



UTM
UNIVERSITI TEKNOLOGI MALAYSIA



UNDERGRADUATE (UG) **ACADEMIC GUIDELINES**

2026 / 2027



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<https://mjiit.utm.my>

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PRELIMINARIES

This handbook is designed to equip students with information regarding the Full-time Undergraduate Degree Program at MJIIT, Universiti Teknologi Malaysia. It is anticipated that the information given will guide the students on their academics and campus activities throughout their study at MJIIT. The information or contents of this handbook are accurate at the time of printing. Any enquiry regarding the academic guideline handbook should be addressed to:

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UTM PHILOSOPHY

TAGLINE, VISION, MISSION AND CORE VALUES

Philosophy

The divine law of Allah is the foundation of knowledge. In line with His Will, UTM strives with total commitment to attain excellence in science, technology and engineering for the well-being and prosperity of mankind

Tagline

Innovating Sustainable Solutions

Vision

A Premier University Providing World-Class Education and Research

Mission

To Develop Global Talents and Prosper Lives Through Knowledge and Innovative Technologies



UTM Core Value

Integrity

Adab in fulfilling a Trust: This refers to proper conduct and placing responsibility as the foundation of any given task.



Excellence

Adab towards Knowledge: This is defined as placing knowledge in its rightful place in the elevation of authority and credibility based on knowledge.



Adab

The recognition and acknowledgement of the reality that everything, including knowledge, humanity, and nature, has its proper place (*Tertib*).

Synergy

Adab towards fellow Humans: This entails recognising the importance of organisational hierarchy and the role of all levels within teamwork that fosters collegiality.



Sustainability

Adab towards Nature & the Organisation: This involves realising that nature is an ecosystem that must be preserved, rather than manipulated, for the continuity of universal life.



MJIIT VISION & MISSION



VISION

A global hub of excellence in education, research, and societal advancement, driven by Malaysia-Japan blended approach



MISSION

To develop competent talent and enrich a resilient society through sustainable innovation and strategic partnerships

TAGLINE

Global Excellence • Shared Values • Sustainable Future

MJIIT 5 Core Values

Shinrai (信頼)

“Shinrai” (信頼) is a Japanese word that means “trust” or “reliance.” It can refer to mutual trust between people, confidence in someone’s abilities, or faith in a system or institution.

Chousen (挑戦)

“Chousen” (挑戦) is a Japanese word that means “challenge” or “attempt.” It is often used when someone takes on a difficult task or strives to achieve something new.

Jissen (実践)

“Jissen” (実践) is a Japanese word that means “practice” or “putting into practice.” It refers to applying knowledge, skills, or theories in real-world situations rather than just learning them in theory.

Kenkyo (謙虚)

“Kenkyo” (謙虚) is a Japanese word that means “humility” or “modesty.” It refers to an attitude of being humble, not boastful, and showing respect for others.

Kizukai (気遣い)

“Kizukai” (気遣い) is a Japanese word that means “consideration” or “thoughtfulness” toward others. It refers to being attentive to people’s feelings, needs, or situations and acting with kindness and care.

“**MJIIT** will win **SHINRAI** by committing **CHOUSEN** and **JISSEN** with the mindset of **KIZUKAI** and **KENKYO**”



UNIVERSITI TEKNOLOGI MALAYSIA

UTM Kuala Lumpur (UTMKL) is a graduate campus of Universiti Teknologi Malaysia (UTM), and is under the same corporate structure as its main campus in Johor Bahru, Johor. UTMKL is a semi-autonomous campus headed by a Pro-Vice-Chancellor, located at the centre of Kuala Lumpur city.

UTMKL is in its own local community affiliated with UTM, offers leading-edge programmes at bachelor and graduate degree levels and provides services both locally and internationally. In the current academic session, the UTMKL is offering full-time undergraduate and postgraduate programmes under its three major schools: Faculty of Artificial Intelligence (FAI), The Azman Hashim International Business School (AHIBS) and The Malaysia Japan International Institute of Technology (MJIIIT). Some of these schools also offer part-time executive programmes for working professionals. In addition, part-time and modular programmes are run by UTMSPACE (The School for Professional and Continuing Education).

There are several centres of excellence in UTMKL which carry out research activities and also offer some academic programmes. Other major supporting units include the branch offices of Innovation & Commercialization Centre (ICC), School for Graduate Studies (SPS) and UTM International. Their presence in the Campus would be supportive of the Campus key results areas and its strategic objectives.

UTMKL has developed a long-term plan to leverage on the full advantage of its location in the urban Kuala Lumpur, cultivating on attractions and characteristics unavailable in the Main Campus. Its mission to showcase UTM in the fields of science and technology and offer cross-disciplinary programmes with international outlook and industry-driven as an international reference centre for the global communities.



MALAYSIA-JAPAN INTERNATIONAL INSTITUTE OF TECHNOLOGY

The Malaysia-Japan International Institute of Technology (MJIIT), which was established in 2010 as a Government-to-Government Project at Universiti Teknologi Malaysia (UTM), is the culmination of Malaysia's Look East Policy that manifests a unique education project between Malaysia and Japan. Japan has formed a consortium of 29 Universities and has dispatched Japanese lecturers and professors to MJIIT providing a significant piquant of the Japanese-oriented engineering program for Malaysian and international students. The interaction between two countries were strengthened by sending exchange students to Japan, setting up training programs at Japanese companies and partnering with Japanese Universities through various academic cooperation. The MJIIT Project was one of the major ways to contribute towards enhancing bilateral relations between the two governments. It is also anticipated that with the establishment of MJIIT, Malaysia has benefited from new technology introduced by Japan.

MJIIT combines the advantage of the Malaysian systematic outcome-based education with the research-intensive approach of Japanese education outlook. The relatively autonomous nature of MJIIT allows for greater innovation and creativity among its academic staff and students. It is the desire of MJIIT to produce knowledgeable human capital towards the advancement and development of state-of-the-art technology and processes while safeguarding the environment. The blend of Malaysian, Japanese as well as other international professors, who engaged extensively in research, combined with students' diversity created continuity in global experiences within the campus environment. MJIIT works closely with Japanese universities and industries to create a distinctive working culture and employs a holistic approach in its program offerings. MJIIT does not only focuses on Malaysian students but also welcomes students from Asian and foreign countries, aiming to be the Japanese-oriented engineering hub in Asia. Presently, MJIIT offers five (5) undergraduate programmes namely Bachelor of Electronic Systems Engineering with Honours, Bachelor of Mechanical Precision Engineering with Honours, Bachelor of Chemical Process Engineering with Honours, Bachelor of Software Engineering with Honours and Bachelor of Science (Industrial Mathematics) with Honours.

MESSAGE FROM DEAN

Assalamualaikum, Salam Sejahtera, Konnichiwa

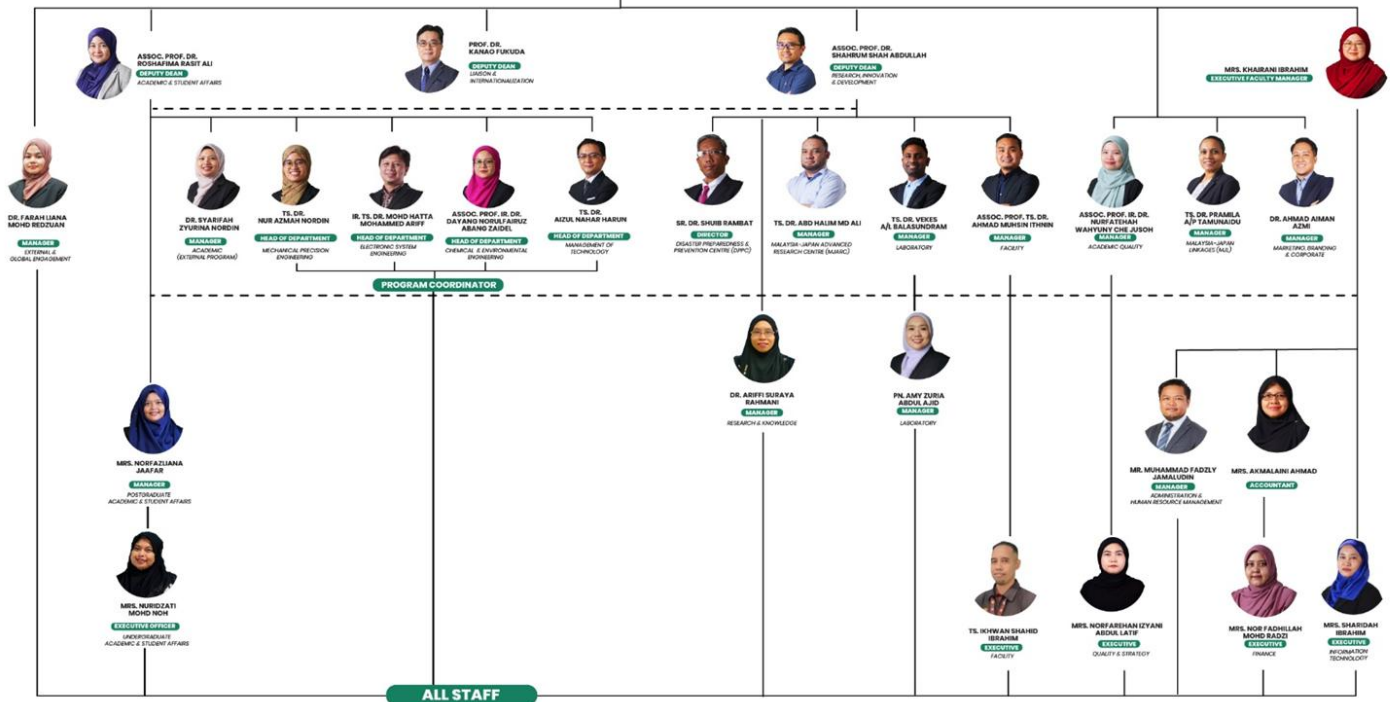
My heartiest congratulations and warmest welcome to all students to Malaysia-Japan International Institute of Technology (MJIIT), Universiti Teknologi Malaysia (UTM). MJIIT UTM is located in Kuala Lumpur which is preparing to become world leading Japanese-oriented engineering education hub with support from the Higher Education Department, Ministry of Education, Malaysia, Japan International Cooperation Agency (JICA) and more than 29 Japanese Universities through the Japanese University Consortium (JUC). Our Japanese-oriented engineering education utilizes the K.E.S. (Knowledge-Experience and Self-study) pedagogy concept of teaching and learning which focuses more on classroom learning in early years and learning through experience and self-study in later years. The well-known 5S concept and Kaizen are incorporated in learning cultures at MJIIT, aim to inculcate important values highly sought in today's world including team working, responsible and resilience.

MJIIT provides state-of-the-art facilities for postgraduate students comprising of well-established research laboratories under the auspices of innovative research laboratories (iKohza) featuring the unique mentoring concept of senpai-kohai (senior and junior mentoring). Junior members are nurtured and closely supported by their seniors, combining collegial collaboration and continuous guidance from professors and senior members of the iKohza. We have close collaboration with industries such as Takasago Ltd., Daiichi and Mitsubishi Heavy Industries Asia Pacific LTE Ltd, Kantsu Ltd and Leave a Nest to support our learning and research ecosystems. On behalf of the MJIIT family, I wish you successful academic endeavours throughout your study at MJIIT. Don't forget to experience the UTM lifestyle while at the same time mastering the Japanese-oriented engineering education with us!

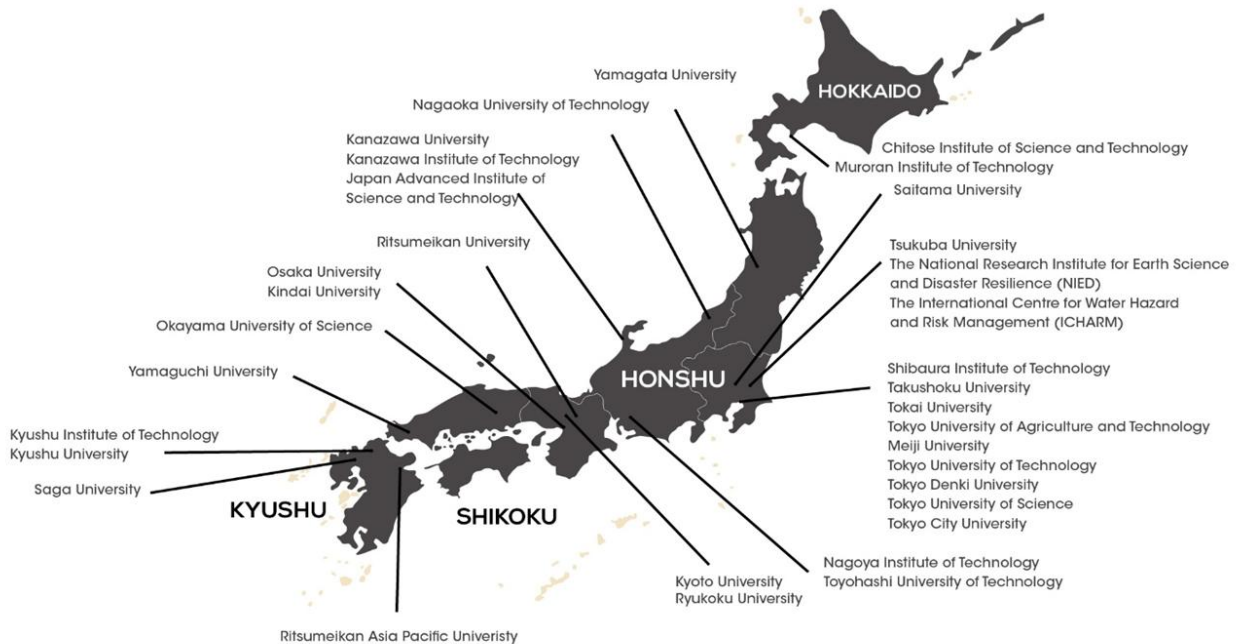


**ASSOC. PROF. IR. TS. DR.
NURULAKMAR ABU HUSAIN**

DEAN
ASSOC. PROF. IR. TS. DR.
NURULAKMAR ABU HUSAIN



JAPANESE UNIVERSITY CONSORTIUM



33 MEMBERS

UNIQUENESS OF MJIIT

QUALITY EDUCATION

1

100%
ACCREDITED
BY ENGINEERING
ACCREDITATION COUNCIL
MALAYSIA

FINANCIAL SUPPORT

2

UP TO **RM 5 MILLION**
OF SCHOLARSHIP
FOR UG & PG (FULL & PARTIAL)

JAPANESE STYLE EDUCATION

3

I - KOHZA, RINKOH
5S, MONOZUKURI
NINGEN - RYOKU
SENPAI - KOHAI
JAPANESE LANGUAGE CLASSES
JAPANESE ACADEMIC STAFFS

WORLD RANKING

4

TOP 40
BEST UNIVERSITIES IN ASIA
(QS WORLD UNIVERSITY RANKINGS)

JAPANESE GOVERNMENT SUPPORT

5

JICA
JACTIM
RESEARCH GRANTS
SCHOLARSHIPS
VARIETY OF EXCHANGE PROGRAMS

JAPANESE MOBILITY PROGRAMS

6

GLOBAL MOBILITY PROGRAM
SAKURA SCIENCE PROGRAM
JENESYS PROGRAM
INDUSTRIAL TRAINING IN JAPAN
JOINT DEGREES & SUPERVISIONS

STATE-OF-THE-ART LABORATORIES

7

76 LABS
5 SERVICE LABS
20 I-KOHZAS (RESEARCH GROUPS)
9 SANGAKU - RENKEI LABS

EXCLUSIVE PARTNERSHIPS

8

WITH **30**
JAPANESE UNIVERSITIES
(THE JAPANESE UNIVERSITY
CONSORTIUM)
& JAPANESE INDUSTRIES

EMPLOYABILITY

9

98% GRADUATE
EMPLOYABILITY WITH
JAPANESE FIRMS IN JAPAN,
MALAYSIA & OTHER REGIONS
ANNUAL JOB FAIRS WITH
JAPANESE COMPANIES

ACCOMMODATION

10

ON-CAMPUS ACCOMMODATION
AVAILABLE

(i - KOHZA)

MJIIT INNOVATIVE KOHZA

MALAYSIA-JAPAN INTERNATIONAL INSTITUTE OF TECHNOLOGY



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UNDERGRADUATE RESEARCH

Undergraduate students are encouraged to actively participate in research and innovation activities throughout their academic journey at MJIT. These opportunities allow students to apply theoretical knowledge to real-world engineering and technological challenges while developing critical thinking, problem-solving, and research skills. In the final year of study, each student undertakes an individual Final Year Project (FYP) under the guidance of an academic supervisor, with progress monitored regularly to ensure the successful completion of the project.

