented to probability and data analysis to solve problems related to the environment. It is designed to provide students with the knowledge and skills to interpret and analyze data. Course content includes data description in the environment, probability, estimating the value of a parameter using confidence intervals, comparison tests, correlation and regression as well as environmental sampling and modeling. Overall, students are inculcated with 21st century elements in managing, analyzing and interpreting data critically and using appropriate methods. Technology 4.0-guided approach can produce students who have skills in analyzing a lot of data (big data analytics) for the sake of universal sustainability.

KAS3032   : Principles of Environmental Analysis
Credit   : 3 (3+0)
Prerequisite : None
This course introduces the student to the fundamental mathematical tools and concepts commonly applied in technology. Topics covered in the course include topics from Algebra (solution of equations, trigonometry, complex numbers), Calculus (functions and graphs, review of differentiations, rates of change and differential equations, integration techniques and applications) and Geometry (vectors and curves). The mathematical calculation concepts introduced in this course will help students master the topics in the advanced courses.

KAS3213   : Water Treatment Technology
Credit   : 3 (3+0)
Prerequisite : None
This course introduces the student to the theories and principles of water treatment. The topics covered include the characteristics, criteria, principles, theories related to water treatment and distribution techniques and their components. The course will also emphasize on compliance with standards, rules, laws and outlines. The discussion will also focused on the design aspect of water treatment technology.

KAS3223   : Wastewater Treatment Technology
Credit   : 3 (2+1)
Prerequisite : KAS3213
This course discusses aspects of wastewater characterization, types of pollutants and basic principles for components in conventional and advanced wastewater treatment technology. It also emphasizes on issues related to the management of wastewater treatment systems such as the compliance with treated water discharge standards and sludge disposal. Students will conduct practicals to determine the content of pollutants in water as well as their treatment methods.

KAS3313   : Quality and Air Pollution
Credit   : 3 (3+0)
Prerequisite : None
This course introduces the students to the causes, effects and control of air pollution. The topics covered include the general philosophy of air pollution and related regulations, environmental impacts, classification of air pollution and its source, air quality measurement, data monitoring, processing and modelling. This course also provides the knowledge of the latest rules and management methods in air pollution control based on the Clean Air Regulations, 1978.

KAS3323   : Meteorology and Environment
Credit   : 3 (2+1)
Prerequisite : None
This course aimed to expose to the students the occurrence of various meteorological phenomena, atmospheric circulations, weather system and techniques used in weather forecast. Topics to be discussed includes atmospheric structure, Earth weather and climate system, temperature, moisture, cloud and precipitation, atmospheric circulation, hydrological cycle, weather forecast and climate change. Basic knowledge in meteorology and climatology is very important in advanced courses related to air pollution control and hydrology.

KAS3513   : Occupational Safety and Health
Credit   : 3 (3+0)
Prerequisite : None
This course introduces the students to the philosophy, principles and the rationale of Occupational Safety and Health 1994 for protecting the workers in Malaysia. This course discusses accidents at work, the nature of hazards and danger, techniques for evaluating and assessing hazards and the management of safety and health in the workplace.

KAS3523   : Environmental Laws and Regulations
Credit   : 3 (3+0)
Prerequisite : None
This course requires students to gain knowledge regarding/about the introduction to the international environmental law and agencies that are responsible in Malaysia. This course will expose the students to the regulations under Environmental Quality Air 1974 in protecting and preserving the environment relating to air quality, control of emission from vehicle, noise pollution, water quality, scheduled waste and solid waste management. This course provides students to form the relationship between the regulations and environmental issues that is happening and provide solutions to solve the problems.

KAS3533   : Environmental Management
Credit   : 3 (3+0)
Prerequisite : None
Environmental management is a discipline that integrates human and environmental interactions as well as management and science applications or solve problem and related issues. This course enables students to understand and explain the basic principles and aspect of pollution management and control, environmental protection, how pollutant media act (water, air, soil, noise) and how humans deal with and manage these resources and pollutants. This course also focuses the impacts of human activity towards environment and human health. Aspect of audit and environmental assessment will provide exposure to understand the aspect of protection, risk, audit and environmental pollution control as a whole.

KAS3723 : Hydrology and Water Resource
Credit : 3 (2+1)
Prerequisite : None
This course introduces hydrological cycle, hydrological components such as precipitation streamflow evaporation, evapotranspiration, infiltration and groundwater; hydrograph analysis and hydrological statistics; water resources; flood protection and watershed management. This course emphasizes collaborative learning and able to link theory, measurement technique, computation and prediction. Heutagogy approach is used to develop student's skill of data interpretation and identification of environmental problem.

KAS4113 : Environmental Design
Credit : 3 (1+2)
Prerequisite : None
This course enables the students to gain the insight to the concept in designing unit operations and processes related to the environmental engineering. The student will be guided to select appropriate methodology in project planning and design of water treatment system as well as the residual wastewater collection system. The course involves mini project implementation, project report and presentation.

KAS4413 : Solid Waste Management
Credit : 3 (3+0)
Prerequisite : None
This course exposes students to the principles of solid waste management and toxic waste in urban planning and industrial development in Malaysia. The students will learn intensively the characteristics and composition of solid waste generated from various sources. Topics discussed include an integrated management system in controlling manufacturing industry activities; treatment systems, methods of control, supervision and maintenance of industrial wastes in the context of increasing environmental pollution.

KAS4423 : Hazardous and Scheduled Waste Management
Credit : 3 (3+0)
Prerequisite : None
This course discusses the basic theories and principles of hazardous and scheduled waste management as well as waste control technology. It covers legislation, policies, sampling and managed waste storage procedures. This course also emphasizes on physical, chemical and biological treatment methods, stabilization treatments as well as the latest treatment methods namely incineration.

KAS4553 : Environmental Impact Assessment
Credit : 3 (2+1)
Prerequisite : None
Environmental impact assessment (EIA) is an important process for predicting the environmental consequences of a plan or project. This course introduces the student to guidelines, policies, regulations and acts related to implementation of EIA. The students will be equipped with the skills and knowledge to critically evaluate the impact of a development project on the environment and socioeconomic.

KAS49712 : Industrial Training
Credit : 12 (0+12)
Prerequisite : None

Students will be placed in government or private organizations related to the environment for a period of 24 weeks. Students will carry out current duties appropriate to the Environmental Technology programme under the supervision of both industrial and university supervisors. This course incorporates elements of peeragogy (collaborative teaching and learning) between students and supervisors in the industry, as well as unconventional learning and teaching elements (situation learning and inquiries) in completing the mini-projects entrusted. Combining elements of cognitive, communication, interpersonal, ethics and professionalism, and leadership, autonomy and responsibility skills, these will be translated through final reports, presentations and feedback from both industrial and UMT supervisors.

KAS4983 : Final Year Project I
Credit : 3 (0+3)
Prerequisite : None

This course requires students to propose a research project related to Environmental Technology under the guidance of one or more lecturers at the school. Students will work individually to develop selected research projects based on scientific research methods. Students then prepare a project proposal report and present it in a seminar. Students are also required to prepare a draft of the research thesis covering Chapters 1, 2 and 3 to be evaluated by the appointed supervisor and examiner. To develop the capacity and abilities of students in research, this course emphasizes self-learning (Heutogogical approach) where students are given autonomy to develop and organize selected projects with minimal guidance from the appointed Supervisor. In addition, students will be exposed to the use of appropriate software or applications to manage reference materials as well as provide scientific reports in an effective and systematic format. Course evaluation, on the other hand, focuses on the development of 21st century skills, namely communication and critical and creative thinking.

KAS4993 : Final Year Project II
Credit : 3 (0+3)
Prerequisite : KAS4983

Final year students are required to conduct research projects related to Environmental Technology as proposed during PITA 1 under the guidance of a supervisor. Students are required to present the research progress at the beginning of the semester and then discuss the research findings in the research thesis according to the prescribed format. The main findings of the study should be presented orally in the Seminar. At the end of the semester, a complete and approved thesis must be bound and submitted to the faculty. This course is offered to develop the capacity and abilities of students in research. The implementation of this course emphasizes self-learning (Heutogogical approach) where students are given autonomy to manage and organize selected projects with minimal guidance from the appointed Supervisor. In addition, students will be exposed to scientific equipment, applications and computer software (Technology 4.0) to observe, organize and analyze study data. Communication skills as well as critical and creative thinking that form the basis of 21st century skills development is applied through presentation and thesis writing activities.

KEJ3123 : Materials Engineering
Credit : 3 (2+1)
Prerequisite : None

This course introduces students to the relationship between atomic structure and the properties of materials. It covers the structure and bonding of atoms, the arrangement of atoms, their imperfections as well as their relationship to the properties of materials. Other topics include mechanical properties and material failures. The composition, properties, uses, and manufacturing of materials such as metal alloys, polymers, composites and ceramics are also discussed. Other discussions include corrosion, types of corrosion and corrosion control methods. Laboratory practicals are also implemented to encourage teamwork and expose student to physical labwork.

KEJ3133   : Engineering Drawing for Environmental Technology
Credit   : 3 (1+2)
Prerequisite : None
This course introduces the student to techniques and tools for making environmental engineering drawings. The student gains practical experience in geometric construction, orthographic and isometric, projection of planes, points and lines and development of surfaces using computer aided drawing and design techniques mainly for environmental processes.

KEJ3143   : Fluid Mechanics
Credit   : 3 (2+1)
Prerequisite : None
This course explains the introduction and basic concepts of fluid mechanics. Static pressure and fluids, mass immortality, Bernoulli and energy. Internal flow-laminar, turbulent and loss. Measurement of velocity and flow rate. Practical lab. This course emphasizes 21st century skill elements in which students are encouraged to collaborate learning and the ability to relate theory to the application of equipment. The heutagogy approach is used to build students skill to understand fluid problems and find solutions. Web based teaching and learning, online activities and assessment are also used in this course.

KEJ3163   : Chemical Process Principles
Credit   : 3 (3+0)
Prerequisite : None
This course is designed for providing the student with the basic knowledge about chemical process. The topics covered include the concepts and process variables, mass balance, properties of pure materials, the first law of thermodynamics, energy balance, and the basic concepts of heat transfer. Students will learn how to solve problems related to chemical process using the principle of mass and energy balance, and thermodynamics.

KEJ3173   : Mathematics for Technology
Credit   : 3 (3+0)
Prerequisite : None
This course introduces the student to the fundamental mathematical tools and concepts commonly applied in technology. Topics covered in the course include topics from Algebra (solution of equations, trigonometry, complex numbers), Calculus (functions and graphs, review of differentiations, rates of change and differential equations, integration techniques and applications) and Geometry (vectors and curves). The mathematical calculation concepts introduced in this course will help students master the topics in the advanced courses.

KAS4213   : Urban Drainage and Sewerage
Credit   : 3 (3+0)
Prerequisite : None
This course is designed for introducing the student to the aspect of planning, designing, operation and management of urban drainage and sewerage systems. This course contains fundamental topics on drainage and sewerage, runoff quantity, sewer flow, sewerage design, flood detention pond, concrete basin and erosion and sedimentation control plan. The course will also highlight the urbanization impacts on hydrological processes and the generation of urban runoff.

KAS4223   : Advanced Wastewater Treatment
Credit   : 3 (3+0)
Prerequisite : None
This course introduces the students to a selection of advanced wastewater treatment technologies and their working principles in various water treatment applications. The topics include the limitations for conventional treatment, advanced treatments for removal of micro pollutants, membrane technology, advanced filtration, adsorption, ion conversion, advanced oxidation, distillation and methods of reuse and recycling of treated wastewater.

KAS4233   : Wetlands
Credit   : 3 (3+0)
Prerequisite : None
This course discusses the introduction to wetlands; methods of determining and classifying wetlands; the role of science in the recognition and mapping of wetlands; wetland problems and indicators; and management issues. This course emphasizes the application of 21st century skill elements where students are encouraged to collaborate in learning and be able to relate theory to fieldwork.

KAS4243   : Industrial Wastewater Treatment by Activated Sludge
Credit   : 3 (3+0)
Prerequisite : None
This course enables students to gain knowledge of the principles, theories and treatment of activated sludge as one of the biological treatments for industrial effluent. Knowledge of effective monitoring methods for predetermined parameters, current issues as well as treatment application problems on the characteristics of industrial effluent according to current developments will be discussed. This course prepares students to become a professional wastewater treatment plant operator. Based on Academic Programme Criteria 4.0, this course encourages students to solve effluent monitoring problems based on the selected types of industrial effluents.

KAS4313   : Air Pollution Control Technology
Credit   : 3 (3+0)
Prerequisite : KAS3313
This course discusses the classification of air pollution and its causes, its effects on humans, plants and other environments. Students are also exposed to sampling and control methods. Students will also be given exposure to air modeling methods, meteorology and air quality systems. In addition, a holistic approach guided by 21st century elements are applied to critically understand, evaluate and comment on the production of renewable energy.

KAS4323   : Indoor Air Quality
Credit   : 3 (3+0)
Prerequisite : KAS3313
This course focuses on building systems, human reactions, indoor contaminants, IAQ assessment, strategy and prevention of IAQ problems in buildings, special indoor environments and risk and action assessments.

KAS4333   : Emission from Combustion Process
Credit   : 3 (3+0)
Prerequisite : None
This course will equip the student with the knowledge of combustion engines and the pollution generated from their emission. The course covers the basis of engine operation, the thermodynamics of the combustion process, the rate and mechanism of combustion, the measurement and control of pollutants. The student will be introduced to the application of software in analyzing the emission and efficiency of engine.

KAS4343   : Air Quality Monitoring and Instrumentations
Credit   : 3 (3+0)
Prerequisite : None
Specifically, the course discusses the methods of monitoring and instruments used in the aspect of air quality. Students are exposed by the method of monitoring used by the Department of Environment, Malaysia at present to provide useful information to the public. The method used to measure the concentration of each criterion pollutants in Malaysia is also peeled, taking into account the aspect of quality assurance and precision calibration. A holistic approach based on 21st century elements is applied to understand, evaluate and review the suitability of instruments for observing air pollutant data in accordance with Industrial Technology 4.0.