To further support students' research development, MJIT adopts the i-Kohza system, which is modelled after the Japanese laboratory-based education and research culture. Each i-Kohza is led by a senior academic and comprises academics, researchers, postgraduate students, and undergraduate students who share common research interests. As junior members of the i-Kohza, undergraduate students are integrated into a collaborative research environment where they can interact with experienced researchers, gain exposure to advanced research facilities and equipment, and participate in ongoing research activities. Through this system, students are encouraged to develop independent learning capabilities, teamwork, professional ethics, and a lifelong learning mindset that will prepare them for future careers in industry, research, and postgraduate studies.

Both undergraduate and postgraduate students participate in the i-Kohza ecosystem, which serves as the foundation of MJIT's education and research framework. The system promotes close interaction between students, academics, and researchers within a collaborative research community, facilitating knowledge transfer, mentorship, and hands-on learning. Through participation in i-Kohza activities, students gain valuable exposure to advanced technologies, research methodologies, and professional practices while cultivating the spirit of continuous improvement and lifelong learning that characterises the Japanese approach to higher education and research.



Below are the list and head of i-Kohzas and the centre of excellence (COE) at MJIT:

List of MJIT's i-KOHZA	
1.	Advanced Devices and Materials Engineering (ADME)
2.	Algae & Biomass (ALGAE)
3.	Chemical Energy Conversions and Applications (ChECA)
4.	Circular Process Technology for Environment and Energy (CPTEE)
5.	Engineering Materials and Structures (eMast)
6.	Environmental and Metabolic Engineering for Resilient and Sustainable Systems (EMERSS)
7.	Intelligent Dynamics & System (IDS)
8.	Perception, Robotics & Automation (PRA)
9.	Smart Communication Systems (SCS)
10.	Software Engineering and Industrial Revolutions (SEIR)
11.	Sustainability, Innovation, Technology & Knowledge Advancement (Shin-ka)
12.	SHIZEN Material Conversion and Separation Technology (SHIZEN)
13.	Tropical Indoor Environment Research (TIER)
14.	Tribology and Precision Machining (TriPreM)
15.	Takasago Thermal/Environmental Systems (TTES)
16.	Vehicle System Engineering (VSE)
17.	Wellness Innovation and Technology (WIT)

List of MJIT's Centre of Excellence (COE)	
1.	Disaster Preparedness & Prevention Centre (DPPC)
2.	Malaysia-Japan Advanced Research Centre (MJARC)



LIST AND HEAD OF i-KOHZA

i-KOHZA	Head
Advanced Devices and Materials Engineering (ADME)	Prof. Ir. Ts. Dr. Abdul Manaf bin Hashim
Algae & Biomass (ALGAE)	Assoc. Prof. Dr. Koji Iwamoto
Chemical Energy Conversions and Applications (ChECA)	Prof. Dr. Mohamed Mahmoud Elsayed Nasef
Circular Process Technology for Environment and Energy (CPTEE)	Assoc. Prof. Ir. Ts. Dr. Liew Peng Yen
Engineering Materials and Structure (eMAST)	Prof. Ir. Ts. Dr Saiful Amri bin Mazlan
Environment And Metabolic Engineering for Resilient and Sustainable Systems (EMERSS)	Assoc. Prof. Dr. Shahrum Shah bin Abdullah
Intelligence Dynamics and System (IDS)	Assoc. Prof. Ir. Dr. Lee Kee Quen
Perception, Robotic & Automation (PRA)	Assoc. Prof. Ir. Dr. Zool Hilmi bin Ismail
Smart Communication Systems (SCS)	Prof. Dr. Yoshihide Yamada
Software Engineering of Industrial Revolutions (SEIR)	Prof. Dr. Hamido Fujita
Sustainability, Innovation, Technology & Knowledge Advancement (Shin-ka)	Ts. Dr. Zulhasni bin Abdul Rahim
SHIZEN Material Conversion and Separation Technology (SHIZEN)	Prof. Dr. Tomoya Tsuji
Tropical Indoor Environment Research (TIER)	Prof. Ir. Ts. Dr. Sheikh Ahmad Zaki bin Shaikh Salim



Tribology and Precision Machining (TriPreM)	Prof. Dr. Kanao Fukuda
Takasago Thermal/Environmental Systems (TTES)	Dr. Muhammad Thalhaf bin Zainal
Vehicle System Engineering (VSE)	Assoc. Prof. Dr. Fauzan bin Ahmad
Wellness Innovation Technology (WIT)	Prof. Dr. Siti Hamidah binti Mohd. Setapar

DIRECTOR OF CENTRE OF EXCELLENCE (COE)

COE	Director
Disaster Preparedness & Prevention Centre (DPPC)	Sr. Dr. Shuib bin Rambat
Malaysia-Japan Advanced Research Centre (MJARC)	Ts. Dr. Abd Halim bin Md Ali

COE RESEARCH INTEREST

Disaster Preparedness & Prevention Centre (DPPC)
The Disaster Preparedness and Prevention Centre (DPPC), is a leading disaster risk reduction and management (DRRM) institute in multi-hazards and climate change to strengthen community resilience. DPPC aims to champion in providing DRRM solutions through technology driven and risk-informed sustainable development agenda; to lead and facilitate high-end laboratories, facilities and asset management services for disaster related event; to become a regional hub for building a safer and disaster resilient community through a transdisciplinary approach; to facilitate national and international collaborations in applied research, training and field practices for disaster resilience. - from i-Kohza booklet (2026 newest version). ● Disaster risk reduction and management ● Community Resilience



- Space Science R&D
- Policy
- Corporate Governance
- Finance
- Engineering Education
- Open Innovation, SGD
- Technology Mapping
- Patent Analytics
- Cultural Heritage
- Urban Conservation
- Climate Action in the Buildings Sector
- Green Technology
- Fire Risks Assessment
- Sustainable Cities

Malaysia-Japan Advanced Research Centre (MJARC)

- Waste Treatment & Management Technologies
- Environmental Pollution
- Renewable Energy
- Biomass Conversion and Utilization
- Process Integration and Optimization
- Subcritical Water System
- Bio Composite Material
- Energy Systems & Recovery
- Waste-to-Wealth, Waste-to- Energy
- Effluent treatment
- Energy systems and recovery
- Pre & Post-disaster Waste Management



i-KOHZA RESEARCH INTERESTS

Advanced Devices & Materials Engineering (ADME) - https://mjiit.utm.my/adme/	Algae & Biomass (ALGAE) - https://mjiit.utm.my/algae/	Chemical Energy Conversions and Applications (ChECA) - https://mjiit.utm.my/checa/
● Nanomaterials synthesis ● Semiconductor ● Nanoelectronics ● RF and microwave engineering ● Sensor technology ● Functional oxide thin films ● Phase-change materials ● Thermoelectric systems ● Additive manufacturing ● Materials characterisation ● Advanced functional materials ● Functional micro- and nanodevices	● Microalgae ● Fatty acids ● Bioremediation, Biopolymer ● Waste water ● Bioenergy ● Biocoke ● Azolla and alternative animal feeds	● Catalysts ● Ion-conducting Membranes ● Bioplastics ● Fuel Cells ● Water Electrolyzers ● Carbon Dioxide Capture and Conversion ● Energy Storage
Circular Process Technology for Environment and Energy (CPTEE) - https://mjiit.utm.my/cptee	Engineering Materials and Structures (eMAST) - https://mjiit.utm.my/engineering-materials-structures-emas	Environmental and Multidisciplinary Engineering for Resilient and Sustainable Systems (EMERSS) - https://mjiit.utm.my/emerss/
● Sustainability ● Circular Economy ● Waste Management ● Microplastics	● Smart Materials - Magnetorheology (Magneto-Response)	● Nature-Based Solutions ● Resource Recovery ● Nexus Modelling ● Blue-Green Grids



● Air Pollution ● Renewable Energy ● Biofuel ● Energy Management	Fluid, Grease, Plastomer, Elastomer and Foam) ● Metal Composite ● MR Design and Components ● MR Ageing and Durability ● 3D and 4D Printing Technology of Metal Composite and MR Materials ● Advanced Additive Manufacturing (Multi-material, functionally graded material) ● Surface Modification on Nanotechnology ● NanoMaterial for Saturable Absorber for Fiber Optic ● NanoMaterial for Triboelectric generator ● Micro- and Nano-Characterization Analysis	● Urban Metabolism ● Regenerative Design ● Climate Adaptation ● Adaptive Infrastructure ● System Modelling
Intelligent Dynamics and System (IDS) - https://mjiit.utm.my/ids/	Perception, Robotic & Automation (PRA) - https://mjiit.utm.my/prs/	Vehicle System Engineering (VSE) - https://mjiit.utm.my/research-vehicle/
● Noise and Vibration Control	● Artificial Intelligence	● Bio-signal Processing



● Damaged Detection ● Intensity Identification ● Non-linear System Identification ● Vibration damper and active suspension system ● Structural Dynamics vibration ● Computer Fluid Dynamics ● Fluid-Structure Interaction ● Machine Learning	● Large Language Model ● Pattern Recognition ● Computer Vision ● Process Automation ● Mechatronics ● Robotics & Sensors ● Embedded System ● Hardware Security ● Control and System Optimization ● IoT Applications	● AI & Robotics ● Active Safety & Autonomous Vehicles ● Vehicle Safety ● Product Design ● Structural Dynamics ● Smart Materials ● Air Traffic System Surveillance
Tropical Indoor Environment Research (TIER) - https://mjiit.utm.my/tier/	Sustainability, Innovation, Technology & Knowledge Advancement (Shin-ka) - https://mjiit.utm.my/shin-ka/	Tribology and Precision Machining (TriPreM) - https://mjiit.utm.my/tribology/
● Indoor Climate ● Thermal Comfort ● Wind Engineering ● Wind induced Vibration / Energy ● Control Application ● IoT ● Artificial Intelligence ● Air Conditioning (HVAC) ● Aeroacoustics / Wind Noise	● Intellectual Property Management ● Innovation Management ● Business Analytics ● Technology Management ● Sustainability Policy ● Circular Economy ● TRIZ innovation ● Social Entrepreneurship ● Applied Mathematics	● Tribology and Surface Engineering ● Mechanical System Development and Control ● Adhesive Technologies and Joining Mechanics ● Polymer and Biomaterial Innovation ● Nanotechnology and Functional Particles ● Multi-environment performance optimization



Takasago Thermal/ Environmental Systems (TTES) - https://mjiit.utm.my/ttes/	Material Conversion and Separation Technology (SHIZEN) https://mjiit.utm.my/shizen/	Software Engineering of Industrial Revolution (SIER) - https://mjiit.utm.my/seir-info/
- Carbon Capture, Utilization, and Storage - Combustion - Energy saving technologies - Low energy power consumption technologies - Heat transfer - Nanoparticle / Nanofluid - Mathematical modelling - Abstract theoretical modelling - Artificial intelligence - River System Assessment - Rainfall Forecasting and Modelling - Boundary layer modelling - Natural ventilation	- Sustainable energy - Biofuels - New materials - Utilization of wastes - Thermodynamic models - Process design & control - Apparatus and Assembly Design - Separation and purification - Chemical engineering - High pressure technologies - Design of chemical processes and control based on mathematical models	- Software Engineering - Software Development - Machine Learning - System Analysis and Design - Engineering Education - Cybersecurity
Wellness Innovation Technology (WIT) - https://mjiit.utm.my/wit/	Smart Communication System (SCS) - https://mjiit.utm.my/scs/	
- Bioprocessing - Biosensor - Drug delivery - Food technology - Skincare - Structural bioinformatics	- Antennas and Propagation - Antennas for Future Networks - Body Centric Communication System	



	• Undersea Communication Systems • Metamaterials • Radar Cross Section • Wireless Power Transfer • Wireless Mobile Communication • Wireless Mobile Network • Cognitive Radio Network	
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2026 / 2027 SESSION

ACADEMIC CALENDAR



ACADEMIC CALENDAR 2026/2027 SESSION
UNIVERSITI TEKNOLOGI MALAYSIA
DEGREE PROGRAMME
<https://amd.utm.my/academic-calendar/>

26 - 27 September 2026 (International) 4 September 2026 (Local)	Registration of New Students Semester I, 2026/2027 Session
21 September - 2 October 2026	International Student Orientation Programme
4 October - 9 October 2026	Student Orientation Week Faculty Briefing for Academic Matters

12 October 2026 – 21 March 2027 (23 weeks)	SEMESTER I
12 October - 29 November 2026	Lectures Semester I (First Half - 7 weeks)
30 November - 6 December 2026	Mid-Semester Break for Semester I (1 week)
7 December 2026 - 24 January 2027	Lectures Semester I (Second Half - 7 weeks)
25 January - 30 January 2027	Revision Period for Semester 1 (6 Days)
31 January - 19 February 2027	Final Examination for Semester I (2 weeks) (No examination between 4 – 9 February 2027)
20 February - 21 March 2027	Final Break for Semester I (5 weeks)
20 - 21 March 2027 (International) 22 March 2027 (Local)	Registrations of New Students Semester II, 2026/2027 Session (March intake)
20 & 21 March 2027 (International) 21 March 2027 (Local)	Registration of New Students Semester II, 2026/2027 Session
22 March 2027	Faculty Briefing for Academic Matters



22 March – 03 October 2027 (28 weeks)	SEMESTER II
22 March - 16 May 2027	Lectures semester II (First half - 8 weeks)
17 May - 23 May 2027	Mid-Semester Break for Semester II (1 week)
24 May - 4 July 2027	Lectures Semester II (Second half - 6 weeks)
5 July - 11 July 2027	Revision Period for Semester II (1 week)
12 July - 25 July 2027	Final Examination for Semester II (2 weeks)
26 July – 3 October 2027	Final Break for Semester II (10 weeks)

26 July – 03 October 2027 (10 Weeks)	SHORT SEMESTER
26 July - 30 July 2027	Courses Registrations for Short Semester 2026/2027 Session (5 Days)
2 August - 26 September 2027	Lectures for Short Semester (8 weeks)
27 September - 3 October 2027	Final Break for Short Semester (2 Week)

Note: Subject to change



Malaysia Public Holiday

16 September 2026	Malaysia Day
8 - 9 November 2026	Deepavali
25 December 2026	Christmas Day
1 January 2027	New Year's Day
22 January 2027	Thaipusam
1 February 2027	Federal Territory Day
6 - 8 February 2027	Chinese New Year
24 February 2027	Nuzul Al-Quran
10 - 11 March 2027	Hari Raya Aidilfitri Holiday
1 May 2027	Labour Day
17 May 2027	Hari Raya Aidiladha
20 May 2027	Wesak Day
6 - 7 June 2027	Awal Muharram
7 June 2027	Agong Birthday
15 - 16 August 2027	Prophet Muhammad's Birthday
31 August 2027	Merdeka Day
16 September 2027	Malaysia Day
8 - 9 November 2027	Deepavali
25 December 2027	Christmas Day

Note: Subject to change



DEGREE OFFERED & PROGRAM SPECIFICATIONS



GENERAL INFO

UNDERGRADUATE



ENGINEERING PROGRAMMES SPECIFICATIONS

MJIIT has FOUR (4) undergraduate programs, namely Bachelor of Mechanical Precision Engineering with Honours (MPE), Bachelor of Chemical Process Engineering with Honours (ChEE), Bachelor of Electronic Systems Engineering with Honours (ESE), and Bachelor of Software Engineering with Honours (SE). The entry requirements and Programme Award Requirements for these programmes are tabulated below.

ENTRY REQUIREMENTS

ADMISSION TO 1ST YEAR

Bachelor of Mechanical Precision Engineering with Honours (MPE)

Bachelor of Chemical Process Engineering with Honours (CPE)

Bachelor of Electronic Systems Engineering with Honours (ESE)

A. *MoHE Matriculation Programme Holders:*

(KPM Matriculation/ UTM Asasi / UM Asasi Sains / UiTM Asasi)

Pass SPM with Grade “C” and above for Bahasa Melayu

Pass SPM with Grade “E” and above for Sejarah starting 2013

and

Pass KPM Matriculation / UTM Asasi / UM Asasi Sains / UiTM Asasi with CGPA of at least 2.5

and

achieve at least a ‘C+’ (NGMP 2.33) in the following subjects:



Programme	Subjects
ESE	1. Mathematics 2. Physics
MPE	1. Mathematics 2. Physics
CPE	1. Mathematics 2. Physics 3. Chemistry/Chemistry/Biology

and

achieve Malaysian University English Test (MUET) **Band 2**

B. STPM Holders:

Pass SPM with Grade “C” and above for Bahasa Melayu

Pass SPM with Grade “E” and above for Sejarah starting 2013

and

Pass STPM with CGPA of at least 2.50

Pass STPM with Grade C and above for PENGAJIAN AM

Pass STPM with Grade C and above for any subjects not yet counted

and

achieve at least a ‘C+’ (NGMP 2.33) in the following subjects:

Programme	Subjects
ESE	1. Mathematics 2. Physics



MPE	1. Mathematics 2. Physics
CPE	1. Mathematics 2. Physics 3. Chemistry/Chemistry/Biology

and

achieve Malaysian University English Test (MUET) **Band 2**

C. Diploma/Equivalent Holders

- FOR BACHELOR OF ELECTRONIC SYSTEMS ENGINEERING WITH HONOURS**

Holds a **Diploma in a field related to Engineering / Engineering Technology** from UTM or Institution of Higher Learning (IPT) with CGPA of at least 2.50
- FOR BACHELOR OF MECHANICAL PRECISION ENGINEERING WITH HONOURS**

Holds a **Diploma in Engineering or Mechanical Engineering Technology** (Core, Aeronautical, Automotive, Industrial, or Manufacturing) or **Mechanical Technology** (Manufacturing, Materials Processing, or Mechatronics) from UTM or any Institution of Higher Learning (IPT) with a **CGPA of at least 2.50**.
- BACHELOR OF CHEMICAL PROCESS ENGINEERING WITH HONOURS**

Holds a **Diploma in a field related to Engineering / Engineering Technology / Chemical Technology** from Institution of Higher Learning (IPT) with CGPA of **at least 2.50**.



and,

Obtain at least **BAND 2.0** in the **Malaysian University English Test (MUET)** for examinations beginning **Session 1, year 2021**, or **Band 2** for examinations up to **year 2020**, subject to the validity period of 5 years from the date the examination result is issued.

D. Others/Equivalent Qualifications Holders (A-Level / International Baccalaureate Diploma / Australian Matriculation Program)

Holds other qualifications deemed equivalent by the Government of Malaysia and approved by university Senate

and

achieve any of the following:

Programme	Requirements
ESE	1. GCE A Level with at least C 2. International Baccalaureate Diploma (IB) with at least Grade 4 in HL level courses 3. Australian Matriculation Programme (AUSMAT) with at least Grade C / 60% ATAR Rank in Mathematics and Physics
MPE	1. GCE A Level with at least C 2. International Baccalaureate Diploma (IB) with at least Grade 4 in HL level courses 3. Australian Matriculation Programme (AUSMAT) with at least Grade C / 60% ATAR Rank in Mathematics and Physics
CPE	1. GCE A Level with at least C



- | | |
|--|---|
| | <ol style="list-style-type: none"> 2. International Baccalaureate Diploma (IB) with at least Grade 4 in HL level courses 3. Australian Matriculation Programme (AUSMAT) with at least Grade C / 60% ATAR Rank in Mathematics, Chemistry and Physics |
|--|---|

and

achieve at least **Band 2.0** in MUET / **Band 5.5** in IELTS / **Score 500** in TOEFL PBT / **Score 46** in TOEFL IBT / **Score 51** in PTE / **Score 160** in CEQ / **Level 108** in ELS CIEP

Exemption:

- *Candidates from International Schools, A-level and International Baccalaureate qualifications are exempted from the UTM English language requirement a Bridging Programme.*
- *Candidates from UTM Foundation or other Foundation programmes in Malaysia are exempted from the UTM English language requirement and Bridging Programme.*

Bachelor of Software Engineering with Honours (SE)

A. Matriculation / Foundation Programme Holders:

Meet the General Requirements of the University as well as the Special Requirements of the Program

and

Get at least CGPA 2.80 at Matriculation/Foundation level;

and

Get at least Grade B (NGMP 2.67) at the level Matriculation/Foundation in the following two (2) subjects:

- Mathematics

and



Any ONE (1) of the following subjects:

- Physics / Engineering Physics
- Chemistry / Chemical Engineering
- Biology
- Computer Science / Computing

and

Get at least honours (Grade C) at the SPM level in the following subjects:

- Mathematics
- Additional Mathematics

and

Get at least Band 2.0 in Malaysian University English Test (MUET) for exams starting Session 1 of 2021 or Band 2 for exams up to 2020 according to the validity period on the application date.

B. STPM Holders:

Meet the General Requirements of the University as well as the Special Requirements of the Program

and

Get at least CGPA 2.80 at STPM level;

and

Get at least Grade B (NGMP 2.67) at STPM level in the following two (2) subjects:

- Mathematics (T)

and

Any ONE (1) of the following subjects:

- Physics
- Chemistry
- Biology
- Information and Communication Technology



and

Get at least honours (Grade C) at the SPM level in the following subjects:

- Mathematics
- Additional Mathematics

and

Get at least Band 2.0 in Malaysian University English Test (MUET) for exams starting Session 1 of 2021 or Band 2 for exams up to the year 2020 according to the validity period on the application date.

C. *Diploma/Equivalent Holders:*

Meet the General Requirements of the University as well as the Special Requirements of the Program.

and

Possess a Diploma in Computer Science or Software Engineering or Technology Information or Information System from UTM/IPT/Equivalent to at least CGPA 3.00;
or

Having a Diploma in the field of Science and Technology by getting at least CGPA 3.00.

and

Obtained at least Grade B- at Diploma level in a Mathematics subject.

and

Get at least Band 2.0 in Malaysian University English Test (MUET) for exams starting Session 1 of 2021 or Band 2 for exams up to 2020 according to the validity period on the application date.

D. *STAM Holders:*

Meet the General Requirements of the University as well as the Special Requirements of the Program.



and

Get at least Jayyid Jiddan Rank (CGPA: 3.00) in Malaysian Higher Certificate Examination (STAM)

and

Obtained at least honors (Grade C) on SPM level in the following subjects:

- Mathematics
- Additional Mathematics

and

Get at least Band 2.0 in Malaysian University English Test (MUET) for exams starting Session 1 of 2021 or Band 2 for exams up to 2020 according to the validity period on the application date.

E. Equivalent Qualifications Holders (A-Level / International Baccalaureate Diploma / Australian Matriculation Program)

Meet the General Requirements of the University as well as the Special Requirements of the Program

and

Have a GCE A Level qualification with at least get Grade C;

or

Having an International Baccalaureate Diploma (IB) qualification by getting Grade 4 HL level subjects;

or

Have Australian Matriculation (AUSMAT) with Grade C/60% ATAR Rank in the following subjects:

- Mathematics

and

Any ONE (1) of any the following subjects:

- Physics



- Chemistry
- Biology
- Computing

and

Get at least honours (GRADE C) at the SPM level in the following subjects:

- Mathematics
- Additional Mathematics

and

Get at least Band 2.0 in Malaysian University English Test (MUET) for exams starting Session 1 of 2021 or Band 2 for exams up to the year 2020 according to the validity period on the date application OR Band 5.5 in IELTS Test, Academic Score 500 in PBT TOEFL Test, Score 46 in TOEFL IBT Test

DIRECT ENTRY TO SECOND (2ND) YEAR: DIPLOMA UTM QUALIFICATION

A. Diploma Holders and equivalent

- **FOR BACHELOR OF ELECTRONIC SYSTEMS ENGINEERING WITH HONOURS**
Holds a **Diploma in a field related to Engineering / Engineering Technology** from UTM or Institution of Higher Learning (IPT) with CGPA of at least 2.50
- **FOR BACHELOR OF MECHANICAL PRECISION ENGINEERING WITH HONOURS**
Holds a **Diploma in a field related to Engineering / Mechanical Engineering Technology** (Core / Aeronautics / Automotive / Industry / Manufacturing) from UTM or Institution of Higher Learning (IPT) with CGPA of at least 2.50
- **BACHELOR OF CHEMICAL PROCESS ENGINEERING WITH HONOURS**
Holds a **Diploma in a field related to Engineering / Engineering Technology / Chemical Technology** from Institution of Higher Learning (IPT) with CGPA of at least 2.50

and



achieve Malaysian University English Test (MUET) **Band 2**

Note: Candidates should submit the complete Diploma examination results (from first to last semester) to UTM. Candidates should also submit a copy of diploma certificate or letter of completion of study.

The entry and duration of the study are based on the exemption credits that are approved by UTM.

ENTRY REQUIREMENTS FOR INTERNATIONAL STUDENT

- At least the Senior High School Certificate/Senior Secondary School/other equivalent pre-university examination from the government school (with the period of at least 12 years of study from primary to higher secondary)
or
- General Certificate of Education (GCE) 'A' Level, Diploma in the related field or other equivalent pre-university examinations;
or
- Any other certificate that is recognized by Senate of the University equivalent to the above;
and
- Program's specific requirements;
and
- Language requirements



ENGLISH LANGUAGE REQUIREMENT

Pass the English proficiency requirements:

English Language Test	Required Band and Score
Malaysian University English Test (MUET)	Band 4.0 and above
International English Language Testing System (IELTS)	Band 5.5 and above
Test of English as a Foreign Language (TOEFL) iBT	Score of 46 and above
The Pearson Test of English (PTE Academic / PTE Academic Online)	Score of 51 and above
Cambridge English Qualification (CEQ) – B2 First (FCE), C1 Advanced (CAE), C2 Proficiency (CPE)	Score of 160 and above
Certified Intensive English Programme (CIEP – ELS)	Complete level 108 and above

Note: Students who do not meet the English language proficiency standards or requirements are required to attend:

1. **Intensive English Programme (IEP)** conducted by the UTM Language Academy and obtain a minimum score in MUET / IELTS / TOEFL / Pearson Test of English / Cambridge English Qualification, **OR**



2. **Certified Intensive English Programme (CIEP)** conducted by the ELS Language Centre and **completed Level 108**.

Exemption:

- *Candidates from International Schools, A-level and International Baccalaureate qualifications are exempted from the UTM English language requirement and Bridging Programme.*
- *Candidates from UTM Foundation or other Foundation programmes in Malaysia are exempted from the UTM English language requirement and Bridging Programme.*



PROGRAMME EDUCATIONAL OBJECTIVES

PEO
01

TECHNICAL

Demonstrate mastery of knowledge and competency in manifesting cutting-edge technologies while embracing the faculty's core values

PEO
02

PROFESSIONALISM

Demonstrate professionalism through innovation, ethical principles, entrepreneurial spirit, and global qualities

PEO
03

SUSTAINABLE SOCIETY

Contribute to sustainable development and related efforts for the benefit of society

PROGRAMME LEARNING OUTCOMES



ENGINEERING KNOWLEDGE

Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization to develop solutions to complex engineering problems.



PROBLEM ANALYSIS

Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development.



DESIGN/DEVELOPMENT

Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations.



INVESTIGATION

Conduct investigation of complex engineering problems using research methods including research-based knowledge, design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PROGRAMME LEARNING OUTCOMES



TOOL USAGE

Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, and recognize their limitations in solving complex engineering problems.



THE ENGINEER AND THE WORLD

Analyze and evaluate sustainable development impacts on society, the economy, sustainability, health and safety, legal frameworks, and the environment in solving complex engineering problems.



ETHICS

Apply ethical principles, commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.



INDIVIDUAL AND COLLABORATIVE TEAM WORK

Function effectively as an individual, and as a member or leader in diverse and inclusive teams, in multidisciplinary, face-to-face, remote and distributed settings.

PROGRAMME LEARNING OUTCOMES



COMMUNICATION

Communicate effectively and inclusively on complex engineering activities with the engineering community and society, such as comprehending and writing effective reports and design documentation, making effective presentations, and considering cultural, language, and learning differences.



PROJECT MANAGEMENT AND FINANCE

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



LIFE LONG LEARNING

Recognize the need and have the ability for i) independent and life-long learning, ii) adaptability to new and emerging technologies, and iii) critical thinking in the broadest context of technological change.

PROGRAMME AWARDS REQUIREMENTS

The program is offered in full-time mode and based on a TWO (2) Semester Academic Year with several courses being delivered and assessed in each Semester. Assessment is based on final examination, coursework conducted throughout the semester.

Awards requirements:

Students should:

- For local and international undergraduate students: achieve a total of 135 credit for SMJMH, 135 credits for SMJCH, 136 credits for SMJEH and 128 credits for SCSEH with minimum CGPA of 2.00.
- Pass industrial training.
- Complete the final year project in Year 4.
- As part of the efforts to produce competitive and marketable graduates, UTM has introduced Professional Skills Certificates for all undergraduate students in addition to their normal academic transcript. UTM School of Professional and Continuing Education (SPACE) is responsible for conducting this programme. The aim of this programme is to provide opportunities for students (especially the final year students) who wish to expand their knowledge beyond the credits curriculum and hence become more competitive in the real world after they graduate. The programme will help them obtain additional knowledge and skills in adapting themselves to their jobs and technical skills in their chosen career. The professional skills are offered in the following areas:



PROFESSIONAL SKILLS CERTIFICATE

Compulsory Courses	Elective Courses (Any 2)
1. GLRB 0010: Design Thinking for Entrepreneur (DTE) 2. GLRL 0010: English Communication Skills for Graduating Students (ECS) 3. GLRM 0010: Talent and Competency Management (TCM)	1. GLRT 0010: Data Analytics for Organization 2. GLRT 0020: Professional Ethics and Integrity 3. GLRT 0030: Construction Measurement (Mechanical & Electrical) 4. GLRT 0050: OSHE for Engineering Industry and Laboratory 5. GLRT 0060: Quality Management for Built Environment and Engineering Professionals 6. GLRT 0070: Safety and Health Officer Introductory Course 7. GLRM 0020: Industrial Machinery and Lubrication



BACHELOR IN
**MECHANICAL
PRECISION
ENGINEERING**

With Honours (**UT6521005**)



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<https://mjiit.utm.my>

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DEPARTMENT OF MECHANICAL PRECISION ENGINEERING (MPE)

BACHELOR OF MECHANICAL PRECISION ENGINEERING WITH HONOURS CURRICULUM

1. Awarding Institution		Universiti Teknologi Malaysia		
2. Teaching Institution		Universiti Teknologi Malaysia		
3. Program Name		Bachelor of Mechanical Precision Engineering with Honours		
4. Final Award		Bachelor of Mechanical Precision Engineering with Honours		
5. Program Code		UT6521005		
6. Professional or Statutory Body of Accreditation		Engineering Accreditation Council (EAC)		
7. Language(s) of Instruction		Bahasa Malaysia and English		
8. Mode of Study (Conventional, distance learning, etc.)		Conventional		
9. Mode of operation (Franchise, self-govern, etc.)		Self-governing		
10. Study Scheme (Full Time/Part Time)		Full Time		
11. Study Duration		Minimum: 4 years, Maximum: 6 years		
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part Time
Normal	8	-	14	-
Short	1	-	10	-



12. Classification of Courses			
Classification		Credit	Percentage (%)
Program Core		100	74.07%
Program Electives		9	6.67%
Faculty Core			
a. SHLJ 2252 Japanese for Communication 2			
b. SHLJ 2352 Japanese for Communication 3			
c. SMJG 2243 Professional Ethics, Safety & Health (Ningen-Ryoku)		10	7.41%
d. SMJG 3243 Project Management and Engineering Economics			
General / University Courses			
a. Management/Economics/Humanities/Ethics			
b. Language – English and Japanese		16	11.85%
c. Co-curriculum/Service Learning			
Total		135	100%
<i>For sciences program, please fill up the following classification.</i>			
No	Classification	Credit	Percentage (%)
A	Engineering Courses		
	a) Lecture	84	
	b) Laboratory	2	
	c) Final Year Project	8	74.1%
	d) Industrial Training	6	
	Total Credit for Part A	100	74.1%



B	Related Courses		
	a) Mathematics/Free Elective	15	25.9%
	b) Management/Economics/Humanities/Ethics	8	
	c) Co-Curriculum	2	
	d) English Language	4	
	e) Japanese	6	
	Total Credit for Part B	35	25.9%
	Total Credit for Parts A and B	135	100%
13. Total Credit to Graduate		135	



PROGRAMME STRUCTURE FOR OCTOBER INTAKE

Year 1 Semester 1

Code	Course	Credits	L	T	P/S	Lab
SMJG1113	ENGINEERING MATHEMATICS	3	3			
SMJJ1313	MATERIALS SCIENCE	3	2			1
SMJJ1213	STATICS	3	3			
SMJJ1013	INTRODUCTION TO MECHANICAL PRECISION ENGINEERING DESIGN	3	2		1	
SMJJ1111	PRECISION WORKSHOP I	1				1
ULRS1042	PHILOSOPHY AND CURRENT CHALLENGES <i>*(for local students)</i>	2	2			
UHLM1012	MALAY LANGUAGE FOR COMMUNICATION 2 <i>*(for international students)</i>					
ULRF2XX2	SERVICE LEARNING & COMMUNITY ENGAGEMENT COURSES	2			2	
Total Credits		17				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 1 Semester 2