KAS4353   : Environmental Noise and Vibration
Credit   : 3 (3+0)
Prerequisite : None
This course focuses on the concept of environmental noise and vibration that includes research on the causes and impacts on humans and the environment. Proper sampling methods and control identification for environmental noise and vibrations are also discussed. Guidelines on environmental noise and vibrations issued by the Department of Environment Malaysia are also covered Students will be equipped with the skills to understand, critically comment and holistically assess the impact and control of environmental noise and vibration based on the elements of Industrial Technology 4.0.

KAS4513   : Geotechnical Engineering
Credit   : 3 (3+0)
Prerequisite : None
This course discusses the analysis and property of soil classification. The law and fundamental of compression, shear, strain, stability and water seepage are discussed as well. Students will be equipped with the skills to understand, critically comment and holistically analyze problems related to soil mechanics guided by 21st century skill elements. Based on Academic Programme Criteria 4.0, students who take this course will also be exposed to real practice from the industry through selected topics such as slope stability.

KAS4533   : Industrial Hygiene
Credit   : 3 (3+0)
Prerequisite : KAS3513
This course discusses the basic concepts of Industrial Hygiene which includes identifying, evaluating and controlling workplace conditions that may cause occupational injury or illness. Several topics will be covered such as introduction to industrial hygiene, structure and main functions of human organs that are often exposed to occupational diseases, basic concepts of risk assessment, types of exposure assessment, biological monitoring and the assessments to environmental hazards to include dust, noise, gas and vapours, lighting, thermal, radiation, biological and psychosocial agents.

KAS4543   : Occupational Safety Health Management and Audit
Credit   : 3 (3+0)
Prerequisite : KAS3513
The aim of this course is to introduce the student to the field of occupational safety and health and related management practices. The topics included in this course discuss the safety and health management, emergency management methods, safety ethics to be followed as well as management audits. The implementation of the health safety management system in the work of international standards ISO45001 and the implementation in industry as well as the promotion of safety campaigns are also discussed.

KAS4563   : Life Cycle Assessment
Credit   : 3 (3+0)
Prerequisite : None
Products, services, and infrastructure cause environmental impacts throughout the life cycle - from raw material intake, consumption to waste management. The Life Cycle Analysis (LCA) method offers a systematic approach to analyzing the impact of products and systems from the beginning to the end of the product or system (cradle-to-grave). This course will cover an overview of various aspects of environmental life cycle analysis, constructing goals and scope of life cycle analysis, inventory, evaluation and interpretation. Sensitivity and uncertainty analysis using available data and impact assessment methods will be emphasized in conducting and interpreting the life cycle analysis of the product or service environment.

KAS4573   : Sustainable Operation and Management
Credit   : 3 (3+0)
Prerequisite : None
This course emphasize towards the development and application capabilities in promoting sustainable operation and management. Students will be introduced to the green technology procurement, environmental management practices (water, air and energy) and sustainability requirement. The overall knowledge will enable the students to fulfill sustainability criteria through modification in the operation process and also on the management aspect.

KAS4713   : Groundwater and Pollution
Credit   : 3 (3+0)
Prerequisite : None
This course includes an introduction to groundwater groundwater hydraulics, well hydrodynamics, groundwater flow models, groundwater quality and pollution, as well as saltwater intrusion. This course emphasizes the application of 21st century skill elements where students are encouraged to work in groups and are able to relate theory to environmental problems.

KAS4723   : Surface Water Hydrology
Credit   : 3 (3+0)
Prerequisite : None
This course introduces the students to the concepts of surface water hydrology which discusses the study of surface water movement and distribution of surface water in space and time. The topics covered include the concept and surface water process, catchment area hydrological data analysis and hydrological modeling. Hydrological foundations will be reviewed and applied through the use of the system. In addition, the students will be exposed to the skill to design hydrology system using modelling software.

KAS4733   : Coastal Environment
Credit   : 3 (2+1)
Prerequisite : None
This course introduces the student to the theory and application of waves, tides, estuary, sediment transport and their application in the nearshore coastal zone. The topics covered include the introduction to the wave and tidal theories and design of wave breakers for coastal protection. The course put emphasize on the coastal problems and their impacts to the environment at large.

KAS4743   : Soil Physics
Credit   : 3 (3+0)
Prerequisite : None
This course is an advanced course that allows students to gain knowledge by focusing on more specific environmental components namely movement processes such as water, gas, heat and pollutants in the soil. Students who take this course will be able to strengthen their knowledge of the physical processes of natural fluids in the soil.

KAS4753   : Watershed Management
Credit   : 3 (3+0)
Prerequisite : None

This course introduces the fundamental concepts of watershed management planning and principles. It encompasses the water quality issues, storm water management, drought management, soil erosion, rainwater harvesting and watershed modeling. The students will be exposed to field work activity and learn how to use computer modelling to solve selected watershed management issues.

KAS4763   : Soil Nature and Physical Properties
Credit   : 3 (3+0)
Prerequisite : None

This course provides the student with the basic knowledge of soil nature and properties which is important in the context of land use management and monitoring of soil pollution. The topics discussed in this course are the soil architecture and physical properties, soil water characteristics and behavior, soil aeration and temperature, soil erosion and its control, and chemical pollution.

KAS4773   : Applied Geographic Information System (GIS) for Environment
Credit   : 3 (2+1)
Prerequisite : None

This course aims to train students the environmental problem-solving skills using geographic information systems and related analytic techniques. This course covers the introduction of open-source GIS software, GIS principles, methods, and techniques relevant to and valuable for problem-solving in the environmental technology field.

KEJ4113   : Unit Operations
Credit   : 3 (3+0)
Prerequisite : None

This course enables students to gain knowledge on the basic concept of unit operation that discuss separation process based on thermo-physical properties in equipment and materials. The topics covered include evaporation, drying, liquid-gas separation, vapour-liquid separation, solid-fluid separation, and physical separations. In addition, the students will be exposed to the skill for calculating and designing unit operation system at the required production rate and specification.

KEJ4133   : Heat Transfer
Credit   : 3 (3+0)
Prerequisite : None

The course introduces the fundamental concepts of various modes of heat transfer. Some aspects of process design principles of various heat transfer equipment will be taken up in the later part of this course. Finally, to present a physical picture of the convection process, heat transfer in boundary layer flows will be addressed.

KEJ4143   : Mass and Energy Balances
Credit   : 3 (3+0)
Prerequisite : None

This course introduces the basic concepts in engineering design calculations to solve material and energy balance problems for industrial processes involving multiple unit operations under various conditions. Topics discussed include an introduction to engineering calculations, processes and process variables, material balance bases, single-phase systems, energy and energy balance, balance in non-reaction processes, and balance in reaction processes.

KEJ4123   **: Chemical Reaction Technology**
Credit   **: 3 (3+0)**
Prerequisite : None

This course applies the concepts of reaction rate, stoichiometry and equilibrium to the analysis of chemical reacting systems. Derivation of rate expressions from reaction mechanisms and equilibrium or steady state assumptions. Design of chemical reactors via synthesis of chemical kinetics, transport phenomena, and mass and energy balances. Aided by Technology 4.0, students will be exposed to the relationship between chemical kinetics and design.

KEJ4513   **: Engineering Economics**
Credit   **: 3 (3+0)**
Prerequisite : None

This course introduces the students to engineering economy concept for deciding the right investment projects in the engineering context. The topics discussed in this course include the introduction to engineering economy, time value of money, interest, present worth analysis, rate of return analysis, cost-benefit analysis, inflation, cost estimation, depreciation and taxes. The course will emphasize on the discussion on case study to evaluate the economic feasibility of an engineering project.

KEJ4523   **: Chemical Process Safety**
Credit   **: 3 (3+0)**
Prerequisite : None

This course discusses the principles of process safety management in a chemical processing plant. The topics covered in this course include the introduction to process safety and loss prevention, properties of hazardous chemical substances and their release/dispersion mechanisms which lead to fires, explosions and toxic release event. In addition, the process hazard analysis and risk assessment techniques are also comprehensively discussed. This course empowers the student with numeracy skills to solve engineering problem related to process hazard and risk assessment.

KEJ4613   **: Renewable Energy Technology**
Credit   **: 3 (3+0)**
Prerequisite : None

This course introduces the student to various types of renewable energy technology as new source of energy and their applications. Topics covered in this course include the solar energy's fundamental theories (thermal and photovoltaic), hydroelectric, wind, geothermal, marine thermal, waves, tidal, biomass, hybrid system technology, efficiency, and energy storage. This course also discusses the development of renewable energy technology in the first industrial revolution era until the fourth industrial revolution.

KEJ4623   **: Membrane Technology**
Credit   **: 3 (3+0)**
Prerequisite : None

This course describes in details membrane separation technology as part of the downstream processing of various industries. The course covers general concept of separation technology, development of membrane technology, concept of membrane separation, membrane materials and their properties and various methods of membrane preparation and characterization. This course then focusing on pressure-driven polymeric membrane processes in the aspects of transport mechanisms, membrane design and configuration, fouling phenomenon and way to overcome the membrane processes limitations. Further, principles of various membrane processes such as Reverse Osmosis, Nano filtration, Ultra Filtration, Micro Filtration, and Forward Osmosis are covered along with their applications in various industries.

KEJ4633　　: Clean Technology
Credit　　: 3 (3+0)
Prerequisite : None

This course discusses the technology and sustainability that includes the source and production of pollution (e.g.: gas, coal, fossils, solid waste and scheduled waste) as well as the impact of industrial development on the environment. Clean technology also allows students to understand the concepts and strategies of implementing clean technology such as clean energy, green chemistry and industrial ecology. This course also provides knowledge on the application of clean technology in agriculture, water and waste management, technological change through process integration and discuss the emerging clean technology.

KEJ4643　　: Polymer and Environment
Credit　　: 3 (3+0)
Prerequisite : None

This course introduces students to the relationship between polymers and the environment. Course materials include an introduction to the basic principles of polymer chemistry and environmental stability of polymers towards various factors such as degradation, weathering and biodegradation. With the wide range of applications of polymers, this course also discusses the methods of recovery and recycling of polymers as well as environmentally friendly polymers that are biodegradable polymers. The cybergogy approach is also used to encourage students' involvement in blended teaching and learning activities. Web-based teaching and learning and online assessment are also implemented in this course.

KEJ4653　　: Environmental Nanotechnology
Credit　　: 3 (3+0)
Prerequisite : None

This course discusses the principles of nanotechnology and its applications in environmental field. Topics covered include the introduction of nanoscience and nanotechnology, the basic principles of "nano effects", classification of nanomaterials synthesis and processing of nanostructures applications of nanotechnology in environmental field and ethics in nanotechnology. This course empowers the student with 21st century skills by encouraging them to think critically and creatively actively collaborate and communicate to discuss issues related to environmental application of nanotechnology Cybergogy approaches are applied to promote student involvement in blended teaching and learning activities. Web based teaching and learning, online assessments and online interactive activities are also implemented in this course.

KEJ4623　　: Thermochemical Treatment and Biomass Recovery
Credit　　: 3 (3+0)
Prerequisite : None

This course provides a comprehensive summary of current thermochemical technologies that is being carried out or studied in the treatment and recovery of waste materials and biomass such as combustion, pyrolysis, gasification, torrefaction, hydrothermal dissolution and carbonization. It gives an understanding of the basics of these technologies while offering useful information on the design, operation and products of those technologies (process design and efficiency, operating parameters, technical considerations, distribution and product composition).

KEJ4673 **: Anaerobic Digestion Process Technology**
Credit **: 3 (3+0)**
Prerequisite : None

This course discusses the principles, theories of processing and anaerobic digestion design for digestion of organic waste and subsequently to the production of biogas. In addition to the introduction to basic design, it also emphasizes on effective monitoring methods for the parameters that have been set to ensure that anaerobic digestion operates at the prescribed level of effectiveness. This course provides input for students to prepare to become a professional organic food processing plant operator. Visual layout of wastewater treatment plant will also be used to support the application of IR 4.0 value during the lecture.

KEJ4683 **: Energy and Climate Change**
Credit **: 3 (3+0)**
Prerequisite : None

This course discusses the introduction of energy systems, conventional energy technologies, renewable energy technologies, energy and environmental costs, introduction to carbon elements, climate change occurrence, climate change solutions and life cycle assessment (LCA) procedures. This course also discusses electricity generation activities in the first to the fourth industrial revolution and the impact of electricity generation in all four periods on global climate change.