Code	Course	Credits	L	T	P/S	Lab
SMJG1123	DIFFERENTIAL EQUATIONS	3	3			
SMJJ1613	PROGRAMMING FOR ENGINEERS	3	2		1	
SMJJ1413	THERMODYNAMICS	3	3			
SMJJ1023	ENGINEERING DRAWING WITH CAD	3	2		1	
ULRS1122	MALAYSIAN NATION-STATE ASPIRATION <i>*(for local students)</i>	2	2			
ULRS1132	MALAYSIAN CITRA <i>*(for international students)</i>					



UHLB1112	ENGLISH COMMUNICATION SKILLS <i>*(for MUET 3.5 and below)</i>	HW	2			
UHLJ1122	JAPANESE FOR COMMUNICATIONS I	2	2			
Total Credits		16				

Notes: L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 2 Semester 3

Code	Course	Credits	L	T	P/S	Lab
SMJG2133	ENGINEERING STATISTICS	3	3			
SMJJ2223	DYNAMICS	3	3			
SMJJ2423	FLUID MECHANICS I	3	3			
SMJJ2233	SOLID MECHANICS I	3	3			
SMJJ1512	FUNDAMENTAL OF ELECTRICAL ENGINEERING	2	2			
SHLJ2252	JAPANESE FOR COMMUNICATION II	2	2			
ULRS1032	INTEGRITY AND ANTI-CORRUPTION	2	2			
Total Credits		18				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 2 Semester 4

Code	Course	Credits	L	T	P/S	Lab
SMJG2143	NUMERICAL METHODS	3	3			
SMJJ2433	FLUID MECHANICS II	3	3			
SMJJ2243	SOLID MECHANICS II	3	3			
SMJJ2121	PRECISION WORKSHOP II	1				1
SMJJ2443	THERMAL ENGINEERING	3	3			
SMJG2243	PROFESSIONAL ETHICS, SAFETY & HEALTH (NINGEN-RYOKU)	3	3			



UHLB2122	PROFESSIONAL COMMUNICATION SKILLS 1	2	2			
Total Credits		18				

Notes: L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 3 Semester 5

Code	Course	Credits	L	T	P/S	Lab
SMJJ3253	MECHANICS OF MACHINES AND VIBRATION	3	3			
SMJJ3033	PRECISION COMPONENT DESIGN	3	2		1	
SMJJ3323	MANUFACTURING PROCESSES	3	3			
SMJJ3523	MECHATRONICS	3	2		1	
SHLJ2352	JAPANESE FOR COMMUNICATION III	2	2			
UHLB3132	PROFESSIONAL COMMUNICATION SKILLS 2	2	2			
Total Credits		16				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 3 Semester 6

Code	Course	Credits	L	T	P/S	Lab
SMJG3243	ENGINEERING ECONOMICS & PROJECT MANAGEMENT	3	3			
SMJJ3333	TRIBOLOGY	3	3			
SMJJ3623	FINITE ELEMENT ANALYSIS	3	3			
SMJJ3043	MONOZUKURI I	3	2		1	
SMJJ3633	CNC CAD/CAM	3	2		1	
ULRS3032	ENTREPRENEURSHIP & INNOVATION	2	2			
Total Credits		17				

Notes: L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory



Year 3 Short Semester

Code	Course	Credits	L	T	P/S	Lab
SMJG 3806	INDUSTRIAL TRAINING	6			6	
	Total Credits	6				

Notes: L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 4 Semester 7

Code	Course	Credits	L	T	P/S	Lab
SMJG4912	UNDERGRADUATE RESEARCH METHODOLOGY	2	1			1
SMJJ4054	MONOZUKURI II	4	2		2	
SMJJ4343	QUALITY OF ENGINEERING	3	3			
SMJJ4533	CONTROL ENGINEERING AND INSTRUMENTATION	3	3			
SMJJ4**3	ELECTIVE I	3	3			
	Total Credits	15				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 4 Semester 8

Code	Course	Credits	L	T	P/S	Lab
SMJG4926	FINAL YEAR PROJECT	6				6
S**X****	FREE ELECTIVE	3	3			
SMJJ4**3	ELECTIVE II	3	3			
	Total Credits	12				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory



PROGRAMME STRUCTURE FOR MARCH INTAKE

Year 1 Semester 1

Code	Course	Credits	L	T	P/S	Lab
SMJJ1213	STATICS	3	3			
SMJJ1613	PROGRAMMING FOR ENGINEERS	3	2		1	
SMJJ1413	THERMODYNAMICS	3	3			
SMJJ1023	ENGINEERING DRAWING WITH CAD	3	2		1	
UHLB1112	ENGLISH COMMUNICATION SKILLS <i>*(for MUET 3.5 and below)</i>	HW	2			
UHLJ1122	JAPANESE FOR COMMUNICATIONS I	2	2			
ULRS1122	MALAYSIAN NATION-STATE ASPIRATION <i>*(for local students)</i>	2	2			
ULRS1132	MALAYSIAN CITRA <i>*(for international students)</i>					
	Total Credits	16				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 1 Semester 2

Code	Course	Credits	L	T	P/S	Lab
SMJG1113	ENGINEERING MATHEMATICS	3	2			
SMJJ1313	MATERIALS SCIENCE	3	3			
SMJJ1013	INTRODUCTION TO MECHANICAL PRECISION ENGINEERING DESIGN	3	2		1	
SMJJ1111	PRECISION WORKSHOP 1	1	3			
SMJJ2223	DYNAMICS	3	3			
ULRF2**2	SERVICE LEARNING & COMMUNITY ENGAGEMENT COURSES	2	2			
ULRS1042	PHILOSOPHY AND CURRENT CHALLENGES <i>*(for local students)</i>	2	2			



UHLM1012	MALAY LANGUAGE FOR COMMUNICATION 2 <i>*(for international students)</i>					
Total Credits		17				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 2 Semester 3

Code	Course	Credits	L	T	P/S	Lab
SMJG1123	DIFFERENTIAL EQUATIONS	3	3			
SMJG2243	PROFESSIONAL ETHICS, SAFETY & HEALTH (NINGEN-RYOKU)	3	3			
SMJG3243	ENGINEERING ECONOMICS & PROJECT MANAGEMENT	3	3			
SMJJ2121	PRECISION WORKSHOP II	1				1
SMJJ3333	TRIBOLOGY	3	3			
UHLB2122	PROFESSIONAL COMMUNICATION SKILLS 1	2	2			
Total Credits		15				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 2 Semester 4

Code	Course	Credits	L	T	P/S	Lab
SMJG2133	ENGINEERING STATISTICS	3	3			
SMJJ2423	FLUID MECHANICS I	3	3			
SMJJ2233	SOLID MECHANICS I	3	3			
SMJJ3033	PRECISION COMPONENT DESIGN	3	2		1	
SMJJ1512	FUNDAMENTAL OF ELECTRICAL ENGINEERING	2	2			
SHLJ2252	JAPANESE FOR COMMUNICATION II	2	2			



ULRS1032	INTEGRITY AND ANTI-CORRUPTION	2	2			
Total Credits		18				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 3 Semester 5

Code	Course	Credits	L	T	P/S	Lab
SMJG2143	NUMERICAL METHODS	3	3			
SMJJ2433	FLUID MECHANICS II	3	3			
SMJJ2243	SOLID MECHANICS II	3	3			
SMJJ2443	THERMAL ENGINEERING	3	3			
SMJJ3043	MONOZUKURI I	3	2		1	
ULRS3032	ENTREPRENEURSHIP & INNOVATION	2	2			
Total Credits		17				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 3 Semester 6

Code	Course	Credits	L	T	P/S	Lab
SMJJ3253	MECHANICS OF MACHINES AND VIBRATION	3	3			
SMJJ3323	MANUFACTURING PROCESSES	3	3			
SMJJ3523	MECHATRONICS	3	2		1	
SMJJ4054	MONOZUKURI II	4	2		2	
SHLJ2352	JAPANESE FOR COMMUNICATION III	2	2			
UHLB3132	PROFESSIONAL COMMUNICATION SKILLS 2	2	2			
Total Credits		17				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory



Year 4 Semester 7

Code	Course	Credits	L	T	P/S	Lab
SMJG4912	UNDERGRADUATE RESEARCH METHODOLOGY	2	2			
SMJJ3623	FINITE ELEMENT ANALYSIS	3	3			
SMJJ3633	CNC CAD/CAM	3	2		1	
S**X**3	FREE ELECTIVE	3	3			
SMJJ4**3	ELECTIVE 1	3	3			
Total Credits		14				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 4 Short Semester

Code	Course	Credits	L	T	P/S	Lab
SMJG3806	INDUSTRIAL TRAINING	6			6	
Total Credits		6				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 4 Semester 8

Code	Course	Credits	L	T	P/S	Lab
SMJG4926	FINAL YEAR PROJECT	6				6
SMJJ4533	CONTROL ENGINEERING AND INSTRUMENTATION	3	3			
SMJJ4343	QUALITY OF ENGINEERING	3	3			
SMJJ4**3	ELECTIVE 2	3	3			
Total Credits		15				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

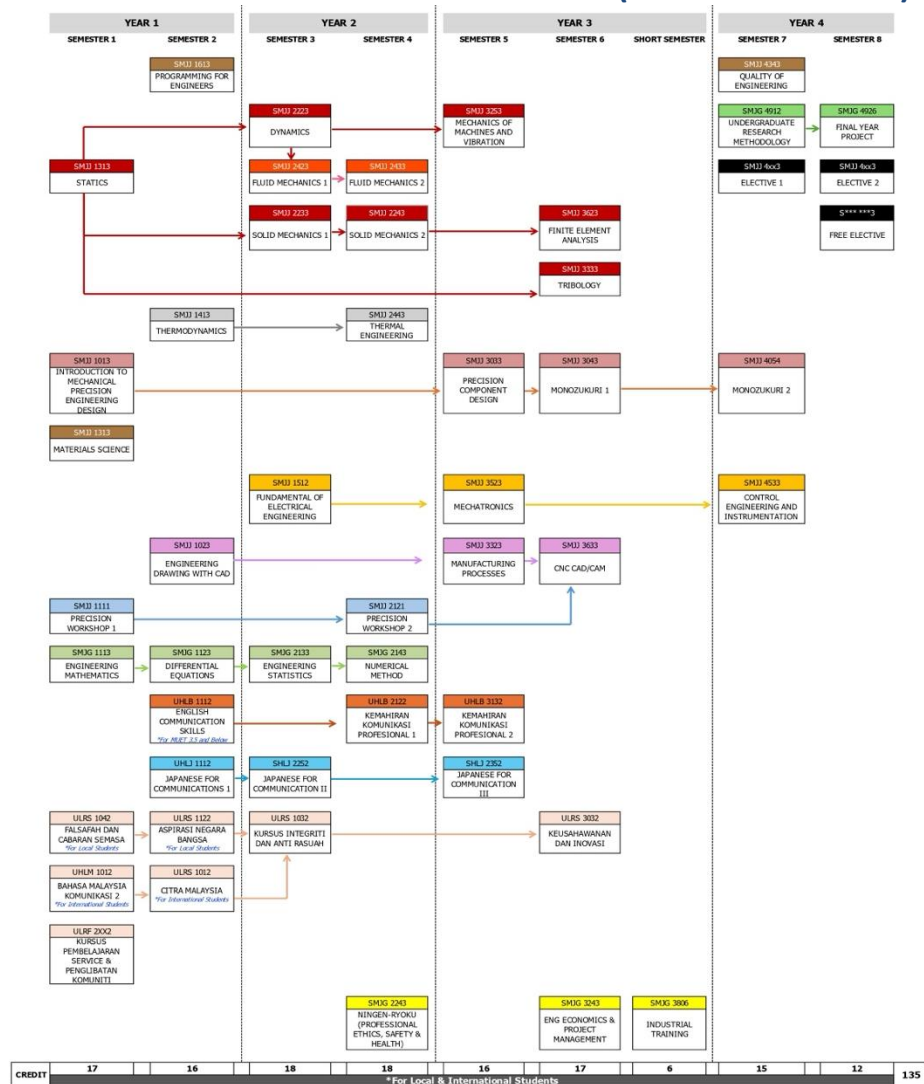


ELECTIVE COURSES
CHOOSE TWO (2) ONLY

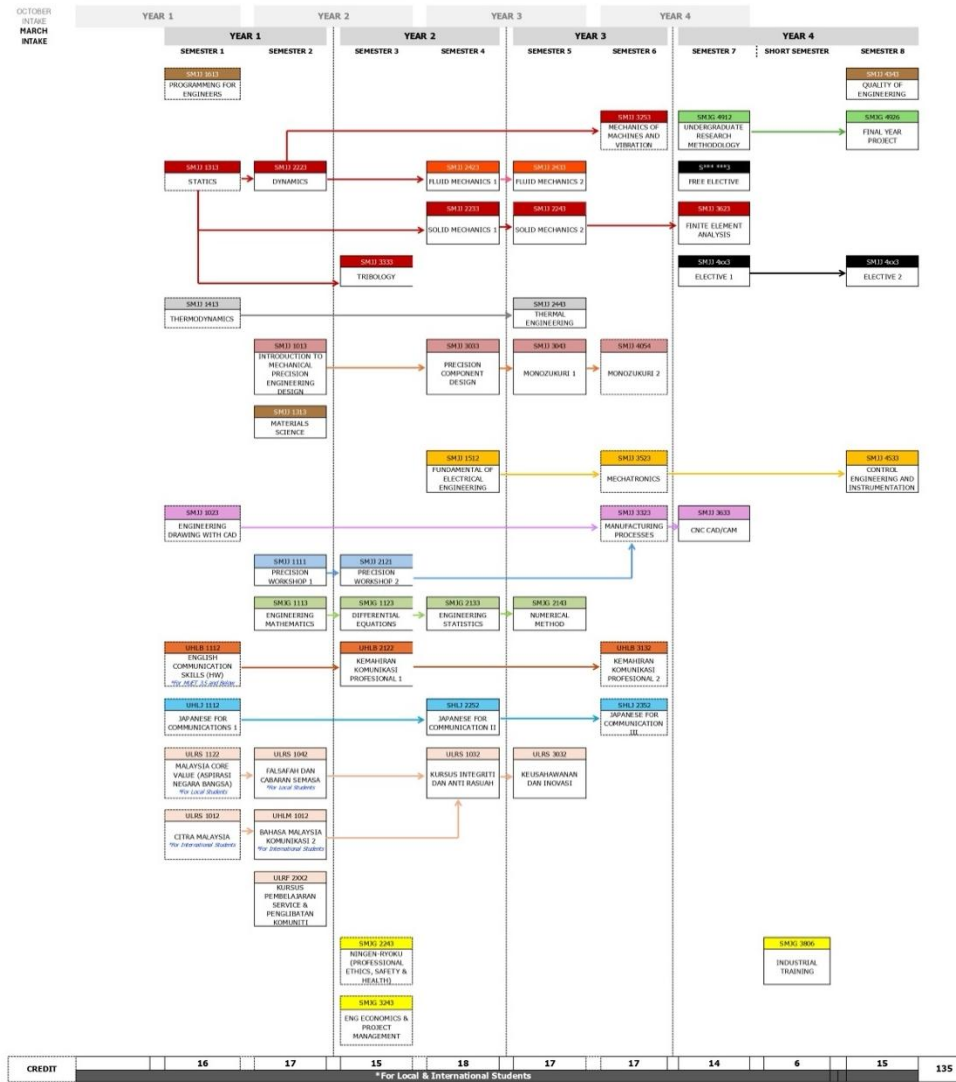
Code	Course	Credit
SMJJ4543	ROBOTICS	3
SMJJ4553	SMART OPERATIONS 4.0	3
SMJJ4633	INTRODUCTION TO ARTIFICIAL INTELLIGENCE	3
SMJJ4263	MAINTENANCE ENGINEERING & CONDITION MONITORING	3
SMJJ4353	ADDITIVE MANUFACTURING TECHNOLOGIES	3
SMJJ4363	SMART MATERIALS	3
SMJJ4373	SUBMICROMETER AND NANOMETER TECHNOLOGY	3
SMJG5243	TRIZ: THEORY OF INNOVATIVE PROBLEM SOLVING	3



PROGRAMME COURSES FLOW CHART (OCTOBER INTAKE)



PROGRAMME COURSES FLOW CHART (MARCH INTAKE)



SYNOPSIS OF CORE COURSES

SMJJ 1313 **Materials Science**

Materials Science is a vital discipline that explores the relationship between the structure of materials and their properties. This foundational knowledge is essential for engineers involved in designing precise components and products, enabling them to select the most appropriate materials. To achieve this, the course covers key topics such as atomic bonding, crystal structures, mechanical properties of metals, lattice defects, phase diagrams and phase transformations, as well as practical metallic materials including ferrous and nonferrous metals. The course also includes laboratory experiments, allowing students to apply their theoretical knowledge for a deeper understanding of Material Science.