KEJ4693 **: Energy Management and Audit**
Credit **: 3 (3+0)**
Prerequisite : None

This course discusses the introduction of energy management and audits, Basic of electrical system, energy loads, energy audit Instrumentation, energy audit methodology process, energy costs, energy performance and environmentally friendly concepts, and energy modeling. The course also discussed the generation and energy management activities of the era of the first industrial revolution until the fourth industrial revolution.
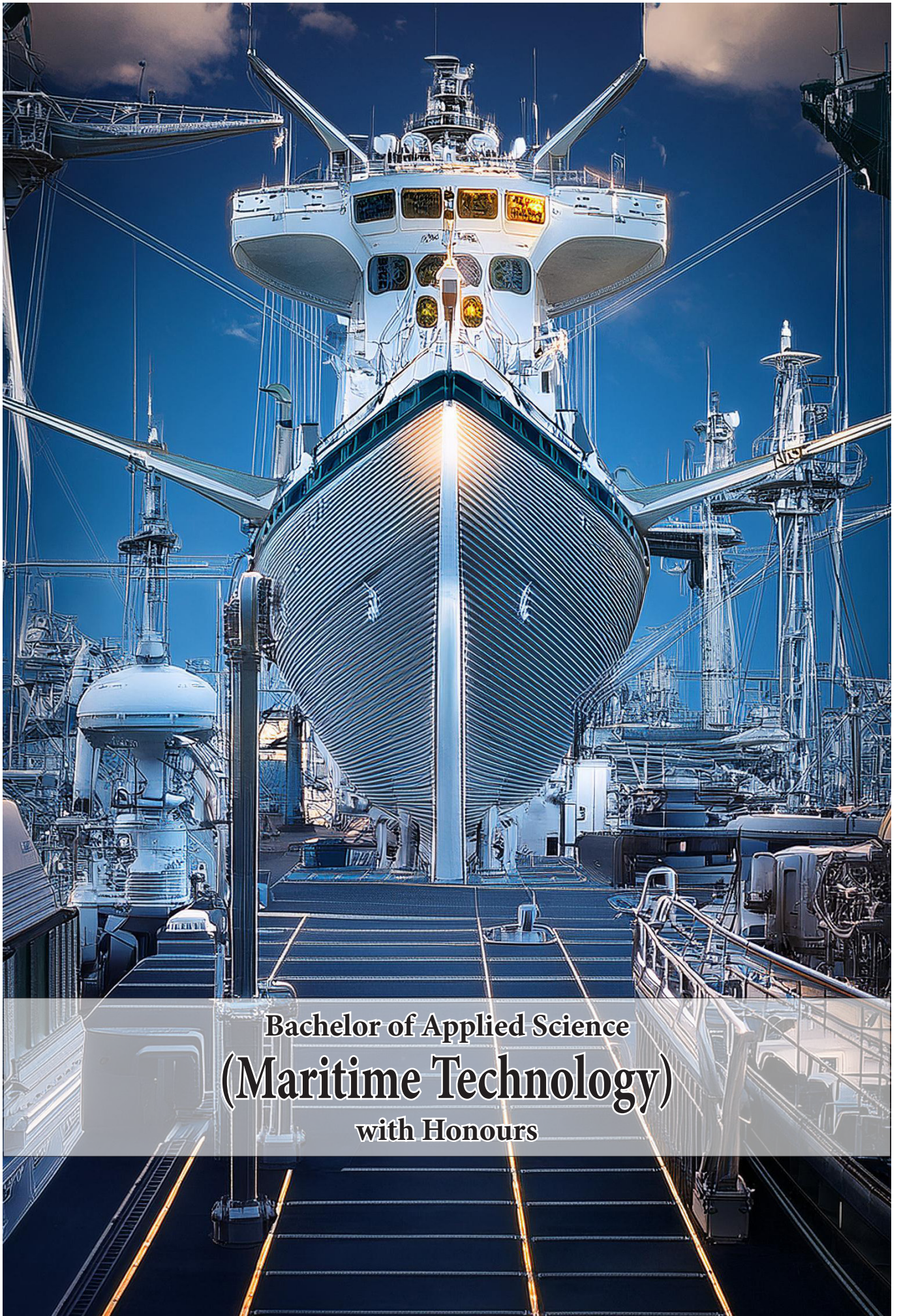
Bachelor of Applied Science
(Maritime Technology)
with Honours

Bachelor of Applied Science (Maritime Technology) with Honours

Introduction

The Bachelor of Applied Science (Maritime Technology) with Honours was first offered in the July 2006/2007 session by the Department of Maritime Technology, Faculty of Maritime Studies and Marine Science. This programme is offered full time and takes four (4) years or eight (8) semesters which includes 137 minimum credit hours for graduation.

Maritime Technology is an area focusing on the application of technology, operations, and systems used in the maritime, coastal and offshore engineering sectors. The programme is designed to produce graduates who will develop knowledge, contribute expertise to serve and lead shipping, shipbuilding, oil and gas companies, and government agencies related to the maritime industry locally and abroad.

Programme Educational Objective (PEO)

This programme is offered for students to achieve the following objectives:

PEO1: Graduates who are knowledgeable, applying the fields of scientific, numeracy and management leadership can submit brilliant ideas and wisely build careers in Maritime Technology at both local and global levels.

PEO2: Graduates who spearhead technical knowledge and digital, as well as practice lifelong learning in maritime technology.

PEO3: Graduates who are competitive, entrepreneurial characteristics, identify business opportunities in contributing expertise to the field of Maritime Technology and related on behalf of academic, industry, professional body and society.

PEO4: Graduates who are available, are able to communicate effectively and always capable individually and in groups as a Maritime Technology member.

Job Prospects

This programme is suitable to be offered given the rapid development that is happening in the maritime industry. Careers in this programme involve job opportunities in government and private agencies, especially those directly or indirectly involved with the maritime industry. Graduates can serve as marine technological engineers, naval architects, technologists, marine surveyors, port officers, project planners, technical/sales executives, QA/QC officers, application technology engineers, university/polytechnics/matriculation/private colleges lecturers, research officer/science officer (Research Institute) and others.

Total Credit for Graduation

The minimum amount of credit to graduate is 137 credit hours. The distribution of credit hours by course category is as follows:

Category	Credit	Percentage (%)
University Core	20	14.6
Programme Core	81	59.1
University Elective	36	26.3
Total	**137**	**100**

University Core (20 Credit Hours)

Course Code	Course Name	Credit Hour	Prerequisite
BBB3013	Academic Writing Skills	3 (3+0)	None
BBB3033	English for Occupational Purposes	3 (3+0)	None
MPU3142	Philosophy and Current Issues	2 (2+0)	None
MPU3132	Appreciation of Ethics and Civilizations	2 (2+0)	None
MPU3223	Basic Entrepreneurship	3 (3+0)	None
MPU3352	Communication Arts	2 (0+2)	None
COM3112	Community Care	2 (2+0)	None
CCM3011	Co-Curriculum	1 (0+1)	None
CCXXXXX	Integrity and Anti-Corruption	2 (0+2)	None

Programme Core (81 Credit Hours)

Course Code	Course Name	Credit Hour
EDI3303	Physic Fundamental	3 (3+0)
EDI3313	Engineering Mathematics I	3 (3+0)
EDI3323	Engineering Mathematics II	3 (3+0)
EDI3333	Basic Programming for Technologist	3 (2+1)
MMT3013	Engineering Mechanics	3 (2+1)
MMT3023	Fluid Mechanics	3 (2+1)
MMT3033	Design and Graphics	3 (0+3)
MMT3043	Materials Engineering	3 (2+1)
MMT3053	Thermodynamics	3 (2+1)
MMT3063	Marine Fluid Power	3 (2+1)
MMT3073	Shipping and Port Technology	3 (3+0)
MMT3082	Machining Workshop and Welding	2 (0+2)
MMT3093	Mechanics Dynamics	3(3+0)
MMT3112	Marine Technology Laboratory	2 (0+2)
MMT3123	Strength of Materials	3 (2+1)
MMT3133	Marine Engineering System	3 (2+1)
MMT3144	Marine Electronics and Instrumentation	4 (2+2)
MMT3154	Naval Architecture and Ship Construction	4 (3+1)
MMT4982	Final Year Project I	2 (0+2)
MMT4994	Final Year Project II	4 (0+4)
MMT49712	Industrial Training	12 (0+12)
MMS3513	Meteorology	3 (2+1)
MMM3763	Principle of Maritime Management	3 (3+0)
FIS3483	Principle of Seamanship and Navigation	3 (2+1)

University Elective (36 Credit Hours)

Students are required to register and pass any of the 36 elective course credits listed throughout their studies and subject to the permission and consent of the Head of Field.

Course Code	Course Name	Credit Hour
MMT4163	Marine Technology and Environmental	3 (2+1)
MMT4173	Marine Automation and Control	3 (2+1)
MMT4183	Advanced Naval Architecture	3 (2+1)
MMT4193	Maritime Engineering Design	3 (2+1)
MMT4213	Diesel Engines	3 (2+1)
MMT4223	Research Method in Technology	3 (3+0)
MMT4233	Power Plant and Ship Machinery	3 (2+1)
MMT4244	Ship Repair and Maintenance Systems	4 (3+1)
MMT4253	Marine Corrosion	3 (2+1)
MMT4263	Offshore Structure	3 (3+0)
MMT4273	Marine Hydrodynamics	3 (3+0)
MMT4283	Marine Conditioning and Refrigeration System	3 (2+1)
MMT4293	Ship Structure	3 (3+0)
MMT4313	Offshore Mooring and Riser	3 (3+0)
MMT4323	Offshore Pipeline	3 (3+0)
MMT4333	Maritime and Coastal Engineering	3 (3+0)

Course Scheme
Bachelor of Applied Science (Maritime Technology) with Honours

Code	Course Name	Credit Hour	Pre-requisite	Code	Course Name	Credit Hour	Pre-requisite
Semester 1				**Semester 2**			
EDI3313	Engineering Mathematics I	3(3+0)	-	EDI3323	Engineering Mathematic II	3(3+0)	-
EDI3303	Fundamental of Physics	3(3+0)	-	MMT3023	Fluid Mechanics	3(2+1)	-
MMT3013	Engineering Mechanics	3(3+0)	-	MPU3142	Philosophy and Current Issues	2(2+0)	-
COM3112	Communication Arts	2(2+0)	-	BBB3103	Academic Writing Skills	3(3+0)	-
MMT3033	Design and Graphics	3(0+3)	-	MPU3132	Appreciation of Ethics and Civilizations	2(2+0)	-
MPU3352	Integrity and Anti-Corruption	2(2+0)	-	MPU3223	Basic Entrepreneurship	3(3+0)	-
				CCXXXXX	Co-Curriculum	2(0+2)	-
				CCM3011	Community Care	1(0+1)	
	Total Credit	**16**			**Total Credit**	**19**	
Semester 3				**Semester 4**			
MMT3043	Materials Engineering	3(2+1)	-	EDI3333	Basic Programming for Technologist	3(2+1)	-
MMM3763	Principle of Maritime Management	3(3+0)	-	MMT3053	Thermodynamics	3(2+1)	-
MMT3063	Marine Fluid Power	3(2+1)	-	MMS3513	Meteorology	3(2+1)	-
MMT3093	Mechanics Dynamics	3(3+0)	-	MMT3112	Marine Technology Laboratory	2(0+2)	-
MMT3082	Machining and Welding Workshop	2(0+2)	-	MMT3123	Strength of Materials	3(2+1)	-
MMT3073	Shipping and Port Technology	3(3+0)	-		Elective 1	3	-
FIS3483	Principle of Seamanship and Navigation	3(2+1)	-		Elective 2	3	-
	Total Credit	**20**			**Total Credit**	**20**	
Semester 5				**Semester 6**			
MMT3154	Naval Architecture and Ship Construction	4(3+1)	-	MMT4982	Final Year Project I	2(0+2)	-
MMT3133	Marine Engineering System	3(2+1)	-		Elective 5	3	-
MMT3144	Marine Electronics and Instrumentation	4(2+2)	-		Elective 6	3	-
BBB3033	English for Occupational Purposes	3(3+0)	-		Elective 7	3	-
	Elective 3	3	-		Elective 8	3	-
	Elective 4	3	-		Elective 9	3	-
	Total Credit	**20**			**Total Credit**	**17**	
Semester 7							
MMT4994	Final Year Project II	4(0+4)	MMT4982	MMT49712	Industrial Training	12(0+12)	
	Elective 10	3	-				
	Elective 11	3	-				
	Elective 12	3	-				
	Total Credit	**13**				**12**	
Total Credit to Graduate : 137							

Notes :

1. The number of elective course credit hours that must be taken by students in the programme of study is subject to the number of elective credit hours set by the programme of study to meet graduate qualifications and is not subject to the number of elective courses taken.
2. The list of elective courses that can be taken by students in the programme of study refers to the course offerings listed in the handbook of the study programme of the faculty and other faculties.

MARITIME TECHNOLOGY

Course Synopsis
Bachelor of Applied Science (Maritime Technology) with Honours

EDI3303   : Physic Fundamental
Credit   : 3 (3+0)
Prerequisite : None
This course provides a fundamental understanding of the main ideas and principles of Physics to students who only need a background of General Physics. This course covers almost the entire field of Physics especially mechanics, character traits of matter, heat, wave phenomenon, agriculture, grace and modern Physics. Titles will be discussed qualitatively with the use of simple calculus. The use of these concepts in applied sciences will be given widespread attention.

EDI3313   : Engineering mathematics I
Credit   : 3 (3+0)
Prerequisite : None
This course discusses matrices and emphasizes the important concepts in mathematical engineering including limit, differentiation, integration, differential equation and vector system.

EDI3323   : Engineering Mathematics II
Credit   : 3 (3+0)
Prerequisite : None
This course introduces some methods of mathematical analysis and applications to solve problems in engineering and technology. Topics involved are the determinant matrix and eigenvalues, the solution of first and second degree of differential equations, Laplace Transforms, Fourier Series and Fourier Transforms, partial differential equations and numerical methods for solving common differential equations.

EDI3333   : Basic Programming for Technologist
Credit   : 3 (3+0)
Prerequisite : None
This course contains basic programming and programming language, problem solving technique, flow diagram and structured algorithm, program coding techniques and instruction to solve formal problems. Hands on programming exercise will be given to strengthen students programming language.

MMT3013   : Engineering Mechanics
Credit   : 3 (3+0)
Prerequisite : None
This course was developed to provide students with a clear and thorough presentation of the theory and applications of engineering mechanics. Topics covered in this course including introduction and basic concepts force vector, resultant and resolution of forces, particle and rigid body equilibrium, moment and couple, centroid and center of gravity and also friction.

MMT3023   : Fluid Mechanics
Credit   : 3 (2+1)
Prerequisite : None
This course explains introduction and basic concept of fluid mechanics. Fluid properties. Pressure and static fluid. Mass conservation, Bernoulli and energy. Inner flow-laminar, turbulent and loss. Velocity measurement and flow rate. Laboratory.

MMT3033   : Design and Graphic
Credit   : 3 (0+3)
Prerequisite : None
This course covers geometry, orthographic and isometric, intersection, development, cross-sectional drawing and working drawing, computer aided command and computer aided design.

MMT3043   : Materials Engineering
Credit   : 3 (2+1)
Prerequisite : None
This course introduces students to the relationship between the structure and properties of materials. It includes atomic structure and bonding, crystalline and molecular structure and imperfections as well as their relations to engineering properties. Other included topics are mechanical properties, various failure modes of materials, and phase diagram. Compositions, properties, applications and fabrications of several materials such as metal, polymer, composite and ceramics are also discussed.

MMT3053   : Thermodynamics
Credit   : 3 (2+1)
Prerequisite : None
Definition and concept of thermodynamics, the First Law of Thermodynamics, the Ideal gas property, the Second Law of Thermodynamics, the Power and cooling cycle and Laboratory.

MMT3063   : Marine Fluid Power
Credit   : 3 (2+1)
Prerequisite : None
This course discusses fundamentals of fluid power with emphasis on marine/naval equipment. It covers hydraulic power transmission in marine machinery. This includes the introduction to fluid power, positive displacement pumps, directional, flow and pressure control valves, linear and rotary actuators, hydraulic oil, marine applications, hydraulic system design, servo and proportional control system, air breather and water removal equipment, pneumatic system, inspection and maintenance of marine fluid power system. Laboratory.

MMT3073   : Shipping and Port Technology
Credit   : 3 (2+1)
Prerequisite : None
This course discusses the environmental factors that influence the choice of shipping and port technology. Specialization of cargo, type of operation, modes of transport and intermodal transport is also emphasized in addition to the current issue of technological developments in the shipping industry and ports.

MMT3082   : Machining Workshop and Welding
Credit   : 2 (0+2)
Prerequisite : None
This course introduces basic knowledge in handling machinery and equipment in metal cutting, using lathe and milling, welding and practice of basic principles of safety at work and in workshops. Laboratory work covers sheet metal fabrication, cutting, bending, welding, basic machining, measuring techniques using proper tools and using hand power tools. Understanding specifications, scale, engineering design. Workshop safety and writing technical reports.

MMT3093   : Mechanics of Dynamics
Credit   : 3 (3+0)
Prerequisite : None
This course introduces students on basic engineering mechanics for dynamic that consists of linear and rotational motions, conservation of work, forces and kinetic energy, linear velocity and acceleration, general motion relative to rotating structures and mass moment of inertia to provide them with useful engineering knowledge toward applications of technology.

MMT3112   : Marine Technology Laboratory
Credit   : 2 (0+2)
Prerequisite : None
This course incorporates some important technical aspects in the field of marine engineering and naval architecture, which includes the provision of drawings of ship lines, understanding on hydrostatic, stability of floating objects, conduct tests. experiments/observations related to different aspects of electrical equipment found on board. The concepts are discussed understood through performing the actual tests/experiments using model ships and CBT in the laboratory.

MMT3123   : Strength of Materials
Credit   : 3 (2+1)
Prerequisite : None
The course discusses the strength of a material with an emphasis on the external load and the effect of loading. It covers basic static loading, the resulting stress and strain, the torsion of a circular bar, shear and bending moment, bending stress and combined loading. Understanding the basis of the loading and analysis for the reaction is the focus of this course. Practical for related topics are also enhanced.

MMT3133   : Marine Engineering System
Credit   : 3 (2+1)
Prerequisite : None
This subject introduces students the general knowledge of marine engineering terms, control systems, principles and operation of all the ship's machinery, type of main work which machinery and auxiliary machineries. It covers marine power plant, boiler, propulsion system, freshwater generator, steering gear, pumps system, refrigeration, marine sewage, incinerator, deck machineries etc.

MMT3144   : Marin Electronics and Instrumentation
Credit   : 4 (2+2)
Prerequisite : None
The objective of this subject is to expose the knowledge of electronics and instrumentation in marine application to the students. The contents of this subject are: basic electrical and electronics; symbols in electrical and electronic circuits; electronic instrumentation on board ships; principles of operations of RADAR, echo-sounder, RDF, GPS, gyro-compass; specifications and selection of electronic equipment; boat electrical specification; laboratory. The rational of this subject is the students must have knowledge of electrical and electronic for the operations of marine instrumentation and system, to become an expert mariner.

MMT3154   : Naval Architecture and Shipbuilding
Credit   : 4 (3+1)
Prerequisite : None
This subject will introduce students to several basic terms of the naval architecture and several types of ships such as merchant ship, military ship and special ship design. This subject also introduces to calculate ship's form coefficient and apply Simpson rule to find the ship properties. Furthermore, the transverse statical stability is calculated under loading, discharging and transferring of cargoes on board ship. Role of ship's classification and maritime regulations on safety at sea especially related to ship design is explained. Features modern building materials including material strength, limitations and factors affecting the construction materials as appropriate. This subject also includes projects and assignments

individually.

MMT4982   : Final Year Project I
Credit   : 2 (0+2)
Prerequisite : None
Final Year Project I is design to train the students do, write and present the scientific research. Final year student must do one research project and supervise by a lecturer in the study area of Maritime Technology or related. The students should propose a title, prepare a research proposal and submit their pre-thesis to be evaluate for each semester the course is register. The students also need to do a presentation in a Final Year Project Seminar.

MMT4994   : Final Year Project II
Credit   : 4 (0+4)
Prerequisite : MMT4982
Final Year Project II is continuing from PITA I and the students need to implement the research as propose in a research proposal, analyse data, and complete the thesis to be evaluate by the supervisor for each semester subject is register. The students also need to present in a final year project seminar and submit the hardbound thesis.

MMT49712 : Industrial Training
Credit   : 12 (0+12)
Prerequisite : None
Students will be placed in government departments or private sectors for 24 weeks in Semester 8. Students will do a suitable daily duty under qualified supervisor in the industry and observed by supervisor from university.

MMT4163   : Marine and Environmental Technology
Credit   : 3 (2+1)
Prerequisite : None
This course discusses the development and current issues in coastal and marine environment which involves applications of technologies including coastal erosion, pollution, exploration of resources and energy. Methods of bottom sampling, water pollution, seabed mapping and coastal erosion. Acoustic techniques of bottom mapping, and resource survey. Chemical and biological methods to rehabilitate living resources, water quality and marine environment. Current issues related to resource exploitation, alternative energy, water and sound pollution and shipping activities.

MMT4173   : Marine Automation and Control
Credit   : 3 (2+1)
Prerequisite : None
Control system terminology, subsystems and processes, input-output, open-loop, close loop systems, manipulation of block diagram, computer -controlled systems. Modeling in frequency and time domain, time responses, stability analysis, digital control system. Sensors, transducers. Laplace transform, transfer function. Sensors for automation. Control software packages. Case studies and computer simulation.

MMT4183   : Advanced Naval Architecture
Credit   : 3 (2+1)
Prerequisite : MMT3154
This course introduces students to have continuous understanding on longitudinal stability of ship (trim) in various ship's conditions involving loading, discharging and shifting of the cargoes on board as referred to the transverse statical stability. Dam age stability and ship's stability during drydocking and grounding are also discussed accordingly. Furthermore, this subject also takes a fundamental approach to several components of ship resistances i.e., frictional, wave and other resistance components. In addition, the module also discusses powering and efficiency components.

MMT4193   : Maritime Engineering Design
Credit   : 3 (2+1)
Prerequisite : None
This subject is focusing on the factors that affecting design and operations in maritime engineering design. The scope of the subject shall be focusing on design philosophy, design process, requirement and analysis. Students are required to select a topic, prepare a proposal, analysis, write reports and make presentations. The design processes in this subject shall be within the scope of coastal and offshore structures (ship, offshore structure, marine infrastructure, marine components and systems).

MMT4213   : Diesel Engines
Credit   : 3 (2+1)
Prerequisite : None
This course covers basic components, function, operation and systems of diesel engine such as mechanical structure, cooling, lubricating, fuel, storage, troubleshooting and maintenance.

MMT4223   : Research Method in Technology
Credit   : 3 (3+0)
Prerequisite : None
Student selects a research topic, prepare research proposal, a summary about sources of error in surveys. Survey design, research questions and hypotheses, sampling, data collection, data analysis, data management, quantitative methods, qualitative procedures, basic research statistics, software for statistics.

MMT4233   : Power Plant and Ship Machinery
Credit   : 3 (2+1)
Prerequisite : None
Elements related to ship machinery including steam plant, gas turbine, reciprocating plant, compressor. Auxiliary power plants and classification of power plants. Principles of operation of power plant. Power generation and transmission through mechanical, electrical and hydraulic systems including basic components. Trouble shooting and maintenance.

MMT4244   : Ship Repair and Maintenance Systems
Credit   : 4 (3+1)
Prerequisite : None
This course discusses the basics of the maintenance and repair process of a ship involving the types of work in the shipyard. The syllabus of this course discusses the introduction to the activities in the maintenance and repair process of a ship including work planning, docking type, price estimate, type of repair work, safety aspects, job inspection and the requirements of classification society.

MMT4253   : Marine Corrosion
Credit   : 3 (2+1)
Prerequisite : None
Introduction to theory and practices in marine corrosion. Natural process of corrosion formation and environment factors affecting marine corrosion. Introduction to basic methods preventing marine corrosion and lastly expose students to currently practises technique to marine corrosion control and prevention.

MMT4263 : Offshore Structure
Credit   : 3 (3+0)
Prerequisite : None
This course provides an introduction to engineering offshore structures associated with oil and gas industry, environmental load, load effects of the environment on offshore structures, analysis and design of offshore facilities, analysis and design of topside modules, Load-out, installation, hook-up, and the operation, inspection, maintenance, and repair, assessment of existing structures, installation and inspection of pipelines, offshore structures and other relevant.

MMT4273 : Marine Hydrodynamics
Credit   : 3 (3+0)
Prerequisite : None
This course discusses the fundamentals of fluid mechanics in the context of marine structures, vehicles, ocean science and engineering, transport theorem and conversation principles, hydrodynamic forces in potential flow and numerical method solutions technique for hydrodynamics problems.

MMT4283 : Marine Conditioning and Refrigeration System
Credit   : 3 (2+1)
Prerequisite : MMT3053
Marine air-conditioning components and system, principles of heat transfer, applications, and installation of air conditioning systems including operating conditions, type and characteristics of refrigerants, troubleshooting, repair and maintenance of refrigeration system.

MMT4293 : Ship Structure
Credit   : 3 (3+0)
Prerequisite : None
This course is required basic engineering mechanics and also an extension of material strength. It covers introduction ship structural, ship loading, hull girder moment, hull girder bending stress and deflection, hull girder shear stress, stress analysis and struts and columns. This course emphasis on the student ability to identify and solve the structural design problem by carrying the necessary calculation and analysis.

MMT4313 : Offshore Mooring and Riser
Credit   : 3 (3+0)
Prerequisite : None
This course provides an introduction to the offshore structural engineering related to mooring and riser system. Loading mechanism, mooring and riser system design, components, standards used, top tension risers, SCR, involved analysis of the mooring and riser system, and method of installation. Structure evaluation method is also among the topics to be included in the subject.

MMT4323 : Offshore Pipeline
Credit   : 3 (3+0)
Prerequisite : None
This course introduces piping system and engineering covering principles of operation of under-water offshore piping, piping types, methods of protecting pipes. Different aspects o to student. It also covers the processes of constructing and installation of pipes and piping system, the design concepts, selection of suitable materials and pipe inspection.

MMT4333   : Maritime and Coastal Engineering
Credit   : 3 (3+0)
Prerequisite : None
This course is an introduction to the maritime field that focuses on coastal engineering. In this course, students will be exposed to the introduction of coastal engineering in general, wave events and related theories, water level rise and tides, coastal erosion prevention structure, introduction to estuary and sediment movement on the coastal area. With the knowledge in this course students will be able to help to solve the problems of the coastal environment and how it gives importance to the environment.l.

Bachelor of Mechanical Engineering
(Naval Architecture)
with Honours

Bachelor of Mechanical Engineering Technology (Naval Architecture) with Honours

Introduction

The Bachelor of Mechanical Engineering Technology (Naval Architecture) with Honours was first offered in the Semester I session 2020/2021 and is the first engineering technology programme offered by UMT. This programme has been accredited by the Malaysia Board of Technologists (MBOT). This programme is offered full-time and takes four (4) years or eight (8) semesters which includes a minimum of 140 credit hours to graduate.

Mechanical Engineering Technology (Naval Architecture) is a programme that combines the science, naval architecture and engineering of ship machining systems. The core of the programme includes studies related to naval architecture, hydrostatic and static/dynamic stability of ships or floating structures, ship machining and instrumentation, ship power plants, ship management and operating systems, and safety based on standards by the marine safety agency and the International Maritime Organization (IMO). Elements implemented include naval architecture and ship construction, mechanical engineering, electrical, electronics, software and security used in the engineering design, classification, maintenance, and operation processes for vessels and floating structures. The programme provides professional knowledge and skills for jobs in the shipping marine and oil and gas industries.

Program Educational Objective (PEO)

This programme is offered for students to achieve the following objectives:

PEO1: To produce competent Engineering Technologists who are able to apply principles of science, engineering and modern technology in solving current and future problems related to Naval Architecture & Marine Engineering

PEO2: To produce Engineering Technologists in Naval Architecture & Marine Engineering field who perform work and duty ethically with high moral values and responsibility to God, nation and societies.

PEO3: To produce creative and innovative Engineering Technologist in research and development as well as techno-entrepreneur in fulfilling the national and international requirements.

PEO4: To produce Engineering Technologists who are able to communicate effectively with good leadership as well as able to function in teamwork environment.

PEO5: To produce Engineering Technologists that shows enthusiasm in engaging long-life learning through continuity of learning, technical practices and professional development.