SMJJ 1213 **Statics**

This course introduces the students the concept of statics and its applications in related engineering fields. Statics is the study of forces acting onto bodies at rest. The chapters covered in this subject include equilibrium equations for a particle and a rigid body subjected to coplanar and three-dimensional force systems, mechanical structures and frictional forces between contact surfaces. At the end of the course, students are expected to be able to apply their knowledge to solve the engineering problems related to statics of particles and rigid bodies.

SMJJ 1013 **Introduction to Mechanical Precision Engineering Design**

This course introduces the fundamental principles and practices of mechanical precision engineering, with a focus on the design and development of high-precision components and systems. Students will be exposed to concepts and methods for developing precise designs for mechanical engineering solutions. Emphasis will be placed on the design process, problem identification, brainstorming, concept development, and evaluation. Students will apply their knowledge through a project-based learning approach, emphasizing creative, innovative, and effective methods for solving engineering design problems. By the end of the course,



students will be able to design mechanical systems with consideration for functionality, manufacturability, and performance.

SMJJ 1111 Precision Workshop I

This course is designed to provide practical training by emphasizing precision manufacturing techniques using equipment such as lathes, milling machines, CNC simulators, and 3D printers. Throughout the semester, students will work in groups to complete several reports that detail out the effective use of these machines within a specified timeframe, fostering an understanding of process planning, machine operation, and quality control in precision fabrication. At the end of the course, students will be able to develop practical/hands-on skills that are useful in solving complex engineering problems.

SMJJ 2121 Precision Workshop II

This course introduces students to precision experimental measurements and instrumentation techniques, with a focus on non-destructive testing (NDT) and metrological inspection methods commonly used in engineering practice. Students will write laboratory reports, perform data acquisition and apply statistics to experimental data. At the end of the course, students will gain hands-on experience with NDT tools and metrology equipment, as well as the ability to apply the correct instrumentation techniques and evaluate measurement uncertainty.

SMJJ 1613 Programming for Engineers

Programming for Engineers is a foundational course in computer programming using C++, designed to develop essential programming skills for solving engineering problems. This course emphasizes algorithmic thinking, logical problem-solving, and structured program design relevant to modern engineering applications. Students are introduced to the fundamentals of computer programming with C++, such as expressions and interactivity, making decisions, looping, function, and file input/output. In this course, practical exercises and projects are designed around engineering contexts to reinforce learning. The course is delivered through lectures, tutorials, and computer lab sessions, with emphasis on problem-



solving, hands-on coding, and project-based learning. By the end of the course, students will be able to analyze various engineering problems through C++ programming using programming logic and algorithmic techniques effectively, as well as demonstrate teamwork and problem-solving skills through engineering-related projects.

SMJJ 1023 Engineering Drawing with CAD

Engineering Drawing with CAD is a foundational course in engineering graphics and computer-aided design (CAD) aimed to equip students with essential CAD skills that form the basis for precision engineering design and manufacturing. Students will learn the principles of technical/engineering drawing and their application using CAD software. Topics include geometric construction, orthographic projection, isometric projection, as well as dimensioning and tolerancing according to engineering drawing standards with emphasis on precision, accuracy, clarity, and the communication of engineering designs. The course culminates in a project where students apply CAD techniques to produce a complete set of engineering drawings. The course combines lectures and CAD laboratory sessions, with emphasis on practical application, project-based learning, and industry-relevant skills. The course combines lectures and CAD laboratory sessions, with emphasis on active and project-based learning. By the end of the course, students will be able to analyze complex engineering components, produce accurate engineering drawings using CAD software effectively, and demonstrate practical skills through a CAD-based design project.

SMJJ 1512 Fundamental of Electrical Engineering

This course introduces the concept and theory of basic electrical engineering suitable for students majoring in mechanical engineering. This course covers the basic analysis method of DC circuit with resistors. Several techniques of circuit analysis such as nodal analysis (node voltage method), mesh analysis (mesh current method) and source transformation theorem are given. Analysis of AC circuit comprises of active circuit elements such as inductors and capacitors is also included in the course with its complex number representation. The concept of impedance, phase, effective power and apparent power are introduced. Besides



that, a three phase system will also discussed in this course. Towards the end of the course, the DC and AC electrical machines will also be introduced and discussed.

SMJJ 2223 Dynamics

This course provides students with the fundamental knowledge of dynamics that describes motion of bodies with or without forces. The topic includes the kinematics of particles, kinetics of particles, planar kinematics of rigid bodies and planar kinetics of rigid bodies. This course also includes experimental works that students will implement to further understand the theories of dynamics. At the end of the course, students are expected to be able to apply their knowledge to solve complex engineering problems related to dynamics.

SMJJ 2423 Fluid Mechanics I

This course covers the basic analysis method of DC circuits with resistors. Several techniques of circuit analysis such as node voltage method, mesh current method and transformation theorem are given. Analysis of AC circuits including circuit elements of inductors and capacitors is also given by representing with complex numbers. Concepts of impedance, phase, effective power and apparent power are introduced. Besides that, operational amplifiers and filter circuits will be discussed.

SMJJ 2433 Fluid Mechanics II

Fluid Mechanics I is a foundational course designed to develop students' analytical understanding and critical reasoning in both theories and applications in fluid mechanics. This course introduces six key areas: properties of fluids, pressure and fluid statics, fluid kinematics, Bernoulli and energy equations, momentum analysis of flow systems, and internal flow. Students will learn how to apply fundamental principles to analyze and solve a variety of fluid-related engineering problems related to real-world applications such as hydraulic systems and piping networks. Experimental laboratory sessions are included to reinforce concepts and provide hands-on experience in fluid measurement and analysis. Teaching is delivered through lectures, tutorials, and laboratory experiments, with a focus on active and collaborative learning. By the end of the course, students will be able to analyze



fundamental fluid mechanics problems and related engineering systems as well as develop practical/hands-on and technical communication skills.

SMJJ 2233 Solid Mechanics I

This course provides students with the fundamental knowledge of solid mechanics that relates stress, strain and strength to failure of material. This course covers topics of material properties, stress and strain in bars, pins, bolts, shafts, beams, and thin cylinders with applied loadings include axial load, torsional load, transverse load, bending moment, internal pressure, and combination of these loads. This course also includes experimental works that students will implement to further understand the theories of solid mechanics. At the end of the course, students should have the ability to apply their knowledge to solve problems related to solid mechanics.

SMJP 2243 Solid Mechanics II

This course is an extension to the Solid Mechanics subject. It covers several failures of structures that include yielding, deflection, buckling and plasticity. The subject starts with topics of plane strain transformations, failure theory and thick cylinders. Furthermore, the course discusses deflection of beams, deflections of structures using energy methods, buckling of columns and plasticity of beams. This course also includes experiments that students will implement to further understand the Solid Mechanics II theory. At the end of the course, students should have the ability to apply their knowledge to solve problems related to Solid Mechanics II.

SMJJ 1413 Thermodynamics

Thermodynamics is a foundational course designed to build students' analytical understanding and critical reasoning of energy systems. The course covers fundamental thermodynamic concepts, phase-change processes of substances, types of energy and energy transfer, and the application of the first and second laws of thermodynamics to both closed and open systems. Students will examine how energy interactions govern real-world systems such as engines, refrigeration, and power plants. Laboratory experiments are



integrated to reinforce core concepts and provide hands-on experience with thermodynamic measurements and analysis. The course is taught through lectures, tutorials, and laboratory sessions, with emphasis on active and collaborative learning. By the end of the course, students will be able to analyze complex engineering problems using the principles and laws of thermodynamics as well as develop practical/hands-on and technical communication skills.

SMJJ 2443 Thermal Engineering

Thermal Engineering is an intermediate course in thermal sciences, designed to develop a fundamental understanding of how heat and energy are interrelated, converted, and transferred. The course reviews major principles of energy conversion and the modes of heat transfer, including conduction, convection, and radiation. It introduces the basic laws of thermodynamics and their application to practical engineering problems. Students will also explore the governing equations of thermodynamics and their role in analyzing thermal processes. The course extends to fundamental principles of power generation systems, providing insight into real-world applications such as steam turbines, gas turbines, or renewable energy systems. Laboratory experiments are integrated to strengthen conceptual understanding and develop practical skills in heat transfer analysis. The course is taught through lectures, tutorials, and laboratory sessions, with emphasis on active and collaborative learning. By the end of the course, students will be able to analyze complex engineering problems related to energy conversion and heat transfer as well as develop practical/hands-on and technical communication skills.

SMJJ 3253 Mechanics of Machines and Vibration

This course is a continuation of Dynamics (SMJJ 2223). It covers mechanics of several machines such as gear system, belt drives, flywheels and governors while covering also free and forced vibration subject. This course also includes experiments that students will implement to further understand the mechanics of machines and vibration theory. At the end of the course, students should have the ability to apply their knowledge to solve engineering problems related to Mechanics of Machines and Vibrations.



SMJJ 3033 Precision Component Design

This course provides both engineering theory and practical applications in the precision design of machine components for solving complex engineering problems. It covers fundamental and advanced topics such as stress and force analysis, material selection and properties, fatigue failure, and design considerations for fasteners, welded joints, bearings, gears, and belt drives. Students will learn to apply analytical methods and design principles to ensure the functionality, safety, and reliability of components in various engineering applications. The course adopts a project-based learning approach, in which students work on mechanical design problems from concept development to final design presentation. By the end of the course, students will be able to design and evaluate machine components that meet performance and sustainability requirements in complex engineering systems.

SMJJ 3523 Mechatronics

Mechatronics is an intermediate course that integrates mechanical, electrical, and computer engineering principles to provide students with a comprehensive foundation in mechatronics. It combines traditional fundamentals with contemporary developments to prepare students for precision engineering applications and modern automated systems. The course covers essential elements of mechatronics, including semiconductor diode, transistor, amplifier, programmable logic controller, and microcontroller. Emphasis is placed on the integration of hardware and software for the development of intelligent and precise engineering systems. The course combines lectures, active learning, and project-based learning, with emphasis on integration and system-level problem-solving. By the end of the course, students will be able to analyze and design mechatronics systems and demonstrate practical skills in developing and testing precision-oriented mechatronics applications.

SMJJ 3323 Manufacturing Processes

The course introduces key manufacturing process categories, including casting, forming, joining, subtractive, and additive manufacturing, emphasising the critical relationship between process, microstructure, and material properties to achieve optimal structural and dimensional integrity. Students will engage with industrial case studies to contextualise these



processes and explore advanced topics such as hybrid manufacturing, surface engineering, and digital twins in the context of Industry 4.0. Additionally, the course addresses sustainable practices through green manufacturing principles, circular economy models, and case studies on recycling waste and composite materials, equipping students with the knowledge to innovate in precision engineering and sustainable manufacturing.

SMJJ 3633 CNC CAD/CAM

This course introduces the fundamentals of computer-aided design (CAD), computer-aided manufacturing (CAM), and computer numerical control (CNC) technologies using various related software, hardware, and equipment. In addition to revisiting fundamentals of CAD learned previously (part design, assembly, and technical drawing), this course extends into advanced CAD concepts and features such as design for manufacturing and assembly (DfMA), geometric dimensioning and tolerancing (GD&T), and Industry 4.0-related features such as AI-based generative design approach and lightweighting design principles, e.g. lattice structures. Additionally, students will be introduced to CAM concepts such as algorithm preparation and generation of G- and M-codes for CNC manufacturing, focusing on tool-path and G-code optimization for high precision, efficiency, and material optimisation. CNC processes including machining and 3D printing are covered, with a focus on precision measurements using tools like coordinate measuring machines (CMM) and 3D scanners, as well as managing tolerances and reverse engineering workflows. The hands-on experience with CAD/CAM tools, CNC machines, 3D printers, and 3D scanners will culminate in a group project promoting collaboration, diversity and inclusivity that will enable the students to develop practical skills for innovative precision manufacturing solutions.

SMJJ 3333 Tribology

The course “Tribology” provides basic knowledge on contact, friction, wear, and lubrication, all of which provide essential fundamentals of mechanical precision engineering. In addition, this course provides examples of practical application of tribology and exposes students to engineering problems that can be overcome through tribology. At the end of this course,



students will acquire knowledge of tribology as well as understanding of current advancements or technologies in this field.

SMJJ 3623 Finite Element Analysis

Finite Element Analysis (FEA) is an intermediate course in computational mechanics, designed to introduce students to the application of the Finite Element Method (FEM) for modelling, analyzing, and interpreting engineering problems. The course provides both theoretical foundations and practical skills for solving real-world engineering challenges using FEA software, with particular emphasis on accuracy and reliability in mechanical precision applications. The course covers the fundamentals of FEM, including the direct method, truss elements, and the principle of minimum potential energy. Students will learn how to formulate and analyze engineering models, assess accuracy, and interpret numerical results for precision components and systems. The course combines lectures, tutorials, and computer labs, with emphasis on problem-solving, computational modelling, and software-based applications. By the end of the course, students will be able to apply FEM principles to model and solve engineering problems, analyze and interpret results obtained from FEA simulations, and demonstrate proficiency in using FEA software for precision-oriented engineering applications.

SMJJ 3043 Monozukuri I

This advanced course delves into the modelling, design, integration, and best practices specific to precision mechanical engineering, focusing on machine elements such as bearings, springs, gears, cams, and mechanisms. Students will employ advanced principles of precision engineering, including high-accuracy modelling and analysis, through extensive application of physics, mathematics, and core mechanical engineering concepts like Statics, Dynamics, Solid Mechanics, Fluid Mechanics, Manufacturing Processes, and computer simulations. Precision engineering principles are reinforced through a comprehensive design project, where students model, design, and conduct engineering analyses to create the most precise and optimized final design. This design will then proceed to the fabrication stage to develop a real prototype in Monozukuri II (SMJJ 4054). In this course, assessment focuses on the



students' ability to design, synthesize, and model the best solution for complex, high-precision engineering problems. Additionally, students are evaluated on their project management skills, including teamwork, budgeting, and overall project management.

SMJJ 4054 Monozukuri II

This course is a continuation of Monozukuri I, with a primary focus on the product development process within the context of precision mechanical engineering. It integrates the Japanese Monozukuri philosophy, emphasizing craftsmanship and meticulous attention to detail. Students will engage in the fabrication process using advanced machinery such as Computer Numerical Control (CNC), Coordinate Measuring Machine (CMM), Electrical Discharge Machine (EDM), and 3D printers to produce high-precision components and prototypes. This is a project-based course that emphasizes hands-on learning. The course progresses through stages of product testing and optimization, where test data is analyzed and evaluated to refine the design, ensuring it meets the specifications set in Monozukuri I. In addition to technical competencies, students will also be assessed on their ability to manage key project aspects, including teamwork, budgeting, and scheduling—skills essential to the successful delivery of precision-engineered products.

SMJJ 4533 Control Engineering and Instrumentation

This course introduces students to the fundamental ideas and definitions of control systems such as block diagrams, plants or processes, open loop and close loop control systems, transfer functions and transient and steady state responses. Students will be taught how to obtain mathematical models of actual physical systems such as electrical, mechanical, electromechanical and simple fluid flow systems. Methods of system representation such as block diagram representation and signal flow graphs will be examined. The students will also be exposed to techniques of analysing control systems such as time domain analysis and stability. Additionally, an introduction to the design and analysis of control systems using MATLAB will also be given. By the end of the course, students will be able to comprehend complex control systems in real-world applications and gain several transferable skills such as analytical thinking and critical thinking.



SMJJ 4343 Quality of Engineering

This course is designed for students with the skills to apply their fundamental engineering knowledge in industrial settings, focusing on quality and precision in solving complex engineering problems. It emphasizes the ability to analyze and research engineering literature using total quality management techniques, while also developing strong communication skills for reporting engineering processes through statistical analysis. Additionally, students will learn to work effectively both independently and as leaders in diverse, multidisciplinary teams, ensuring successful collaboration in industrial engineering environments.

SMJG 2243 Ningen-Ryoku (Professional Ethics, Safety & Health)

This course provides knowledge on fundamental principles of professional ethics, safety and health, their application to the engineering profession and sustainable development at local and international level. It also covers the skills and knowledge in promoting and maintaining health and safety in the workplace. The importance of acquiring professional ethics, safety and health will be explored through project based activities, seminar, etc.

SMJG 4113 Engineering Economics & Project Management

This course aim to provide a thorough understanding on the fundamental knowledge of project management theory and principles. It begins with the reviewing of the evolution of the management theory and the influence of the various schools of thought in management. The issues and challenges faced by the contemporary managers will be discussed within the current business environment context. Then the focus will be shifted to the project management environment. This course is conducted within the context of nine areas of knowledge as stipulated in PMBOK or PRINCE2. The course will relate how the underlying principles of management theory are being applied to the project management perspective at the various phases of its life cycle. Major constraints of time cost quality in project management environment will be elaborated. The elements of project management critical to the success of a project also are identified and explained.