NAVAL ARCHITECTURE

Job Prospects

This programme is offered in view of the rapid development taking place in the shipping industry. Here are some career opportunities in the field of naval architecture:

Naval Architect, Mechanical/Ship Instrumentation Engineering Technologist, Coastal & Offshore Engineering Technologist, Construction & Maintenance Technological Engineering Technologist, Ship Design Consultant, Marine Surveyor, QC Officer, Marine Operations Officer, Lecturer/ Educator, Standard Agency Officer, Technical/Sales Executive, Science Officer/Researcher.

Total Credit for Graduation

The minimum amount of credit to graduate is 140 credit hours. The distribution of credit hours by course category is as follows:

Category	Credit	Percentage (%)
University Core	20	14
Programme Core	111	79
University Elective	9	7
Total	**140**	**100**

University Core (20 Credit Hours)

Course Code	Course Name	Creadit Hour	Prerequisite
BBB3013	Academic Writing Skills	3 (3+0)	MUET Band 3,4,5,6
BBB3033	English for Occupational Purposes	3 (3+0)	None
MPU3142	Communication Arts	2 (2+0)	None
MPU3132	Philosophy and Current Issues	2 (2+0)	None
MPU3223	Communicative Malay Language	3 (3+0)	None
MPU3352	Appreciation of Ethics and Civilizations	2 (0+2)	None
COM3112	Community Care	2 (2+0)	None
CCM3011	Co-Curriculum	1 (0+1)	None
CCXXXXX	Integrity and Anti-Corruption	2 (0+2)	None

Programme Core (111 Credit Hours)

Course Code	Course Name	Creadit Hour
EDI3353	Computer Programming for Technologist	3 (2+1)
EDI3313	Engineering Mathematics I	3 (3+0)
EDI3323	Engineering Mathematics II	3 (3+0)
MNA3192	Engineers, Law and Society	2(2+0)
MNA3113	Project Management	3 (2+1)
MNA3173	Engineering Statistics	3(3+0)
MNA3183	Occupational Safety & Health	3(3+0)
MMT3043	Materials Engineering	3 (2+1)
MMT3023	Fluid Mechanics	3 (2+1)
MMT3053	Thermodynamics	3 (2+1)
MMT3082	Machining and Welding Workshop	2 (0+2)
MMT3112	Marine Technology Laboratory	2 (0+2)
MMT3123	Strength Of Materials	3 (2+1)
MMT3144	Marine Electronics and Instrumentation	4 (2+2)
MMT4293	Ship Structure	3 (2+1)
MMT4253	Marine Corrosion	3 (2+1)

MNA4982	Final Year Project I	2 (0+2)
MNA4994	Final Year Project II	4 (0+4)
MNA3203	Statics	3(3+0)
MNA3013	Engineering Drawing	3(0+3)
MNA3043	Naval Architecture I	3(3+0)
MNA3053	Marine Engineering Systems I	3(2+1)
MNA3064	Naval Architecture II	4(2+2)
MNA3073	Marine Engineering Systems II	3(2+1)
MNA3103	Marine Engineering Systems III	3(2+1)
MNA3093	Naval Architecture III	3(2+1)
MNA3163	Automation and Control Systems	3(2+1)
MNA3153	Marine Engineering Systems IV	3(2+1)
MNA3143	Naval Architecture IV	3(2+1)
MNA3023	Dynamics	3(3+0)
MNA3124	Capstone Design Project	4(1+3)
MNA3133	Ship Repair and Maintenance Systems	3(2+1)
MNA49712	Industrial Training	12 (0+12)
MNA3033	Ship Constructions	3(2+1)

University Elective (9 Credit Hours)

Students are required to register and pass any of the 9 elective course credits listed throughout their studies and subject to the permission and consent of the Head of Programme.

Course Code	Course Name	Creadit Hour
MMT4163	Marine Technology and Environmental	3 (2+1)
MMT4193	Maritime Engineering Design	3 (2+1)
MMT4213	Diesel Engines	3 (2+1)
MMT4223	Research Method in Technology	3 (3+0)
MMT4263	Offshore Structure	3 (3+0)
MMT4273	Marine Hydrodynamics	3 (2+1)
MMT4313	Offshore Mooring and Riser	3 (3+0)
MMT4323	Offshore Pipeline	3 (3+0)
MMT4333	Maritime and Coastal Engineering	3 (3+0)

Course Scheme
Bachelor of Mechanical Engineering Technology (Naval Architecture) with Honours

Code	Course Name	Credit	Pre-pequisite	Code	Course Name	Credit	Pre-pequisite
Semester 1				**Semester 2**			
MNA3013	Engineering Drawing	3(0+3)	-	EDI3323	Engineering Mathematics II	3(3+0)	-
MMT3023	Fluid Mechanics	3(2+1)		MNA3203	Statics	3(3+0)	-
EDI3353	Basic Programming for Technologist	3(2+1)	-	MPU3132	Appreciation of Ethics and Civilizations	2(2+0)	-
EDI3313	Engineering Mathematics I	3(3+0)	-	MPU3223	Basic Entrepreneurship	3(3+0)	-
COM3112	Communication Arts	2(2+0)	-	BBB3013	Academic Writing Skills	3(3+0)	-
MPU3352	Integrity and Anti-Corruption	2(2+0)		CCXXXXX	Co-Curriculum	2(0+2)	-
				CCM3011	Community Care	1(0+1)	-
Total Credit		**16**		**Total Credit**		**17**	
Semester 3				**Semester 4**			
MNA3043	Naval Architecture I	3(3+0)	-	MNA3064	Naval Architecture II	4(2+2)	-
MNA3053	Marine Engineering Systems I	3(2+1)	-	MNA3073	Marine Engineering Systems II	3(2+1)	-
MMT3082	Machining and Weld-ing Workshop	2(0+2)	-	MNA3023	Dynamics	3(3+0)	-
MMT3123	Strength of Materials	3(2+1)	-	MNA3033	Ship Constructions	3(2+1)	-
MMT4253	Marine Corrosion	3(2+1)	-	MNA3192	Engineers, Law and Society	2(2+0)	-
MMT3053	Thermodynamics	3(2+1)	-	MMT3043	Engineering Materials	3(2+1)	-
MPU3142	Philosophy and Current Issues	2(2+0)		MMT3112	Marine Technology Laboratory	2(0+2)	-
Total Credit		**19**		**Total Credit**		**20**	
Semester 5				**Semester 6**			
MNA3093	Naval Architecture III	3(2+1)	-	MNA3143	Naval Architecture IV	3(2+1)	-
MNA3103	Marine Engineering Systems III	3(2+1)	-	MNA3153	Marine Engineering Systems IV	3(2+1)	-
MNA3124	Capstone Design Project	4(1+3)	-	MNA4982	Final Year Project I	2(0+2)	-
MNA3133	Ship Repair and Maintenance Systems	3(2+1)	-	MNA3163	Automation & Control System	3(2+1)	-
MMT4293	Ship Structure	3(2+1)	-	MNA3173	Engineering Statistics	3(3+0)	-
MNA3113	Project Management	3(2+1)	-	MMT3144	Marine Electronics and Instrumentation	4(2+2)	-
Total Credit		**19**		**Total Credit**		**18**	
Semester 7				**Semester 8**			
MNA4994	Final Year Project II	4(0+4)	MNA4982	MNA49712	Industrial Training	12(0+12)	
MNA3183	Occupational Safety & Health	3(3+0)	-				
BBB3033	English for Occupational Purposes	3(3+0)	-				
	Elective I	3					
	Elective II	3	-				
	Elective III	3	-				
Total Credit		**19**		**Total Credit**		**12**	
Total Credit to Graduate : 140							

Notes:

1. The number of elective course credit hours that must be taken by students in the programme of study is subject to the number of elective credit hours set by the programme of study to meet graduate qualifications and is not subject to the number of elective courses taken.
2. The list of elective courses that can be taken by students in the programme of study refers to the course offerings listed in the handbook of the study programme of the faculty and other faculties.

NAVAL ARCHITECTURE

Course Scheme Bachelor of
Mechanical Engineering Technology (Naval Architecture) with Honours

EDI3353 **: Computer Programming for Technologist**
Credit **: 3 (2+1)**
Prerequisite : None
This course contains basic programming and programming language, problem solving technique, flow diagram and structured algorithm, program coding techniques and instruction to solve formal problems. Hands on programming exercise will be given to strengthen students programming language.

EDI3313 **: Engineering Mathematics I**
Credit **: 3 (3+0)**
Prerequisite : None
This course discusses matrix and emphasizes on the important concepts in mathematical engineering including limit, differentiation, integration, differential equation, and vector system.

EDI3323 **: Engineering Mathematics II**
Credit **: 3 (3+0)**
Prerequisite : None
This course introduces some methods of mathematical analysis and applications to solve problems in engineering and technology. Topics involved are the determinant matrix and eigenvalues, the solution of first and second degree of differential equations, Laplace Transforms, Fourier Series and Fourier Transforms, partial differential equations, and numerical methods for solving common differential equations.

MNA3192 **: Engineers, Law and Society**
Credit **: 2 (2+0)**
Prerequisite : None
This course discusses the concepts of ethics, values and moral, and its relationships with engineering profession. The ethical concept in work including professionalism, accountability, organization and workers within the organization, law and current ethical law, and unlawful acts such as bribe, cheating, discrimination, and others.

MNA3113 **: Project Management**
Credit **: 3 (2+1)**
Prerequisite : None
This course introduces the fundamental of project management and contract. Project life cycle processes are explained which include project initiating, planning, executing, monitoring, controlling, and closing. Hands-on applications to Microsoft Project software are also included.

MNA3173 **: Engineering Statistics**
Credit **: 3 (3+0)**
Prerequisite : None
This course exposes the students on general knowledge, method, theory and its application of statistic and probability in naval architecture marine engineering.

MNA3183 **: Occupational Safety & Health**
Credit **: 3 (3+0)**
Prerequisite : None
This course covers the rules, regulations and the Act which is closely related to occupational safety and health as OSHM, OSHA and FMA. In addition, it also emphasizes the danger and risk, accident control, industrial hygiene, material safety data sheets, emergency response plans, safety and health audit.

MMT3043   : Materials Engineering
Credit   : 3 (2+1)
Prerequisite : None
This course introduces students to the relationship between the structure and properties of materials. It includes atomic structure and bonding, crystalline and molecular structure and imperfections as well as their relations to engineering properties. Other included topics are mechanical properties, various failure modes of materials, and phase diagram. Compositions, properties, applications, and fabrications of several materials such as metal, polymer, composite and ceramics are also discussed.

MMT3023   : Fluid Mechanics
Credit   : 3 (2+1)
Prerequisite : None
This course explains introduction and basic concept of fluid mechanics. Fluid properties. Pressure and static fluid. Mass conservation, Bernoulli, and energy. Inner flow-laminar, turbulent and loss. Velocity measurement and flow rate. Laboratory.

MMT3053   : Thermodynamics
Credit   : 3 (2+1)
Prerequisite : None
Definition and concept of thermodynamics. The First Law of Thermodynamics. Ideal gas property. The Second Law of Thermodynamics. Power and cooling cycle. Laboratory.

MMT3082   : Machining and Welding Workshop
Credit   : 2 (0+2)
Prerequisite : None
The course introduces basic knowledge in handling machinery and equipment in metal cutting, using lathe and milling, welding and practice of basic principles of safety at work and in workshops. Laboratory work covers sheet metal fabrication, cutting, bending, welding, basic machining, measuring techniques using proper tools and using hand power tools. Understanding specifications, scale, engineering design. Workshop safety and writing technical reports.

MMT3112   : Marine Technology Laboratory
Credit   : 2 (0+2)
Prerequisite : None
This course incorporates some important technical aspects in the field of marine engineering and naval architecture, which includes the provision of drawings of ship lines, understanding on hydrostatic, stability of floating objects, conduct tests. experiments/observations related to different aspects of electrical equipment found on board. The concepts are discussed understood through performing the actual tests/experiments using model ships and CBT in the laboratory.

MMT3123   : Strength of Materials
Credit   : 3 (2+1)
Prerequisite : None
The course discusses the strength of a material with an emphasis on the external load and the effect of loading. It covers basic static loading, the resulting stress and strain, the torsion of a circular bar, shear and bending moment, bending stress and combined loading. Understanding the basis of the loading and analysis for the reaction is the focus of this course. Practical for related topics are also enhanced.

MMT3144   : Marine Electronics and Instrumentation
Credit   : 4 (2+2)
Prerequisite : None
The objective of this subject is to expose the knowledge of electronics and instrumentation in marine application to the students. The contents of this subject are basic electrical and electronics; symbols in electrical and electronic circuits; electronic instrumentation on board ships; principles of operations of RADAR, echo-sounder, RDF, GPS, gyrocompass; specifications and selection of electronic equipment; boat electrical specification; laboratory. The rational of this subject is the students must have knowledge of electrical and electronic for the operations of marine instrumentation and system to become an expert mariner.

MMT4293   : Ship Structure
Credit   : 3 (2+1)
Prerequisite : None
This course is required basic engineering mechanics and also an extension of material strength. It covers introduction ship structural, ship loading, hull girder moment, hull girder bending stress and deflection, hull girder shear stress, stress analysis and struts and columns. This course emphasis on the student ability to identify and solve the structural design problem by carrying the necessary calculation and analysis.

MMT4253   : Marine Corrosion
Credit   : 3 (2+1)
Prerequisite : None
IIntroduction to theory and practices in marine corrosion. Natural process of corrosion formation and environment factors affecting marine corrosion. Introduction to basic methods preventing marine corrosion and lastly expose students to currently practices technique to marine corrosion control and prevention.

MNA4982   : Final Year Project I
Credit   : 2 (0+2)
Prerequisite : None
Final Year Project I is design to conduct scientific studies, write reports and make scientific presentations. Final year students are required to carry out a research project under the guidance of one or more supervisors / lecturers in the field of study of Maritime Technology and related. Students are required to submit a title, prepare a research proposal, and complete a research pre-thesis for their respective assessments each semester when the subject is registered. Students are also required to present research proposals in the final year scientific project seminar I.

MNA4994   : Final Year Project II
Credit   : 4 (0+4)
Prerequisite : MNA4982
Final Year Project II (PITA II) is continued from PITA I and the students need to implement the research as propose in a research proposal, analyse data, and complete the thesis to be evaluate by the supervisor for each semester subject is register. The students also need to present in a final year project seminar and submit the final thesis to PITA coordinator.

MNA3203   : Statics
Credit   : 3(3+0)
Prerequisite : None
The course includes an introduction and basic concepts of force, the resultant force and resolution power, the balance of particle, moment and couplings, rigid body balance, center of gravity and centroid, and friction.

MNA3013   : Engineering Drawing
Credit   : 3(0+3)
Prerequisite : None
This course covers geometry, orthographic and isometric, projection of planes, points and lines, development of surfaces, machine drawing, computer aided command and computer aided design.

MNA3043   : Naval Architecture I
Credit   : 3(3+0)
Prerequisite : None
This course introduces students to basic terms on the naval architectural knowledge. This enables students to familiarize themselves with naval architectural terms and ship constructions and under-takes a briefly report of ship design and build during visiting in the shipyard. Several types of ships either merchant or military purposes, technology of ship design/marine engineering and ship fabrication in Malaysia are explained. In addition, the students should be able to describe an important role of ship classification and maritime regulation on safety at sea and carrier opportunities on maritime industries and government sectors especially in Malaysia.

MNA3053   : Marine Engineering Systems I
Credit   : 3(2+1)
Prerequisite : None
The subject introduces elements related to shipping machinery including steam plant, gas turbine, reciprocating plant, compressor. Auxiliary power plants and classification of power plants. Principles of operation of a power plant. Power generation and transmission through mechanical, electrical, and hydraulic systems including basic components. Troubleshooting and maintenance.

MNA3064   : Naval Architecture II
Credit   : 4(2+2)
Prerequisite : None
This course introduces students to have understanding on determining the ship's form ship's coefficient and calculation the hydrostatic properties using Simpson's rule. Furthermore, the transverse statical stability and list conditions of ship are discussed under loading, discharging and transferring of cargoes to have a better understanding on practical ship loading activities. In addition, modern building materials including material strength, limitations and factors affecting the construction materials is explained that enables the students to choose an appropriate material according to the ship design. This subject also includes projects and assignments individually on the ship design exposing basic philosophy of the ship design processes.

MNA3073   : Marine Engineering Systems II
Credit   : 3(2+1)
Prerequisite : None
This subject introduces students to the general knowledge of marine engineering terms, control systems, principles and operation of all the ship's machinery and auxiliary machineries. It covers marine power plant, boiler, propulsion system, freshwater generator, steering gear, pumps system, refrigeration, marine sewage, incinerator, deck machineries etc.

MNA3103   : Marine Engineering Systems III
Credit   : 3(2+1)
Prerequisite : None
This subject introduces the marine refrigeration components and systems, the principles of heat transfer, application, installation, operation principles, types and characteristics of the refrigerant, troubleshoot, maintenance and repair the cooling system on board.

MNA3163   : Automation and Control Systems
Credit   : 3(2+1)
Prerequisite : None

This course discusses the dynamic system encountered in a variety of equipment and mechatronic systems. It will look at the system modeling and system response to disturbance. In addition, the control system uses dynamic feedback and control system design using different design techniques will be discussed.

MNA3093   : Naval Architecture III
Credit   : 3(2+1)
Prerequisite : None

This course introduces students to have continuous understanding on longitudinal stability of ship (trim) in various ship's conditions involving loading, discharging, and shifting of the cargoes on board as referred to the transverse statical stability. Furthermore, this also takes a fundamental approach to several components of ship resistances i.e., frictional, wave and other resistance components; dimensional analysis; bulbous bow and ship form effects; shallow water effects; added resistance; ship model tests and resistance data presentations i.e., theoretical methods for predicting resistance at concept design and the use of computational fluid dynamic based approaches. In addition, the module also discusses powering and efficiency components; screw propeller geometry; propeller theories; dimensional analysis; hull-propeller interaction; propeller model tests; cavitation; propeller design; and other propulsion systems and applications.

MNA3153   : Marine Engineering Systems IV
Credit   : 3(2+1)
Prerequisite : None

This course discusses the dynamic system encountered in a variety of equipment and mechatronic systems. It will look at the system modelling and system response to disturbance. In addition, the control system uses dynamic feedback and control system design using different design techniques will be discussed.

MNA3143   : Naval Architecture IV
Credit   : 3(2+1)
Prerequisite : None

In this course, the dynamic interaction between water and ships associated with the environmental effects is studied in the two subtopics sea keeping and maneuverability. The course is building on and deepens knowledge of wave effects on ship motion. Due to complexity of wave behaviour in nature by incorporating linear wave theory method can be adopted to study the irregular behaviour of waves and relate to ship motions characteristics. Oscillations of floating bodies–equations of motion–added mass and moment of inertia, damping coefficients–exciting forces and moments due to waves, effect of forward speed–heave, pitch and roll oscillations–strip theory for ship like forms–prediction of motion in irregular seas–method of model tests. Introduction to ship maneuvering characteristics in horizontal plane motion-turning circle will be also discussed.

MNA3023   : Dynamics
Credit   : 3(3+0)
Prerequisite : None

This course introduces the basic dynamic engineering. It consists of plane motion straight, curved lines of motion, conservation work and kinetic and potential energy, velocity, and acceleration in a horizontal movement, relative to the general movement of the rotating frame, the mass moment of inertia.

MNA3124   : Capstone Design Project
Credit   : 4(1+3)
Prerequisite : None
Capstone Design Project provides opportunities to collaborate with industry in an open and interdisciplinary challenges proposed by the project sponsor and the research industry. Students will use the engineering design process that is defining the functional requirements, concept, analysis, identify risks and countermeasures, selection, and physical prototypes.

MNA3133   : Ship Repair and Maintenance Systems
Credit   : 3(2+1)
Prerequisite : None
This course provides an introduction to the activities in the maintenance and repair process of a ship including work planning, docking type, price estimate, type of repair work, safety aspects, job inspection and the requirements of classification society.

MNA49712 : Industrial Training
Credit   : 12 (0+12)
Prerequisite : None
Students will be placed in government departments or private sectors for 24 weeks in Semester 8. Students will do a suitable daily duty under qualified supervisor in the industry and observed by supervisor from university.

MNA3033   : Ship Constructions
Credit   : 3(2+1)
Prerequisite : None
This course introduces students the knowledge of the process of ship construction. It includes an introduction to the basics of ship construction, materials, facilities, machinery, and equipment used, the relevant agencies and regulatory bodies as well as the cost of the basic construction of the vessel to be known by the students. This course emphasizes the students' ability to identify and solve problems related to shipbuilding and using the knowledge gained.

MMT4163   : Marine and Environmental Technology
Credit   : 3(2+1)
Prerequisite : None
This course discusses the development and current issues in coastal and marine environment which involves applications of technologies including coastal erosion, pollution, exploration of resources and energy. Methods of bottom sampling, water pollution, seabed mapping and coastal erosion. Acoustic techniques of bottom mapping, and resource survey. Chemical and biological methods to rehabilitate living resources, water quality and marine environment. Current issues related to resource exploitation, alternative energy, water and sound pollution and shipping activities.

MMT4193   : Maritime Engineering Design
Credit   : 3(2+1)
Prerequisite : None
This subject is focusing on the factors that affecting design and operations in maritime engineering design. The scope of the subject shall be focusing on design philosophy, design process, requirement and analysis. Students are required to select a topic, prepare a proposal, analysis, write reports and make presentations. The design processes in this subject shall be within the scope of coastal and offshore structures (ship, offshore structure, marine infrastructure, marine components and systems).

NAVAL ARCHITECTURE

MMT4213　: Diesel Engines
Credit　　　: 3 (2+1)
Prerequisite : None
This course covers basic components, function, operation and systems of diesel engine such as mechanical structure, cooling, lubricating, fuel, storage, trouble shooting and maintenance.

MMT4223　: Research Method in Technology
Credit　　　: 3 (3+0)
Prerequisite : None
Student selects a research topic, prepare research proposal, a summary about sources of error in surveys. Survey design, research questions and hypotheses, sampling, data collection, data analysis, data management, quantitative methods, qualitative procedures, basic research statistics, software for statistics.

MMT4263　: Offshore Structure
Credit　　　: 3(3+0)
Prerequisite : None
This course provides an introduction to engineering offshore structures associated with oil and gas industry, environmental load, load effects of the environment on offshore structures, analysis and design of offshore facilities, analysis and design of topside modules, load-out, installation, hook-up, and the operation, inspection, maintenance, and repair, assessment of existing structures, installation and inspection of pipelines, offshore structures and other relevant.

MMT4273　: Marine Hydrodynamics
Credit　　　: 3 (3+0)
Prerequisite : None
This course discusses the fundamentals of fluid mechanics in the context of marine structures, vehicles, ocean science and engineering, transport theorem and conversation principles, hydrodynamic forces in potential flow and numerical method solutions technique for hydrodynamics problems.

MMT4313　: Offshore Mooring and Riser
Credit　　　: 3 (3+0)
Prerequisite : None
This course provides an introduction to the offshore structural engineering related to mooring and riser system. Loading mechanism, mooring and riser system design, components, standards used, top tension risers, SCR, involved analysis of the mooring and riser system, and method of installation. Structure evaluation method is also among the topics to be included in the subject.

MMT4323　: Offshore Pipeline
Credit　　　: 3 (3+0)
Prerequisite : None
This course introduces piping system and engineering covering principles of operation of underwater offshore piping, piping types, methods of protecting pipes. Different aspects to student. It also covers the processes of constructing and installation of pipes and piping system, the design concepts, selection of suitable materials and pipe inspection.

MMT4333　: Maritime and Coastal Engineering
Credit　　　: 3 (3+0)
Prerequisite : None
This course is an introduction to the maritime field that focuses on coastal engineering. In this course, students will be exposed to the introduction of coastal engineering in general, wave events and related theories, water level rise and tides, coastal erosion prevention structure, introduction to estuary and sediment movement on the coastal area. With the knowledge in this course students will be able to help to solve the problems of the coastal environment and how it gives importance to the environment.

Bachelor of Applied Science
(Electronics and Instrumentation)
with Honours

Bachelor of Applied Science (Electronics and Instrumentation) with Honours

Introduction

Bachelor of Applied Science (Electronics and Instrumentation) with Honours programme offers an undergraduate programme that drives the field of electronics and instrumentation. In the programme offered, students have the opportunity to enhance their knowledge in the field of electrical and electronic-based engineering while strengthening their skills in applying basic understanding in related fields especially in electronics and instrumentation, with emphasis on problem-solving, research and development. With this background, it will make it easier for graduates to move into a challenging work environment. Graduates will be easier to familiarize themselves and be able to work effectively and brilliantly.

Students are also trained to use the instrumentations effectively and the best techniques in solving scientific problems, thus learning the way of collecting data and analysis of results. Students are also required to complete industrial training through placement in relevant private and government agencies. Final year students are required to carry out individual research projects in research and development and further strengthen their understanding and application of the concepts of physics, electronics and instrumentation.

Program Educational Objective (PEO)

This programme is offered for students to achieve the following objectives:

PEO1: Graduates who are knowledgeable in fundamental principles and technically competitive in the field of electronics and instrumentation, in line with industry requirements and digital needs

PEO2: Graduates who can communicate effectively and exemplify good leadership qualities within the organization

PEO3: Graduates who are capable to solve numeracy problems related to electronics and instrumentation in an innovative, creative, and ethical manner

PEO4: Graduates who are able to demonstrate entrepreneurial skills and identify life-long learning needs for an outstanding career advancement

Career Prospect

Graduates from the Bachelor of Applied Science (Electronics and Instrumentation) programme will have career opportunities in government and private agencies. Graduates from this field can work as engineers in industries (automation, electronics, instrumentation, quality, R&D, IoT etc.), lecturers (universities, polytechnics, matriculation, private colleges), teachers (Physics, Mathematics, Design etc.), research officer/science officer (research institute), material scientist, physicist, technical manager (electronics/instrumentation), science officer, sales engineer, businessman, air traffic controller and many more.