SMJG 3806 Industrial Training

This course provides students with a work-based learning in industrial setting related to their engineering discipline for a period of 12 weeks. Industrial training serves as a training ground for students to develop their interpersonal and communication skills effectively along with an opportunity to exercise professional ethical values in real working environment. An industrial report should be prepared at the end of the training. The report is expected to demonstrate the development of practical and professional skills in engineering through technical experience and application of theoretical knowledge from the university. Students should seek advice from their industry supervisor to ensure that no confidential material is included in the report.

SMJG 4912 Undergraduate Research Methodology

This course provides students with the foundational knowledge and practical skills needed to conduct research effectively. This course typically covers a wide range of topics related to literature review, research design, data collection, analysis, and reporting. By the end of the course, students should have a solid understanding of research methodology principles and be well-prepared to undertake research projects, whether for academic purposes or in their future careers. This knowledge and skill set are valuable in various fields, including the electronic, mechanical precision and chemical process engineering. This course incorporates Research Infused Experiential Learning (REAL Level 4) within the Experiential Learning and Competency Based Education Landscape (EXCEL). It also integrates the Teaching-Research Nexus and Emerging Technology for a Future-Oriented Curriculum (FOCU).

SMJG 4926 Final Year Project

Final Year Project by research involves performing analytical/experimental/simulation works /studies at respective iKohza lab. The results of the project will be discussed with their respective supervisors, iKohza members as well as members of the departments. At the end of the course, students should be able to work independently and to produce a project report and able to present their findings. The students should also be able to complete their research according to the period given. This course incorporates Research Infused



Experiential Learning (REAL Level 4) within the Experiential Learning and Competency Based Education Landscape (EXCEL). It also integrates the Teaching-Research Nexus and Emerging Technology for a Future-Oriented Curriculum (FOCU).

SMJJ 4543 Robotics

The course provides a comprehensive introduction to the field of robotics, covering fundamental concepts, kinematics, dynamics, and practical applications. The course provides an overview of robotics, including robot manipulators, spatial transformations, forward and inverse kinematics, and complex kinematic equation solutions. The course also covers trajectory planning and addresses the mechanical design of robots, including basic mechanisms, sensors, actuation schemes, and controllers. The course emphasizes the use of open-source robotic software to simulate robot manipulators, enabling students to design robotic prototypes and visualize the robot's motion behaviour. Throughout the course, students will gain hands-on experience with open software. The course concludes with a project demonstration and presentation, which enables students to demonstrate their comprehension and practical application based on knowledge they have learned.

SMJJ 4553 Smart Operations 4.0

This course provides students with a comprehensive understanding of the transformative impact of the Fourth Industrial Revolution (Industry 4.0) and Society 5.0 on modern enterprises. The course covers the integration of advanced technologies and digitalization in operations across various sectors including manufacturing, agriculture, and services. Students will explore the principles of smart operations, lot-of-one production, agile manufacturing, and smart processes. By the end of the course, students will be equipped with the knowledge to understand and critically assess how these innovations are redefining the future of industry and society.

SMJJ 4633 Introduction to Artificial Intelligence

This course gives students a comprehensive introduction to Artificial Intelligence or AI. The importance of AI to industry and its application in various fields are discussed. The basic



principles and theoretical aspects of the various AI algorithms are described in this course. Furthermore, students are required to interpret and evaluate the performance of AI model with respect to the applications. By the end of this course, student will be able to design AI-driven solutions for complex engineering problems related to mechanical precision engineering.

SMJJ 4263 Maintenance Engineering & Condition Monitoring

This is an intermediate course in maintenance engineering, focusing on the principles and practices of reliability, maintainability, and condition monitoring for plant and equipment. It emphasizes the application of engineering fundamentals to reduce unscheduled downtime, extend equipment life, and improve system reliability in precision engineering contexts. The course provides a comprehensive review of maintenance strategies, including preventive, predictive, and condition-based approaches. Students will explore condition monitoring techniques such as vibration analysis, thermography, lubrication analysis, and other diagnostic tools, with emphasis on their practical application in minimizing failures. Criticality assessments are introduced to guide the selection of appropriate maintenance strategies tailored to different plant operations. The course also incorporates data interpretation methods for diagnosing potential issues and recommending corrective actions. The course combines lectures, case studies, and projects, with emphasis on applied problem-solving, data-driven analysis, and industry-relevant practices. By the end of the course, students will be able to apply engineering fundamentals to condition monitoring, analyze maintenance problems through criticality assessments, and examine diagnostic data to recommend effective corrective strategies for complex engineering systems.

SMJJ 4353 Additive Manufacturing Technologies

This course introduces additive manufacturing (AM) technologies, also known as 3D printing based on ISO/ASTM 52900-2021 classification, focusing on advanced techniques and their practical applications. Students will explore design for additive manufacturing and assembly (DfAMA) approaches, processing parameter optimisation, and high-precision post-processing to balance high quality finishing as well as dimensional and structural integrity.



The course covers key AM technologies, including Fused Filament Fabrication and Vat Photopolymerization, alongside metal AM, emphasising microstructure-property relationships. Trending technologies such as 4D printing, AI-based defect detection, multi-material AM, and design for lightweighting are integrated, with practical experience in tolerancing using CMM and 3D scanning. Sustainability topics in AM such as material recycling and circular economy will also be explored. Through individual assignments and collaborative group projects, students will develop skills to innovate sustainable precision AM solutions.

SMJJ 4363 Smart Materials

This course provides comprehensive knowledge of various novel and smart materials, including piezoelectric materials, smart ceramics, hybrid composites, shape memory alloys, self-healing materials, adhesives, smart polymers, and sustainable materials. It emphasizes the fundamental properties that make these materials suitable for advanced applications in aerospace, automotive, biomedical, and electronic industries. Students will explore the physical and mechanical characteristics of these materials, along with unique processing and modern synthesis techniques for their preparation. Additionally, the course equips students to analyze and interpret structural setups and material functions, evaluate synthesis and analysis methods, and select appropriate materials for specific engineering projects.

SMJJ 4373 Submicrometer and Nanometer Technology

This course provides an in-depth focus on the precise fabrication and analysis of submicron and nanometer-scale structures. It includes detailed instruction on optical and electron microscopy, precise photolithography techniques, surface characterization, and advanced preparation and measurement methods. Topics such as resist technology, optical projection, interferometric and electron lithography, as well as precise aqueous, ion, and plasma etching techniques, are thoroughly covered. Additionally, students will explore precision processes like lift-off, electroplating, and ion implantation. The course also delves into high-precision applications in microelectronics, micro-photonics, information storage, and nanotechnology.



SMJG 5243 TRIZ: Theory of Innovative Problem Solving

This course introduces students to the fundamentals of systematic innovation and problem-solving methodology. Imagine the biggest study of human creativity ever conducted. Picture the systematic study of over two million of the world's most successful patents, and the construction of a problem-solving method which then combines those solutions into a whole that strips away all boundaries between different industries. Now imagine that it exists. What you're seeing is TRIZ. We understand how problem-solving platform has now been transformed into a comprehensive Systematic Innovation methodology, suitable for all types of innovation and innovation management issues. We practice on how today's version of the method is helping users to systematically and reliably create breakthrough solutions to problems of all descriptions.

PROGRAMME AWARDS REQUIREMENTS

The programme is offered in full-time mode and follows a 2-semester academic year. Various courses are delivered and assessed in each semester, with assessments based on final examinations and coursework conducted throughout the semester.

To graduate, students must:

- Complete a total of 135 credit hours with a minimum CGPA of 2.00
- Pass Industrial Training (Equivalent to 6 credit hours)
- Complete Capstone Projects (i.e., Monozukuri I and Monozukuri II) and Final Year Projects
- Pass five (5) Professional Skills Certificate (PSC)



BACHELOR IN
**CHEMICAL
PROCESS
ENGINEERING**

With Honours (**UT6524004**)



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<https://mjiit.utm.my>

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BACHELOR OF CHEMICAL PROCESS ENGINEERING WITH HONOURS CURRICULUM

1. Awarding Institution		Universiti Teknologi Malaysia		
2. Teaching Institution		Universiti Teknologi Malaysia		
3. Program Name		Bachelor of Chemical Process Engineering with Honours		
4. Final Award		Bachelor of Chemical Process Engineering with Honours		
5. Program Code		UT6524004		
6. Professional or Statutory Body of Accreditation		Engineering Accreditation Council (EAC) Malaysia		
7. Language(s) of Instruction		Bahasa Malaysia and English		
8. Mode of Study (Conventional, distance learning, etc)		Conventional		
9. Mode of operation (Franchise, self-govern, etc)		Self-governing		
10. Study Scheme (Full Time/Part Time)		Full Time		
11. Study Duration		Minimum: 4 years Maximum: 6 years		
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part Time
Normal	8	-	14	-
Short	1	-	10	-



12. Classification of Courses			
No.	Classification	Credit	Percentage (%)
A.	Program Core	91	67%
B.	Program Elective	12	9%
C.	Faculty Core a. SHLJ 2252 Japanese for Communication 2 b. SHLJ 2352 Japanese for Communication 3 c. SMJG 2243 Professional Ethics, Safety & Health (Ningen-Ryoku) d. SMJG 3806 Industrial Training - e.	13	10%
C.	General / University Courses a. Management/Economics/Humanities/Ethics b. Language – English and Japanese c. Co-curriculum/Service Learning d. SMJX**** Free Elective	8 6 2 3	14%
	Total	135	100%
<i>For sciences program, please fill up the following classification.</i>			
No	Classification	Credit	Percentage (%)
A	Engineering Courses (a) Lectures (b) Laboratory (c) Final Year Project/Design Project (d) Industrial Training	82 5 16 6	81%
	Total credit for Part A	109	81%



B	Related Courses		
	(a) Mathematics	6	
	(b) Management/Economics/Humanities/Ethics	8	
	(c) Co-Curriculum/Service Learning	2	19%
	(d) English	4	
	(e) Japanese	6	
	Total credit for Part B	26	19%
	Total Credit for Parts A and B	135	100%
13.	Total credit to graduate	135	



PROGRAMME STRUCTURE FOR OCTOBER INTAKE

Year 1

Semester 1

Code	Course	Credits	L	T	P/S	Lab
SMJK 1212	INTRODUCTION TO CHEMICAL PROCESS ENGINEERING	2	2			
SMJK 1013	PHYSICAL CHEMISTRY FOR CHEMICAL ENGINEERS	3	3			
SMJG 1113	ENGINEERING MATHEMATICS	3	2	1		
SMJK 1103	THERMODYNAMICS	3	3			
SMJK 1003	ORGANIC CHEMISTRY FOR CHEMICAL ENGINEERS	3	3			
ULRF 2xx2	SERVICE LEARNING AND COMMUNITY ENGAGEMENT COURSE	2			6	
UHLM 1012	MALAY LANGUAGE FOR COMMUNICATION 2 <i>*(for international students)</i>	2	2			
ULRS 1042	PHILOSOPHY & CURRENT CHALLENGES <i>*(for local students)</i>	2	2			
Total Credits		18				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 1

Semester 2

Code	Course	Credits	L	T	P/S	Lab
SMJK 1223	MASS BALANCE	3	3			
SMJK 1113	FLUID MECHANICS	3	3			
UHLJ 1122	JAPANESE FOR COMMUNICATION 1	2	2			
SMJK 1123	PROGRAMMING FOR CHEMICAL ENGINEERS	3	2			3



SMJG 1123	DIFFERENTIAL EQUATIONS	3	2	1		
ULRS 1122	MALAYSIAN NATION-STATE ASPIRATION <i>*(for local students)</i>	2	2			
ULRS 1132	MALAYSIAN CITRA <i>*(for international students)</i>	2	2			
UHLB 1112	ENGLISH COMMUNICATION SKILLS <i>*(For MUET 3.5 below)</i>	HW	2			
Total Credits		16				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 2 Semester 3

Code	Course	Credits	L	T	P/ S	La b
SMJK 2232	ENERGY BALANCE	2	2			
SMJK 2253	TRANSPORT PHENOMENA	3	3			
SMJK 2293	MATERIAL SCIENCE AND ENGINEERING	3	3			
SMJK 2012	ANALYTICAL CHEMISTRY FOR ENGINEERS	2	3			
SMJK 2273	NUMERICAL METHODS FOR CHEMICAL ENGINEERS	3	3			
SMJK 2701	ORGANIC AND ANALYTICAL CHEMISTRY LAB	1				3
SHLJ 2252	JAPANESE FOR COMMUNICATION 2	2	2			
ULRS 1032	INTEGRITY AND ANTI CORRUPTION	2	2			
Total Credits		18				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory



Year 2 Semester 4

Code	Course	Credits	L	T	P/S	Lab
SMJK 2243	CHEMICAL ENGINEERING THERMODYNAMICS	3	3			
SMJK 2263	SEPARATION PROCESSES 1	3	3			
SMJK 2282	CHEMICAL PROCESS SIMULATION & OPTIMISATION	2	1		1	
SMJG 2243	PROFESSIONAL ETHICS, SAFETY & HEALTH (NINGEN-RYOKU)	3	3			
SHLJ 2352	JAPANESE FOR COMMUNICATION III	2	2			
UHLB 2122	PROFESSIONAL COMMUNICATION SKILLS 1	2	2			
SMJK 3323	BIOTECHNOLOGY FOR CHEMICAL ENGINEERS	3	3			
Total Credits		18				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 3 Semester 5

Code	Course	Credits	L	T	P/S	Lab
SMJK 3303	CHEMICAL REACTION ENGINEERING	3	3			
SMJK 3313	PROCESS CONTROL AND INSTRUMENTATION	3	3			
SMJK 3333	ENVIRONMENTAL ENGINEERING	3	3			
SMJK 3343	SEPARATION PROCESSES 2	3	3			
SMJK 2711	CHEMICAL PROCESS ENGINEERING LABORATORY 1	1				3
SMJK 3721	CHEMICAL PROCESS ENGINEERING LABORATORY 2	1				3



UHLB 3132	PROFESSIONAL COMMUNICATION SKILLS 2	2	2			
Total Credits		16				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 3 Semester 6

Code	Course	Credits	L	T	P/S	Lab
SMJK 3353	PROCESS SAFETY AND HEALTH	3	3			
SMJK 3142	STATISTICS AND DATA ANALYTICS	2	2			
SMJK 3133	ENGINEERING ECONOMY AND PROJECT MANAGEMENT	3	3			
SMJK 3834	MONOZUKURI 1 (CHEMICAL PLANT DESIGN PROJECT 1)	4	3		3	
SMJK 3732	INTEGRATED CHEMICAL PROCESS ENGINEERING LABORATORY	2				3
ULRS 3032	ENTREPRENEURSHIP AND INNOVATION	2	2			
Total Credits		16				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 3 Short Semester

Code	Course	Credits	L	T	P/S	Lab
SMJG 3206	INDUSTRIAL TRAINING	6			8	
Total Credits		6				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 4 Semester 7

Code	Course	Credits	L	T	P/S	Lab
SMJG 4912	UNDERGRADUATE RESEARCH METHODOLOGY	2	1		1	



SMJK 4844	MONOZUKURI 2 (CHEMICAL PLANT DESIGN PROJECT 2)	4	2		6	
**** **3	UNIVERSITY FREE ELECTIVE	3	3			
SMJK 4**3	ELECTIVE	3	3			
SMJK 4**3	ELECTIVE	3	3			
Total Credits		15				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 4 Semester 8

Code	Course	Credits	L	T	P/S	Lab
SMJK 4926	FINAL YEAR PROJECT	6			6	
SMJK 4**3	ELECTIVE	3	3			
SMJK 4**3	ELECTIVE	3	3			
Total Credits		12				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory



PROGRAMME STRUCTURE FOR MARCH INTAKE

Year 1

Semester 1

Code	Course	Credits	L	T	P/S	Lab
SMJK 1223	MASS BALANCE	3	3			
SMJK 1113	FLUID MECHANICS	3	3			
SMJK 1123	PROGRAMMING FOR CHEMICAL ENGINEERS	3	2			3
SMJK 1003	ORGANIC CHEMISTRY FOR CHEMICAL ENGINEERS	3	3			
UHLJ 1122	JAPANESE FOR COMMUNICATION 1	2	2			
ULRS 1122	MALAYSIAN NATION-STATE ASPIRATION *(for local students)	2	2			
ULRS 1132	MALAYSIAN CITRA *(for international students)	2	2			
UHLB 1112	ENGLISH COMMUNICATION SKILLS *(for MUET 3.5 below))	HW	2			
Total Credits		16				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 2