Total Credit for Graduation

The minimum amount of credit to graduate is 122 credit hours. The distribution of credit hours by course category is as follows:

Category	Credit	Percentage (%)
University Core	20	16
Programme Core	72	59
University Elective	30	25
Total	**122**	**100**

University Core (20 Credit Hours)

Course Code	Course Name	Credit Hours	Prerequisite
BBB3013	Academic Writing Skills	3 (3+0)	*None
BBB3033	English for Occupational Purposes	3 (3+0)	*None
MPU3142	Philosophy and Current Issues	2 (2+0)	None
MPU3132	Appreciation of Ethics & Civilization	2 (2+0)	None
MPU3223	Basic Entrepreneurship	3 (3+0)	None
MPU3352	Integrity and Anti-Corruption	2 (2+0)	None
COM3112	Communication Arts	2 (2+0)	None
CCM3011	Community Care	1 (0+1)	None
CCXXXXX	Co-Curriculum	2 (0+2)	None

Programme Core (72 Credit Hours)

Course Code	Course Name	Credit Hours
EDI3183	Basic Programming for Technologist	3 (2+1)
EDI3013	Engineering Mathematics I	3 (3+0)
EDI3043	Digital Electronics	3 (2+1)
EDI3033	Electricity and Magnetism	3 (3+0)
EDI3023	Engineering Mathematics II	3 (3+0)
EDI3053	Circuit Theory	3 (2+1)
EDI3063	Sensors and Transducers	3 (3+0)
EDI3083	Computational Techniques	3 (2+1)
EDI3093	Modern Instrumentation System	3 (3+0)
EDI3073	Electronic Devices	3 (3+0)
EDI4103	Signals and System	3 (3+0)
EDI3113	Analogue Electronics	3 (2+1)
EDI3123	Measurement System	3 (3+0)
EDI4133	Power Electronics	3 (2+1)
EDI4143	Electromagnetism	3 (3+0)
EDI4153	Embedded System	3 (2+1)
EDI4163	Control System	3 (3+0)
EDI4982	Final Year Research Project I	2 (0+2)
EDI4173	Numerical Method	3 (3+0)
EDI4994	Final Year Research Project II	4 (0+4)
EDI49712	Industrial Training	12 (0+12)

University Elective (30 Credit Hours)

Students are free to register for any course offered as appropriate based on student interest and maturity. Students are required to take at least 18 credit hours from the list of elective courses below or subject to the approval of the Head of Programme:

Course Code	Course Name	Credit Hours
EDI3403	Design of Electronic Equipments	3 (2+1)
EDI3533	Thermal and Modern Physics	3 (3+0)
EDI3543	Mechanics and Waves	3 (3+0)
EDI3553	Material Sciences	3 (3+0)
EDI4413	Seminar and Research	3 (3+0)
EDI4423	Electronics and Medical Imaging	3 (3+0)
EDI4433	Advance Analogue Electronics	3 (3+0)
EDI4443	Internet of Things	3 (2+1)
EDI4463	Optics and Laser Technology	3 (3+0)
EDI4473	Computer Interfacing and Control	3 (2+1)
EDI4483	Principle of Communication System	3 (3+0)
EDI4493	Electrical Machines	3 (3+0)
EDI4503	Wireless Communication	3 (3+0)
EDI4513	Introduction to SIMULINK Environment	3 (2+1)
EDI4523	Plasma Electronics	3 (3+0)
EDI4563	Solid State Physics	3 (3+0)
EDI4573	Quantum Mechanics	3 (3+0)
EDI4583	Physical Acoustics	3 (3+0)
EDI4593	Atomic Physics	3 (3+0)
EDI4603	Semiconductor Device	3 (3+0)
EDI4613	Materials Processing Technology	3 (3+0)
EDI4623	Physics and Thin Film Technology	3 (3+0)
EDI4633	Wireless Power Transfer	3 (3+0)
EDI4643	High Voltage Technology	3 (3+0)
EDI4653	Condition Monitoring	3 (3+0)
EDI4663	Introduction to Materials Analysis	3 (3+0)
EDI4673	Introduction to Renewable Energy	3 (3+0)
EDI4683	Introduction to Energy Storage	3 (3+0)
EDI4693	Medical Instrumentation	3 (3+0)
EDI4703	Introduction to Hybrid and Electric Vehicles	3 (3+0)
EDI4713	Introduction to Computer Aided Drawing	3 (2+1)
EDI4723	Sustainability in Telecommunication Technology	3 (3+0)
EDI4733	Batteries and Supercapacitors Technology	3 (3+0)
EDI4743	Hydrogen Technology-Based and Storage	3 (3+0)

Course Scheme
Bachelor of Applied Science (Electronics and Instrumentation) with Honours

Code	Course Name	Credit Hours	Pre-requisite	Code	Course Name	Credit Hours	Pre-requisite
Semester 1				**Semester 2**			
EDI3183	Basic Programming for Technologist	3(2+1)	-	EDI3013	Engineering Mathematics I	3(3+0)	-
EDI3043	Digital Electronics	3(2+1)	-	EDI3063	Sensors and Transducers	3(3+0)	-
EDI3073	Electronic Device	3(3+0)	-	EDI3083	Computational Techniques	3(2+1)	-
MPU3352	Integrity and Anti-Corruption	2(2+0)	-	EDI3123	Measurement System	3(3+0)	-
COM3112	Communication Arts	2(2+0)	-	MPU3142	Philosophy and Current Issue	2(2+0)	-
CCXXXXX	Co-Curriculum	2(0+2)	-	MPU3223	Basic Entrepreneurship	3(3+0)	-
				MPU3132	Appreciation of Ethics and Civilization	2(0+2)	-
				CCM3011	Community Care	1(0+1)	
Total Credit		**15**		**Total Credit**		**20**	
Semester 3				**Semester 4**			
EDI3023	Engineering Mathematics II	3(3+0)	-	BBB3013	Academic Writing Skills	3(3+0)	-
EDI3033	Electricity and Magnetism	3(3+0)	-	EDI3113	Analogue Electronics	3(2+1)	-
EDI3053	Circuit Theory	3(2+1)	-	EDI4103	Signal and System	3(3+0)	-
EDI3093	Modern Instrumentation	3(3+0)	-	EDI4133	Power Electronics	3(2+1)	-
	System	3	-		Elective	3	-
	Elective	3	-		Elective	3	-
Total Credit		**Elective**		**Total Credit**		**18**	
Semester 5				**Semester 6**			
EDI4153	Embedded System	3(2+1)	-	BBB3033	English for Occupational Purpose	3(3+0)	-
EDI4163	Control System	3(3+0)	-	EDI4173	Numerical Method	3(3+0)	-
EDI4982	Final Year Research Project I	2(0+2)	-	EDI4994	Final Year Research Project II	4(0+4)	EDI4982
EDI4143	Electromagnetism	3(3+0)	-		Elective	3	-
	Elective	3	-		Elective	3	-
	Elective	3	-		Elective	3	-
	Elective	3	-				
Total Credit		**20**		**Total Credit**		**19**	
Semester 7							
EDI49712	Industrial Training	12(0+12)	-				
Total Credit		**12**					
Total Credit to Graduate : 122							

Nota:

* STAM and STPM graduates who are not the science stream, are required to take the EDI2013 Basic Engineering and Electrical Mathematics refresher course in Semester 1 which is a prerequisite for the EDI3013 course

1. Students are required to undertake the Survival and Water Safety Program as a condition to graduate.
2. The number of elective course credit hours that must be taken by students in the programme of study is subject to the number of elective credit hours set by the programme of study to meet graduate qualifications and is not subject to the number of elective courses taken.
3. The list of elective courses that can be taken by students in the programme of study refers to the course offerings listed in the handbook of the study programme of the faculty and other faculties.

Course Synopsis
Bachelor of Applied Science (Electronics and Instrumentation) with Honours

EDI3013 **: Engineering Mathematics I**
Credit **: 3 (3+0)**
Prerequisite : None

This course discusses matrix and emphasizes on the important concepts in mathematical engineering including limit, differentiation, integration, differential equation and vector system.

EDI3023 **: Engineering Mathematics II**
Credit **: 3 (3+0)**
Prerequisite : None

This course introduces some methods of mathematical analysis and applications to solve problems in engineering and technology. Topics involved are the determinant matrix and eigenvalues, the solution of first and second degree of differential equations, Laplace Transforms, Fourier Series and Fourier Transforms, partial differential equations and numerical methods for solving common differential equations.

EDI3033 **: Electricity and Magnetism**
Credit **: 3 (3+0)**
Prerequisite : None

This course discusses the basic concept of electricity and magnetism. Students will expose to conceptual understanding and application of electricity such as charge, electric field, electrostatic force, electric flux, electric potential, potential difference, current, dielectric, circuits, inductance, capacitor and capacitance, charge distribution, and many more. Students also learn about Coulomb's Law, Gauss Law, Ohm's Law, Ampere's Law, and Kirchhoff Laws. For magnetic topics, students will learn about the magnet, magnetic force, electromagnetic inductions, magnetic field, magnetic flux, and fundamental laws such as Gauss Law, Biot-Savart laws, Faraday's law, and Lenz's law. The course also introduces an electromagnetism electromagnetic oscillations and spectrum.

EDI3043 **: Digital Electronics**
Credit **: 3 (2+1)**
Prerequisite : None

This course introduces Number Systems, Operations and Codes, Logic Gates, Boolean Algebra and Logic Simplification, Karnaugh Maps, and Combinational Logic Analysis.

EDI3053 **: Circuit Theory**
Credit **: 3 (2+1)**
Prerequisite : None

This course focuses deeply in circuit theory of electric and electronics. It consists of methods of circuit analysis, circuit theorems, first-order circuits, second-order circuits, sinusoids and phasors and AC circuit power analysis. The use of measurement tools and connecting the electrical and electronics component in practical are also included.

EDI3063 **: Sensors and Transducers**
Credit **: 3 (3+0)**
Prerequisite : None

This course is useful for students to understand the sensing mechanism which is a process of converting a physical variable into electrical signals. Sensors and transducers are key components in every instrument and are widely used in electrical and electronic circuits.

EDI3073   : Electronic Devices
Credit   : 3 (3+0)
Prerequisite : None
This course emphasize on theory aspect dan physical problems in electronic devices. Starting with understanding in terms of arrangement and movement of atom and electron, up to the energy that involve in the devices. Continue with the learning on semiconductor characteristics including currents, carrier movement and structure of the devices. Electronic devices that will discuss are main semiconductor devices such as diode types (p-type, n-type) and transistor types (bipolar, FET), ICs, and also photo-electronic devices such as photodiode and LED.

EDI3083   : Computational Techniques
Credit   : 3 (2+1)
Prerequisite : None
In this course, the fundamental programming concepts and skills required for basic problem solving using MATLAB software will be introduced. It emphasizes the concept of programming and the use of built-in functions in MATLAB and AutoCAD.

EDI3093   : Modern Instrumentation System
Credit   : 3 (3+0)
Prerequisite : None
This course starts with the fundamental that underlies with the development of modern instrumentation starting from the sensor and transducer design, reliability, choice and economical aspects as well as calibration in the measurements system. Students will be introduced with non-destructive testings, and instrumentations based on electromagnetic radiations in communication and medical applications. Topics for instrumentations based on spectrometer, spectrophotometer and microscopy will be also exposed.

EDI3113   : Analogue Electronics
Credit   : 3 (2+1)
Prerequisite : None
This course introduces diode with its applications and dc biasing for BJT and BJT amplifiers.

EDI3123   : Measurement System
Credit   : 3 (3+0)
Prerequisite : None
The course introduces basic measurement systems and data analysis techniques. The topic covers generalized measurement systems, reference and standards, measurement uncertainty and statistical analysis, calibration principles, the response of measurement systems, signal transmission, introduction to signals and sampling, frequency response, data acquisition, and signal conditioning, data display and recording, intelligent sensors, and measurement reliability.

EDI3183   : Basic Programming for Technologist
Credit   : 3 (2+1)
Prerequisite : None
This course contains basic programming and programming language, problem solving technique, flow diagram and structured algorithm, program coding techniques and instruction to solve formal problems. Hands on programming exercises will be given to strengthen students programming language.

EDI3403   : Design of Electronic Equipments
Credit   : 3 (2+1)
Prerequisite : None

This course covers the various activities of electronic designs including the planning design, drawing, experimentation, prototyping, testing, troubleshooting, and providing final documentation. Throughout the course, students will be shown how to use the software to design and draw electronic circuits and produce a simple electronic project depending on the design and creation of students own creativity.

EDI3533   : Thermal and Modern Physics
Credit   : 3 (3+0)
Prerequisite : None

This course introduces the fundamental principle of thermodynamics and its application in thermal physics. Other than basic concepts in temperature and heat such as internal energy and heat transfer, the ideal gas law and Boltzmann theory will also be discussed. Thermodynamic laws including heat engine and Carnot principle are discussed in detail. Discussion in modern physics such as Einstein theory, characteristics of particles and atoms, photoelectric effect, and nuclear fusion and fission will be emphasized as well.

EDI3543   : Mechanics and Waves
Credit   : 3 (3+0)
Prerequisite : None

This course deals with the motion of particles and rigid bodies in one, two and three-dimensions using Newtonian and Lagrangian Mechanics. Among topics that will be discussed include non-dispersive waves in physics, wave propagation and EM waves.

EDI3553   : Materials Science
Credit   : 3 (3+0)
Prerequisite : None

Classification of types of materials such as metals, ceramics, glasses, polymers and composites. Emphasis is given to phase diagrams of their binary systems, crystallization and microstructures, the phase diagram and also interphases in materials. The study of imperfections and mechanical properties of materials. The final part deals with experimental techniques used in materials science.

EDI4103   : Signal and System
Credit   : 3 (3+0)
Prerequisite : None

Introduction and the basic concept of discrete and continuous time signal. Circuit theory for signals and systems. Modulation method, Fourier transformation, sample of data, digital filters and technique, Laplace and Z transformations.

EDI4133   : Power Electronics
Credit   : 3 (2+1)
Prerequisite : None

This course introduces the basic concepts of switched-mode converter circuits for controlling and converting electrical power with high efficiency. Principles of converter circuit analysis are introduced, and are developed for finding the steady state voltages, current, and efficiency of power converters. Assignments include simulation of a DC-DC converter, analysis of an inverting DC-DC converter, and modeling and efficiency analysis.

EDI4143   : Electromagnetism
Credit   : 3 (3+0)
Prerequisite : None
Recap on electricity and magnetism. Students will learn application of theories of electromagnetism in differential and integral form to solve Gauss law, the use of Poisson and Laplace equation in 2 and 3 dimensions, to solve boundary condition, rectangular, cylindrical and spherical coordinates system, free and bounded charges. Problem solving in field, force and potential for electricity and magnetism are learnt using vector representation. Students also exposed to Maxwell equation to solve problem involving free space in material and dielectric, boundary condition, magnetic scalar and vector potentials, bound and unbound current, Pointing vector and gauge transformation. This course also involves electromagnetic plane waves in free space, polarization, frequency dependence of permittivity, permeability and conductivity and skin thickness.

EDI4153   : Embedded System
Credit   : 3 (2+1)
Prerequisite : None
This course is useful for students to understand how a microprocessor and microcontroller work, starting from retrieving data from input devices, processing data using uploaded code, storing processed data in memory devices, and sending out processed data to output devices. This course is also useful for students to build a simple program for a microcontroller-based system which is one of the key components in an electronic instrument.

EDI4163   : Control System
Credit   : 3 (3+0)
Prerequisite : None
This course provides students with a background of control principles in various engineering applications. Throughout this course, students will learn the basic mathematical tools such as La-place transform, transfer function, block diagram, signal flow graph, mathematical modeling of dynamic systems, time response analysis, stability of linear system, root locus and frequency domain analysis. MATLAB based approach will be used to aid the students understanding of the concept introduced.

EDI4173   : Numerical Methods
Credit   : 3 (3+0)
Prerequisite : None
This course is offered to expose students to the numerical techniques used in problem solving in relation to the electronic and instrumentations applications. The lecture begins with an introduction to the computer simulations in solving electronic and instrumentation problems and error analysis. Specific numerical techniques will be introduced including root finding and extrapolation in non-linear equations, system of linear equations, numerical integration and differentiation, and ordinary differential equations.

EDI4413   : Seminar and Research
Credit   : 3 (3+0)
Prerequisite : None
This course introduces general research techniques with emphasis in physic research. It covers project proposal, references, data analysis and statistical distribution, computational solutions, interactive techniques and computer distribution. Students are required to prepare a project proposal and to present it in a seminar. Students are also required to attend all seminars organised by the programme.

EDI4423 : Electronics and Medical Imaging
Credit : 3 (3+0)
Prerequisite : None
This course brings together material from engineering, physics and physiology which are relevant to situations in which electronic devices are in direct contact with the body. The primary aim is to familiarize students with some of the important medical applications of electronics, where there is a direct connection to the body, and to explain how the requirements for the equipment are derived. The taught material is concerned not only with how the electronic devices work as well as what they must do for adequate performance and safety. Students also will develop their knowledge and understanding of technical aspects involved in general and fluoroscopic radiography and its conduct. This subject includes the important clinical and radiation safety measures required.

EDI4433 : Advanced Analogue Electronics
Credit : 3 (3+0)
Prerequisite : None
This course is useful for students to understand the functionality of signal conditioning elements such as amplifiers, filters, oscillators and voltage regulators that are commonly used in electronics and instrumentation systems.

EDI4443 : Internet of Things
Credit : 3 (2+1)
Prerequisite : None
This course introduces the concepts of the internet of things device (Arduino, ESP32 or DragonBoard Green) that can provide an affordable platform for new generations to get into the wonderful world of computing in a truly meaningful way. We explore the platforms to develop the hardware and software, discuss the design concepts that will make the intelligent electronic device eye-catching and appealing.

EDI4463 : Optics and Laser Technology
Credit : 3 (3+0)
Prerequisite : None
This course deals with the phenomenon and characteristics in optics, light, photonics and laser. Topics include interference, diffractions, polarizations and coherent and non-coherent sources. Semiconductor laser, solid-state laser, gas laser, excimer laser and few other type of lasers will also be discussed. Other optical applications such as interferometry and optical fibre will also be focused.

EDI4473 : Computer Interfacing and Control
Credit : 3 (2+1)
Prerequisite : None
This course discusses the theoretical concept behind computer interfacing and control system elements and operations. In addition, different types of industrial control systems are explored. At the same time, this course offers the development and implementation of computer interfacing in collecting and analyzing data by using suitable hardware and software.

EDI4483 : Principles of Communications System
Credit : 3 (3+0)
Prerequisite : None
This course gives exposure to the principles of communication systems by focusing on the elements of communication system, spectrum analysis, AM and FM modulation techniques, analog to digital conversion and introductory to the information theory.

EDI4493   : Electrical Machines
Credit   : 3 (3+0)
Prerequisite : None
This course covers theories and laws on magnetic and magnetically coupled circuits. The principles behind electromechanical energy conversion also will be explored. The principles and characteristics of machines such as transformers, synchronous machines, induction machines and DC machines are also discussed.

EDI4503   : Wireless Communications
Credit   : 3 (3+0)
Prerequisite : None
This course covers the fundamental issues affecting wireless communication and studies the development of technology in wireless communication mainly on cellular systems, local area networks, and wireless communication (WLAN).

EDI4513   : Introduction to SIMULINK Environment
Credit   : 3 (2+1)
Prerequisite : None
This course introduces SIMULINK models, dynamic system models and simulations, manage blocks, data and signals, customize SIMULINK environments and run models.

EDI4523   : Plasma Electronics
Credit   : 3 (3+0)
Prerequisite : None
This course gives an exposure in terms of concept and application of plasma in electronics. Start with explanation on plasma, how it can be formed, and its application in daily life. Explanation begin with the fundamental of collision of atoms and molecules, up to the explanation on the energy produced and classification of the plasma. Plasma application is also emphasize particularly in electronics and semiconductor fabrication.

EDI4563   : Solid State Physics
Credit   : 3 (3+0)
Prerequisite : None
This course discusses the structure and crystal bonding force. Experiments for structural analysis are described briefly. Lattice vibrations and their effect on thermal properties, acoustics and optics will be the basis for discussion model free electrons in the metal. A more realistic treatment of these electrons will be discussed in the Model Path. This model will be used to differentiate between the semiconductor and metal conductors. The properties of the dielectric, optical, magnetic and defects in solids will also be discussed.

EDI4573   : Quantum Mechanics
Credit   : 3 (3+0)
Prerequisite : None
The purpose of this course is to expose students to the fundamental concept of quantum mechanics. Students will learn the origin of quantum mechanics and its role to explain microscopic particles such as an electron, atom and molecule, and wave equation of matter. Students will also learn the Schrodinger equation for a particle in 1-dimensional and 3-dimensional for simple potentials such as infinite well, barrier, step-function potential and the harmonic oscillator.

EDI4583   : Physical Acoustics
Credit   : 3 (3+0)
Prerequisite : None
This course discusses the fundamental principles underlying the generation, transmission, and reception of acoustic waves and their application to numerous fields. Applications and examples are drawn from acoustical measurements, noise control, underwater acoustics and architectural acoustics. Applications of ultrasonic instruments and acoustic sensors in industry will be discussed.

EDI4593   : Atomic Physics
Credit   : 3 (3+0)
Prerequisite : None
This course deals with atomic phenomena using the quantum mechanical framework. Topics include solutions to Schroedinger equations, the wave function for the hydrogen atom, angular momentum and magnetic effects, spectrum for one electron atom and multiple electron atom, statistics of identical atoms and particles, molecule and bonding energy and spectrum of rotating, vibrating and electronic molecular state.

EDI4603   : Semiconductor Devices
Credit   : 3 (3+0)
Prerequisite : None
The purpose of this course is to provide the student with the essential background on semiconductor materials including crystals and energy bands, charge carriers (electrons and holes), doping, and transport, (drift and diffusion). The basic concepts of the generation recombination process, PN junction, metal semiconductor contact, and metal insulator semiconductor capacitor also will be discussed.

EDI4613   : Materials Processing Technology
Credit   : 3 (3+0)
Prerequisite : None
This course discusses detailed coverage of materials and manufacturing processes that industrial designers need and overly technical discussions commonly directed toward engineers. The practical knowledge needed to develop a real-world understanding of materials and processes and make informed choices for industrial design projects is also exposed. In this course, students will find everything from basic terminology to valuable insights on why certain shapes work best for particular applications. They'll learn how to extract the best performance from all of the most commonly used methods and materials.

EDI4623   : Physics and Thin Film Technology
Credit   : 3 (3+0)
Prerequisite : None
This course will enable students to acquire knowledge on the basic principle of thin films and their applications in industry. Students will be exposed to various fabrication techniques of thin films.

EDI4633   : Wireless Power Transfer
Credit   : 3 (3+0)
Prerequisite : None
This course covers the principle of wireless power transfer. That includes the fundamental mediums of transferring power wirelessly. Four basic strategies to transmit power wirelessly are included (Inductive, Acoustic/Ultrasound waves, Optical, Microwave) to discuss in detail.

EDI4643 : High Voltage Technology
Credit : 3 (3+0)
Prerequisite : None
This course will expose the various types of high voltages in power systems and protection methods. Nature of breakdown mechanisms in solid, liquid, gaseous and dielectrics will be studied. The generation of high voltages and currents together with their measurement techniques will be emphasized. Testing methods of power apparatus and insulation, such as HVDC and breaker using recent technologies will be included.

EDI4653 : Condition Monitoring
Credit : 3 (3+0)
Prerequisite : None
This course aims to provide an understanding of both mechanical and electrical condition monitoring and associated instrumentation requirements for successful condition monitoring. The main focus in mechanical condition monitoring is vibration monitoring since this is the most popular method of determining the condition and diagnosing faults in rotational machines, although other techniques used in condition monitoring are also discussed.

EDI4663 : Introduction to Materials Analysis
Credit : 3 (3+0)
Prerequisite : None
The aim of the course is to introduce various techniques for materials analysis, particularly surface and thermal analysis, that are used for both academic and industrial research and development.

EDI4673 : Introduction to Renewable Energy
Credit : 3 (3+0)
Prerequisite : None
This course discusses the several main renewable energy resources that could become significant to mankind in the near future. It purpose is to introduce students to these renewable energies and its conversion process with basic theory. These include solar, wind, biomass, hydro-power, geothermal, tidal and wave energy and ocean thermal energy.

EDI4683 : Introduction to Energy Storage
Credit : 3 (3+0)
Prerequisite : None
This course discusses the several main energy storage technologies that could become significant to mankind in the near future. Its purpose is to introduce students to this energy storage and its conversion process with basic theory. These include thermal energy storage, flywheel energy storage, pumped hydro storage, and waterpower, fuel cells, tidal and wave energy and ocean thermal energy.

EDI4693 : Medical Instrumentation
Credit : 3 (3+0)
Prerequisite : None
This course start with the fundamental that underlies with the knowledge and understanding especially on instrument introduction, principle of physics, basic components, and also operational procedures. Topics for instrumentation are based on medical application.

EDI4703 : Introduction to Hybrid and Electric Vehicles
Credit : 3 (3+0)
Prerequisite : None
This course introduces the concept of hybrid, plug in hybrid, fuel cell and electric vehicles. This courses also evaluate about hybrid, plug in hybrid, fuel cell and electric vehicles technology architecture, component, and discuss the current issue of vehicle technology in Malaysia.

EDI4713 : **Introduction to Computer Aided Drawing**
Credit : 3 (3+0)
Prerequisite : None
This course introduces the concept of computer aided drawing, constructing computer aided drawing and applying aided drawing using AutoCAD software.

EDI4723 : **Sustainability in Telecommunication Technology**
Credit : 3 (3+0)
Prerequisite : None
This course covers the concept of sustainability in the field of telecommunication technology. Learning includes an introduction to sustainability, electronic technologies for energy efficiency and sustainable growth, network energy consumptions, energy improvements in green and sustainable telecommunication technologies.

EDI4733 : **Batteries and Supercapacitors Technology**
Credit : 3 (3+0)
Prerequisite : None
This course focuses on the fundamentals of energy storage, considering the operation and design of various batteries and supercapacitor technology. Students will be introduced to scientific knowledge inside batteries and supercapacitors by learning their basic components, mechanisms, and performance criteria. Specific topics for the types of batteries and supercapacitors will be exposed. Energy storage applications in stationary and mobile technologies, as well as safety considerations, will be discussed.

EDI4743 : **Hydrogen Technology-Based and Storage**
Credit : 3 (3+0)
Prerequisite : None
This course begins with an overview of hydrogen-based energy technologies and the integration of hydrogen production, storage, and fuel cells. Students will be introduced to hydrogen production/generation methods. The course will cover the fundamental concepts and classifications of hydrogen storage and fuel cells. Hydrogen processing and applications in various applications will be discussed.

EDI4982 : **Final Year Research Project I**
Credit : 2 (0+2)
Prerequisite : None
This an individual research project in connection with a technical and/or scientific problem and under the guidance of an academic staff. The project undertaken may fall under one of the following areas: Mathematical analysis, experimental tests, computer simulation, hardware and/software development, to their field of interest. In this course students should prepare and present a research proposal, demonstrates parts of findings and results of the research work.

EDI4994 : **Final Year Research Project II**
Credit : 4 (0+4)
Prerequisite : EDI4982
This course is the continuity of Final Year Project I. Students will continue conducting research activities that have been planned and started during the Final Year Project I. Students will also have their progress and final presentation and complete their thesis reports during this course. In this course, students will also be exposed to scientific paper writing.

EDI49712   : Industrial Training
Credit   : 12 (0+12)
Prerequisite : None
This course provides an opportunity for students to delve hands-on into the working world. The type of training conducted is determined by the industry involved with the consent of the faculty. At the end of this course, students gain exposure to the real work environment through interaction with industry workers, obtain skills in applying basic concepts in all courses studied on campus as well as able and confident to solve every work problem given by the industry.

FACULTY OF OCEAN ENGINEERING TECHNOLOGY
"Technology to Lead"

FACULTY OF OCEAN ENGINEERING TECHNOLOGY

FACULTY OF OCEAN ENGINEERING TECHNOLOGY

SCAN ME

https://ftkk.umt.edu.my

OfficialUMT

QS UNIVERSITY RANKINGS ASIA

QS WORLD UNIVERSITY RANKINGS

THE WORLD UNIVERSITY RANKINGS

MyRA MALAYSIA RESEARCH ASSESSMENT

SETARA

CERTIFIED TO ISO 9001:2015   CERT NO.:QMS 03280

CERTIFIED TO ISO/IEC 27001:2013   CERT NO.:ISMS 00323

Terokaan Seluas Lautan, Demi Kelestarian Sejagat | *Ocean of Discoveries for Global Sustainability*