Semester 2

Code	Course	Credits	L	T	P/S	Lab
SMJK 2232	ENERGY BALANCE	2	2			
SMJK 1212	INTRODUCTION TO CHEMICAL PROCESS ENGINEERING	2	2			
SMJK 1013	PHYSICAL CHEMISTRY FOR CHEMICAL ENGINEERS	3	3			
SMJK 1103	THERMODYNAMICS	3	3			
SMJG 1113	ENGINEERING MATHEMATICS	3	2	1		



ULRF 2XX2	SERVICE LEARNING AND COMMUNITY ENGAGEMENT COURSE	2			6	
UHLM 1012	MALAY LANGUAGE FOR COMMUNICATION 2 *(for international students)	2	2			
Total Credits		17				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 2 Semester 3

Code	Course	Credits	L	T	P/S	Lab
SMJK 2243	CHEMICAL ENGINEERING THERMODYNAMICS	3	3			
SMJK 2263	SEPARATION PROCESSES 1	3	3			
SMJK 2282	CHEMICAL PROCESS SIMULATION AND OPTIMISATION	2	1		1	
SMJG 1123	DIFFERENTIAL EQUATIONS	3	2	1		
SMJK 2012	ANALYTICAL CHEMISTRY FOR ENGINEERS	2	2			
**** **3	UNIVERSITY FREE ELECTIVE	3	3			
UHLB 2122	PROFESSIONAL COMMUNICATION SKILLS 1	2	2			
Total Credits		18				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 2 Semester 4

Code	Course	Credits	L	T	P/S	Lab
SMJK 3303	CHEMICAL REACTION ENGINEERING	3	3			
SMJK 2253	TRANSPORT PHENOMENA	3	3			
SMJK 2293	MATERIAL SCIENCE AND ENGINEERING	3	3			



SMJK 2701	ORGANIC AND ANALYTICAL CHEMISTRY LAB	1				3
SMJK 2273	NUMERICAL METHODS FOR CHEMICAL ENGINEERS	3	3			
ULRS 1032	INTEGRITY & ANTI-CORRUPTION	2	2			
SHLJ 2252	JAPANESE FOR COMMUNICATION 2	2	2			
Total Credits		17				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 3 Semester 5

Code	Course	Credits	L	T	P/S	Lab
SMJK 3353	PROCESS SAFETY AND HEALTH	3	3			
SMJK 3142	STATISTICS AND DATA ANALYTICS	2	2			
SMJK 3133	ENGINEERING ECONOMY AND PROJECT MANAGEMENT	3	3			
SMJK 2243	PROFESSIONAL ETHICS, SAFETY AND HEALTH (NINGEN-RYOKU)	3	3			
ULRS 3032	ENTERPRENEURSHIP AND INNOVATION	2	2			
SMJK 3323	BIOTECHNOLOGY FOR CHEMICAL ENGINEERS	3	3			
SHLJ 2352	JAPANESE FOR COMMUNICATION 3	2	2			
Total Credits		18				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 3 Semester 6

Code	Course	Credits	L	T	P/S	Lab
SMJG 4912	UNDERGRADUATE RESEARCH METHODOLOGY	2	1		1	



SMJK 3313	PROCESS CONTROL AND INSTRUMENTATION	3	3			
SMJK 3333	ENVIRONMENTAL ENGINEERING	3	3			
SMJK 3343	SEPARATION PROCESS 2	3	3			
SMJK 2711	CHEMICAL PROCESS ENGINEERING LABORATORY 1	1				3
SMJK 3721	CHEMICAL PROCESS ENGINEERING LABORATORY 2	1				3
UHLB 3132	PROFESSIONAL COMMUNICATION SKILLS 2	2	2			
Total Credits		16				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 4 Semester 7

Code	Course	Credits	L	T	P/S	Lab
SMJG 4926	FINAL YEAR PROJECT	6			6	
SMJK 3834	MONOZUKURI 1 (CHEMICAL PLANT DESIGN PROJECT 1)	4	3		3	
SMJK 3732	INTEGRATED CHEMICAL PROCESS ENGINEERING LABORATORY	2				3
SMJK 4**3	ELECTIVE	3	3			
Total Credits		15				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 4 Short Semester

Code	Course	Credits	L	T	P/S	Lab
SMJG 3806	INDUSTRIAL TRAINING	6			8	
Total Credits		6				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory



Year 4 Semester 8

Code	Course	Credits	L	T	P/S	Lab
SMJK 4844	MONOZUKURI 2 (CHEMICAL PLANT DESIGN PROJECT 2)	4	2		6	
SMJK 4**3	ELECTIVE	3	3			
SMJK 4**3	ELECTIVE	3	3			
SMJK 4**3	ELECTIVE	3	3			
Total Credits		13				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

ELECTIVE COURSES

CHOOSE FOUR (4) ONLY FROM ANY GROUP

THEME 1 SUSTAINABLE BIOPROCESS

CODE	COURSE	CREDIT
SMJK 4433	MOLECULAR BIOLOGY AND GENETIC ENGINEERING	3
SMJK 4443	PRINCIPLES OF BIOPROCESS ENGINEERING	3
SMJK 4453	FOOD PROCESS ENGINEERING	3

THEME 2 SUSTAINABLE MATERIAL

CODE	COURSE	CREDIT
SMJK 4413	NANO AND BIO-MATERIAL ENGINEERING	3
SMJK 4423	POLYMER SCIENCE AND ENGINEERING	3

THEME 3 SUSTAINABLE ENVIRONMENT

CODE	COURSE	CREDIT
SMJK 4513	AIR POLLUTION CONTROL ENGINEERING	3
SMJK 4523	WASTEWATER ENGINEERING	3



SMJK 4533	SOLID & HAZARDOUS WASTE MANAGEMENT	3
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THEME 4

SUSTAINABLE ENERGY

CODE	COURSE	CREDIT
SMJK 4613	THERMAL POWER PLANT ENGINEERING	3
SMJK 4623	GREEN ENERGY ENGINEERING	3
SMJK 4633	HYDROGEN TECHNOLOGIES	3
SMJK 4653	CARBON CAPTURE UTILISATION AND SEQUESTRATION	3
SMJK 4643	BIOMASS TECHNOLOGY	3

TRACK MMJL

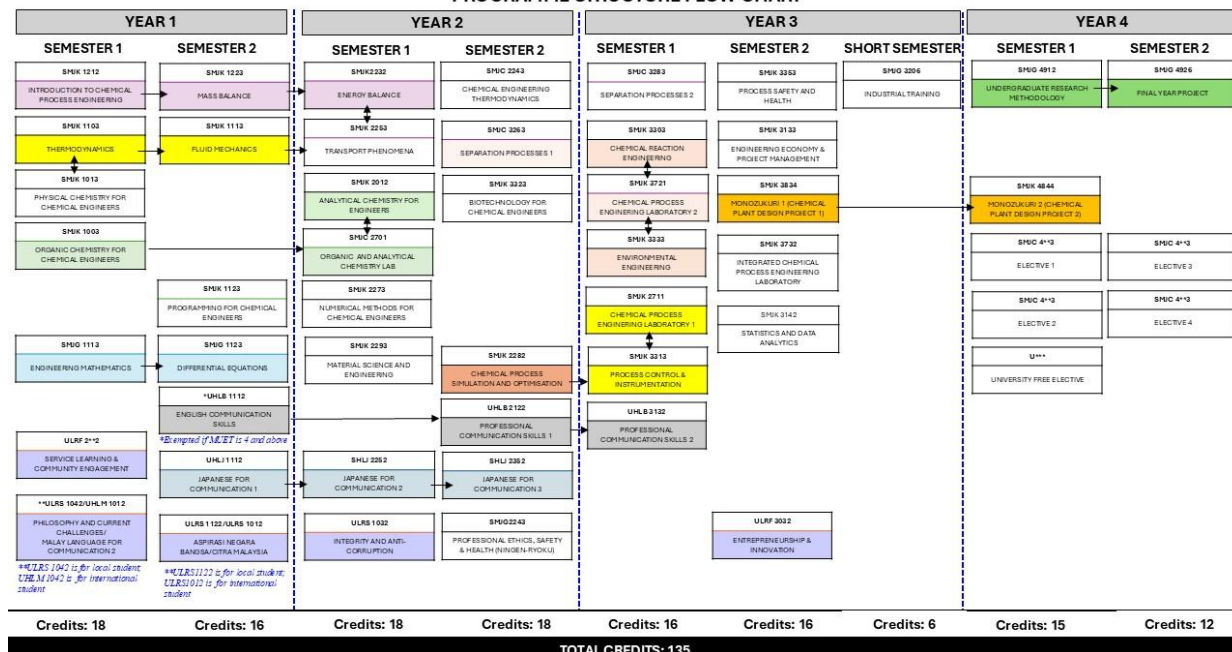
SUSTAINABLE SYSTEM

CODE	COURSE	CREDIT
SMJK 5543/ MMJL 1123	LIFE CYCLE ASSESSMENT	3
SMJK 5553/ MMJL 1143	ENVIRONMENTAL IMPACT ASSESSMENT	3
SMJK 5563/ MMJL 1313	INDUSTRIAL ECOLOGY AND CLEANER PRODUCTION	3
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PROGRAMME STRUCTURE FLOW CHART (OCTOBER INTAKE)

BACHELOR OF CHEMICAL PROCESS ENGINEERING WITH HONOURS PROGRAMME STRUCTURE FLOW CHART



SYNOPSIS OF CORE COURSES

SMJK 1212 **Introduction to Chemical Process Engineering**

This foundation course introduces the principles, roles, and societal contributions of chemical process engineering, with emphasis on its relevance to Malaysia's industrial landscape and global sustainability goals. It serves as a starting point for students to develop core professional and technical competencies. Students will apply unit conversions, basic engineering calculations, and process flowcharting techniques relevant to chemical industries. The course also introduce sustainable engineering practices by addressing safety, economic, and environmental considerations in problem-solving. The topics also include engineering ethics based on the Board of Engineers Malaysia (BEM) guidelines, effective teamwork and leadership in diverse settings, and professional communication through reports and presentations. A key component of the course is the cornerstone project, where students collaboratively propose practical solutions to chemical process-related problems. The course integrates active learning and project-based learning, combining interactive discussions and hands-on activities with a group project that encourages creativity, collaboration, and real-world application of chemical engineering principles. Upon completion, students will be able to perform fundamental chemical engineering analyses, propose sustainable and ethical solutions, work effectively in teams, and communicate technical ideas clearly, laying a strong foundation for their future capstone and engineering design experiences.

SMJK 1003 **Organic Chemistry for Chemical Engineers**

This foundational course introduces the structure, properties, and reactivity of organic compounds commonly encountered in chemical processes. It provides essential knowledge that supports reaction engineering and process design in the chemical industry. The course focuses on key classes of organic compounds, including alkanes, alkenes, alkynes, aromatic hydrocarbons, alcohols, and their derivatives. Topics include structure, physical properties, nomenclature (common and IUPAC), synthesis pathways, and functional group interconversions. Students will study characteristic reactions and explore underlying



reaction mechanisms, with emphasis on their relevance to industrial chemical processes and product development. The course uses active learning, integrating exercise-solving sessions and mechanism-based discussions to enhance students' conceptual understanding and application skills. Upon completion, students will be able to identify and name organic compounds, predict their reactivity, and analyse reaction mechanisms relevant to chemical process development and optimisation.

SMJK 1013 Physical Chemistry for Chemical Engineers

This foundational course introduces key physical chemistry principles that govern the behaviour of chemical systems, with a strong emphasis on their relevance to chemical engineering. It builds the theoretical base necessary for advanced topics in chemical engineering. The course covers four core areas: phase behaviour and solution thermodynamics; electrochemical systems and their industrial applications; chemical kinetics and catalysis; and surface phenomena, including adsorption processes. These topics are explored through the lens of their impact on chemical engineering operations such as separation, reaction engineering, and energy systems. Emphasis is placed on applying thermodynamic and kinetic principles to real-world chemical processes. The course adopts an active learning approach, with student-centred problem-solving activities integrated into lectures to deepen understanding and promote analytical thinking. Upon completion, students will be able to apply thermodynamic and kinetic concepts to analyse, predict, and optimise the behaviour of chemical systems in engineering contexts.

SMJK 1103 Thermodynamics

This foundational course introduces the principles of thermodynamics and their applications in engineering systems. It provides essential knowledge for analysing energy transformations and evaluating system performance across a wide range of engineering applications. Key topics include the first and second laws of thermodynamics, properties of pure substances, energy balances in closed and open systems, and distinctions between reversible and irreversible processes. Students will learn to use thermodynamic



tables and diagrams to analyse real-world systems such as power generation and refrigeration. The course emphasises energy efficiency and sustainability, aligning thermodynamic analysis through considerations of energy conservation and carbon reduction. The course uses active learning through in-class problem-solving, concept-based discussions, and guided analysis of real engineering systems to promote deep understanding and critical thinking. Upon completion, students will be able to apply thermodynamic laws to evaluate energy systems, perform calculations using thermodynamic properties, and recognize sustainability considerations and efficiency implications in engineering processes towards achieving United Nations Sustainable Development Goals (SDGs).

SMJK 1223 Mass Balance

This foundational course introduces the core principles of mass balance in chemical engineering, providing the analytical framework needed to design and evaluate chemical processes. It establishes essential problem-solving skills that support advanced coursework in process design and simulation. Students learn to apply the law of conservation of mass to analyse both non-reactive and reactive systems, including steady-state and unsteady-state operations. Key topics include block flow diagram construction, stream labelling, degree-of-freedom analysis, and mass balances for systems involving recycle, bypass, purge, and phase changes. Special emphasis is given to the application of mass balance principles in multi-unit processes, chemical reactions, and multiphase systems, with sustainability considerations such as resource efficiency and environmental impact. The course integrates project-based learning, where students collaboratively work on open-ended process scenarios to apply mass balance concepts in realistic chemical engineering contexts, supported by active learning techniques during lectures and tutorials. Upon completion, students will be able to construct process flow diagrams, perform mass balance calculations for both reactive and non-reactive systems, and evaluate the sustainability of process designs in terms of material efficiency and environmental considerations.



SMJK 1113 Fluid Mechanics

This course introduces fundamental principles of fluid mechanics and their applications in chemical and process engineering. It builds analytical and computational skills needed to design and evaluate fluid systems in industrial and sustainable contexts. Students will explore fluid properties, flow classification, fluid statics and dynamics, Bernoulli's and momentum equations, pipeline flow, pump performance, flow measurement devices, and dimensional analysis. The course integrates computational simulations to analyse fluid dynamics. Through real-world examples and sustainability case studies, students will examine engineering challenges related to energy efficiency, water conservation, and resource optimisation, aligned with Sustainable Development Goals for clean water and sanitation (SDG 6), affordable and clean energy (SDG 7), and industry, innovation, and infrastructure (SDG 9). The course blends active learning and project-based learning, where students engage in hands-on simulations, group discussions, and a team-based project focused on analysing or designing a fluid system with sustainability considerations. Upon completion, students will be able to classify fluid flows, analyse static and dynamic systems, simulate fluid behaviour using computational tools, and collaboratively present engineering solutions through written reports and oral presentations, with attention to environmental and sustainability impacts.

SMJK 1123 Programming for Chemical Engineers

This foundational course introduces programming concepts and computational problem-solving techniques tailored to chemical engineering applications. It equips students with essential skills for algorithmic thinking, process modelling, and data-driven decision-making. Students will explore programming fundamentals such as variables, data types, control structures, loops, arrays, and functions using two different types platforms, MATLAB and Python. The course emphasises algorithm development, debugging techniques, and the application of programming to solve real chemical engineering problems. The course combines lab-based learning through structured programming tasks in computer labs, with project-based learning, where students collaboratively design, develop, and present programming solutions to real-world chemical engineering challenges. Upon completion, students will be able to apply programming and mathematical knowledge to develop



algorithms, write functional code, debug, syntax and logic errors, and build programs that address practical chemical engineering problems, while communicating results effectively in written and oral formats.

SMJK 2232 Energy Balance

This foundational course introduces the principles of energy balance and their applications in chemical and process engineering. Building on prior knowledge from Mass Balance, it equips students with the tools to analyse energy transformations in industrial systems. Topics include the first law of thermodynamics, energy balances on closed and open systems, sensible and latent heat, and the calculation of heats of reaction, formation, and combustion. Students will integrate thermodynamic data into process calculations and combine energy and mass balance approaches to evaluate both steady-state and unsteady-state operations. Emphasis is placed on improving energy efficiency, optimising processes, and promoting sustainability in line with SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action). The course incorporates active learning and project-based learning, using analytical problem-solving, group-based discussions, and case studies or mini-projects to simulate real-world chemical engineering challenges. Upon completion, students will be able to apply energy balance principles to analyse chemical processes, integrate mass and energy balance in system evaluations, and recognize opportunities for energy efficiency and sustainability improvements.

SMJK 2253 Transport Phenomena

This course introduces the fundamental principles of heat and mass transfer, forming the basis of transport phenomena in chemical engineering. It equips students with analytical and design skills essential for optimising thermal and mass transport processes in real-world applications. The course covers governing equations for conduction, convection, and radiation in heat transfer, as well as molecular and convective mass transfer. Students integrate thermodynamics and transport principles to analyse and improve process efficiency, with consideration of sustainability aspects including energy conservation, waste minimisation, and environmental impact, aligned with SDG 7 (Clean Energy), SDG 12



(Responsible Consumption and Production), and SDG 13 (Climate Action). The course blends active learning and project-based learning, combining conceptual problem-solving with a group design project where students propose sustainable and efficient heat transfer solutions, such as designing heat exchangers for chemical processes. Upon completion, students will be able to apply heat and mass transfer principles to complex engineering problems, evaluate transport performance with sustainability considerations, and recognize design requirements for energy-efficient process systems considering environmental and operational constraints.

SMJK 2293 Material Science and Engineering

This course provides essential knowledge of material science and engineering, focusing on the relationship between structure, properties, processing, and performance. It equips students with the knowledge needed to select and apply appropriate materials in chemical engineering applications, ensuring safety, durability, and sustainability. Students will explore material microstructure, compositional analysis, mechanical and thermal properties, strengthening mechanisms, and modes of material failure. Emphasis is placed on understanding how materials behave under different processing and conditions and on selecting materials that meet performance, safety, and environmental requirements in chemical process applications. The course employs active learning in the classroom through interactive lectures, classroom activities, and problem-solving sessions. Upon completion the students able to explain material properties and behaviours, analyse material performance in engineering contexts, and justify material selection considering sustainability, safety, and societal factors.

SMJK 2012 Analytical Chemistry for Engineers

This course provides foundation in analytical chemistry with emphasis on its relevance and applications in chemical and process engineering. It prepares students to apply analytical reasoning in quality control, process monitoring, and sustainable engineering practices. Students will explore the principles of classical analytical methods (such as titration and gravimetry) alongside modern instrumental techniques. Key topics include measurement



accuracy, precision, error analysis, calibration, and evaluation of data reliability. The course emphasises how analytical methods support decision-making in material analysis, process optimisation, environmental monitoring, and quality assurance within the chemical industry. The course uses active learning through classroom activities, such as discussions, data analysis tasks, and conceptual problem-solving to deepen students' understanding of method selection, accuracy, and impact evaluation. Upon completion, students will be able to apply analytical chemistry principles to engineering problems, analyse material properties using appropriate techniques, and evaluate the suitability of analytical methods with consideration for accuracy, resource efficiency, and societal or environmental implications.

SMJK 2273 Numerical Methods for Chemical Engineers

This course introduces essential numerical techniques for analysing and solving chemical engineering problems that lack analytical solutions. It develops core computational skills required for process modelling and simulation. Students will explore methods for solving non-linear equations, systems of linear equations, interpolation, curve fitting, numerical differentiation and integration, and ordinary differential equations. The course emphasises the practical application of these methods to chemical engineering problems, supported by computational tools such as MATLAB. Case studies focus on modelling, simulation, and analysis of real-world systems to enhance engineering decision-making and sustainability. Through active learning and project-based learning, students engage in in-class problem solving and collaborative projects that involve applying numerical techniques to realistic chemical engineering scenarios using software tools. Upon completion, students will be able to apply numerical methods to solve complex engineering problems, use computational tools for numerical analysis, and justify their solutions for accuracy, efficiency, and practical constraints.

SMJK 2701 Organic and Analytical Chemistry Lab

This laboratory course provides hands-on experience in organic and analytical chemistry, equipping students with essential experimental skills, safety practices, and scientific communication techniques. It supports the development of critical competencies for future



coursework and professional practice in chemical engineering. Students will conduct experiments that apply fundamental principles of organic chemistry, along with key analytical techniques for determining physicochemical properties of compounds. The course includes guided experiments (e.g., complexometric titration and gravimetric determination). It progresses to open-ended experiments (e.g., pigment isolation and sublimation), emphasising experimental planning, data interpretation, and structured scientific reporting. Students are also trained in chemical safety, solution preparation, and good laboratory practices, including 5S. The course uses lab-based learning, beginning with Guided Laboratory sessions to develop core experimental skills, followed by Open-Ended Laboratory (OEL) sessions where students independently plan, execute, and present experiments. This progressive approach fosters critical thinking, teamwork, and scientific communication. Upon completion, students will be able to apply principles of organic and analytical chemistry in laboratory work, analyse experimental data to draw valid conclusions, demonstrate good laboratory ethics and safety practices, and collaborate effectively to complete experiments and communicate results through scientific reports.

SMJK 2243 Chemical Engineering Thermodynamics

This course introduces core thermodynamic principles and their applications in chemical engineering. It provides essential theoretical and practical foundations for analysing energy transformations and equilibrium behaviour in chemical systems. The course covers the behaviour of pure fluids, volumetric and energy properties, and thermodynamic property relations including enthalpy, entropy, and Gibbs free energy. It addresses solution thermodynamics, phase equilibria, and chemical reaction equilibria, emphasising their relevance to the design and optimisation of chemical processes. Applications related to energy efficiency and sustainable process development are also highlighted. The course incorporates active learning through student-centred problem-solving during lectures and project-based learning where students collaboratively develop solutions to open-ended thermodynamic problems, culminating in written reports and presentations. Upon completion, students will be able to analyse and model thermodynamic systems, evaluate



equilibrium conditions, and apply thermodynamic principles to design energy-efficient and sustainable chemical processes.

SMJK 2263 Separation Processes 1

This course introduces the principles and applications of separation processes in chemical engineering. It prepares students to understand and design key unit operations used in phase separation. The course covers the fundamentals of separating mixtures involving liquid-liquid, gas-liquid, vapour-liquid, and solid-liquid phases. Key unit operations such as absorption, distillation, liquid-liquid extraction, and solid-liquid extraction are explored with emphasis on their industrial relevance and sustainability aspects. Students apply mass transfer principles to evaluate process performance, energy efficiency, and resource recovery. Case studies highlight practical challenges in real-world separation systems. The course uses active learning to engage students during lectures and integrates project-based learning through group assignments focused on solving open-ended separation problems with an industrial context. Upon completion, students will be able to analyse separation mechanisms, evaluate unit operation performance, and design basic separation processes that balance efficiency, energy use, and sustainability.

SMJK 2282 Chemical Process Simulation and Optimisation

This course provides students with essential knowledge and skills to simulate and optimise chemical processes using commercial software tools. It is designed to bridge theoretical understanding with practical applications in a computer lab setting. The course is divided into two main components: process simulation and process optimisation. In the simulation part, students learn to construct and analyse steady-state process models using commercial simulation software. The optimisation component focuses on applying numerical optimisation techniques and sensitivity analysis using separate optimisation tools. Emphasis is placed on solving real-world chemical engineering problems related to process efficiency, productivity, and sustainability. Conducted in a computer lab, the course combines active learning through guided software exercises with project-based learning, where students collaborate to simulate and optimise a chemical process and present their findings. Upon



completion, students will be able to develop process simulation models, perform optimisation and sensitivity analysis using appropriate tools, and propose improved engineering solutions based on simulation data and optimisation results.

SMJK 2711 Chemical Process Engineering Laboratory 1

This laboratory course develops students' practical skills in Fluid Mechanics, Thermodynamics, and Process Control. It reinforces theoretical knowledge through structured and open-ended experimental investigations relevant to core chemical engineering practice. The course includes four structured experiments in Fluid Mechanics and Thermodynamics covering fluid flow, energy conservation, and heat transfer. Two additional experiments in Process Control features with Open-Ended Laboratory (OEL) components using a Batch Process Control Plant with Programmable Logic Controller (PLC) and Distributed Control System (Workstation), and a Liquid Level Process Control Plant with PLC, where students explore industrial control scenarios with increased autonomy and problem-solving depth. Emphasis is placed on data analysis, teamwork, communication, and laboratory safety. Delivered through lab-based learning, the course engages students in hands-on experimentation, supported by structured and open-ended tasks to encourage critical thinking and real-world application. Upon completion, students will be able to safely operate lab-scale chemical engineering equipment, analyse and interpret experimental data, and apply both structured and open-ended approaches to investigate and solve engineering problems in fluid mechanics, thermodynamics and process control.

SMJK 3303 Chemical Reaction Engineering

This course provides essential understanding of chemical kinetics and reactor design for industrial applications. It equips students with the skills to analyze and design various types of chemical reactors with consideration for efficiency and sustainability. The course covers mole and energy balances, conversion, reaction rate laws, and stoichiometry for batch and continuous systems. Students explore the design and operation of isothermal and non-isothermal reactors, including batch, continuous stirred-tank reactor (CSTR), plug flow reactor (PFR), and catalytic reactors. Additional topics include data analysis for kinetic



studies, pressure drop in reactors, multiple reactions, and equilibrium conversion. Emphasis is placed on solving complex kinetic problems using PolyMath software. The course supports SDG 9 (Industry, Innovation and Infrastructure) by highlighting the role of chemical engineering in developing sustainable and innovative industrial processes. The course employs active learning through in-class problem solving and modelling exercises, alongside project-based learning, where students work in teams to design and simulate chemical reactors using PolyMath and present their findings in a formal report. Upon completion, students will be able to apply mole and energy balance principles, determine reactor sizing from kinetic data, model complex reaction systems using software tools, and communicate their engineering solutions effectively through technical reports.

SMJK 3313 Process Control and Instrumentation

This course introduces the fundamental principles of dynamic process modelling and control in chemical engineering systems, with emphasis on their importance in enhancing operational efficiency, safety, and sustainability. It prepares students to design and analyse control systems used in real-world chemical processes. Students will explore mathematical modelling of chemical processes using lumped and distributed parameters, Laplace transforms, and dynamic system behaviour analysis. The course covers key control configurations such as feedback, feedforward, ratio, cascade, and inferential control. Advanced control strategies are linked to sustainable production, energy efficiency, and waste reduction, supporting SDG 9 (Industry, Innovation and Infrastructure) and SDG 12 (Responsible Consumption and Production). The course integrates active learning through in-class discussions, simulations, and process control activities. It also employs project-based learning, where students complete a modelling project to design, tune, and analyse a control system using industrial-relevant tools, with an emphasis on safety, stability, and sustainability. Upon completion, students will be able to derive and analyse dynamic models, design and tune control systems using modelling tools, evaluate system behaviour under various control strategies, and recognize emerging technologies in process control for sustainable chemical engineering applications.



SMJK 3323 Biotechnology for Chemical Engineers

This course introduces the principles and applications of biotechnology relevant to chemical engineering, highlighting how biological systems and molecular biology techniques are used to develop innovative products and processes across various industries. Students will explore categories of biotechnology products and enabling technologies such as fermentation, molecular biology, genetic engineering, recombinant DNA methods, monoclonal antibody production, genomics, and proteomics. Applications are discussed across healthcare, agriculture, food, energy, and environmental sectors. The course also covers current trends in Malaysia's biotechnology landscape and addresses key ethical, regulatory, and sustainability issues associated with biotechnological innovation. Emphasis is placed on how biotechnology contributes to industrial advancement and global challenges in health, the environment, and sustainable development. The course adopts an active learning approach through classroom activities and problem-solving activities that encourage students to evaluate the sustainability and societal impacts of biotechnology solutions. Upon completion, students will be able to apply biotechnology principles across industries, analyse enabling technologies concerning sustainability and ethical implications, propose appropriate solutions for real-world biotech applications, and discuss regulatory and legal frameworks within local and global contexts.

SMJK 3333 Environmental Engineering

This course provides essential knowledge to environmental engineering principles, with a focus on the causes, impacts, and control of pollution. It emphasises sustainable and regulatory-compliant engineering solutions to address water, air, and solid waste pollution in industrial and community settings. Topics include water quality assessment, drinking water and wastewater treatment processes, air pollution sources and dispersion, air pollution control technologies, and solid and hazardous waste management. Students also examine national environmental legislation, such as the Environmental Quality Act 1974, as well as relevant international regulations. Emphasis is placed on evaluating the societal, health, and environmental impacts of engineering solutions, and on how sustainable pollution control practices contribute to the Sustainable Development Goals (SDGs), particularly SDG 3 (Good



Health and Well-being), SDG 6 (Clean Water and Sanitation), SDG 11 (Sustainable Cities), and SDG 13 (Climate Action). The course integrates active learning classroom activities. It also employs project-based learning, where students work in teams to design, analyse, and present practical solutions for pollution control problems, incorporating technical, environmental, and regulatory considerations. Upon completion, students will be able to analyse sources and impacts of pollution, evaluate and propose engineering control methods, justify their solutions concerning sustainability and societal impact, and ensure alignment with relevant environmental laws and policies.

SMJK 3343 Separation Processes 2

This course offers a more rigorous exploration of key unit operations and separation processes essential to chemical engineering, with an emphasis on sustainable practices. It prepares students to apply mass transfer principles in designing, analysing, and improving industrial separation systems. Students will study the principles and applications of drying, evaporation, crystallisation, filtration, membrane separation, adsorption, and other solid-liquid and solid-gas separation techniques. Emphasis is placed on evaluating the efficiency, environmental impact, and sustainability of each unit operation. Through the use of real-world examples and case studies, students will explore how these processes contribute to resource optimisation and waste minimisation in industrial contexts. The course incorporates active learning through classroom activities and interactive problem-solving sessions. It also includes project-based learning, where students work in teams to investigate, analyse, and propose solutions related to current challenges in separation processes, with a focus on sustainable industrial practices. Upon completion, students will be able to apply mass transfer principles to solid-liquid separation problems, assess the performance and sustainability of unit operations, work collaboratively in team settings, and recognize innovations in separation technologies to address industrial and environmental challenges.



SMJK 3721 Chemical Process Engineering Laboratory 2

This laboratory course provides hands-on experience with core unit operations in Separation Processes, Reaction Engineering, and Environmental Engineering, emphasising the practical application of theoretical concepts to real-world industrial and environmental challenges. Students conduct experiments involving liquid-liquid extraction, distillation, evaporation, reactor systems (continuous stirred tank reactor, plug flow reactor, batch reactors), and heat exchange operations. In the environmental component, the students will perform water quality analyses such as chemical oxygen demand (COD), suspended solids, and volatile solids, along with pollution control tests like the jar test and dechlorination. The course includes a structured Open-Ended Laboratory (OEL) module in environmental engineering, where students design and execute experiments (e.g., air or water pollution control) to reinforce sustainable engineering practices and problem-solving skills. The course adopts a lab-based learning approach, blending guided experiments with open-ended laboratory (OEL) activities to promote autonomy and inquiry. It also incorporates research-led teaching, where students are exposed to current environmental engineering challenges and methodologies drawn from ongoing research. This encourages evidence-based analysis, critical thinking, and the development of solutions grounded in real-world industrial and academic practice. Collaborative teamwork and ethical lab conduct are emphasised throughout. Upon completion, students will be able to apply knowledge of separation processes, reaction engineering, and environmental engineering in experimental contexts, analyse data to draw valid conclusions, demonstrate good laboratory ethics, and collaborate effectively to complete and communicate experimental work.

SMJK 3353 Process Safety and Health

This course introduces the principles of safety and risk assessment in industrial operations, with a focus on chemical processes. It equips students with essential knowledge in occupational health and safety management systems to support sustainable design, legal compliance, and protection of human health and the environment. Topics include Malaysian legislation (e.g., OSHA, FMA), international safety standards and frameworks, inherent safety design, toxicology, fire and explosion hazards, industrial hygiene, hazard identification



techniques such as HAZOP, and Chemical Health Risk Assessment (CHRA). Students explore how safety and sustainability principles are integrated into chemical plant operations to mitigate risks and support Sustainable Development Goals such as SDG 3 (Good Health and Well-being), SDG 8 (Decent Work and Economic Growth), and SDG 12 (Responsible Consumption and Production). The course employs active learning through case-based discussions, legal scenario analysis, and hands-on problem-solving. It also integrates project-based learning, where students work in teams to perform a risk assessment (e.g., CHRA or HAZOP) for a selected chemical process, proposing improvements aligned with regulatory standards. Industrial guest lecture provides real-world insights into current safety practices and industry expectations, reinforcing the practical application of theoretical knowledge. Upon completion, students will be able to interpret industrial safety practices and legislation, assess health and environmental hazards, and evaluate risks using structured methods, while considering sustainability, legal compliance, and societal impacts in chemical engineering operations.

SMJK 3142 Statistics and Data Analytics

This course provides a comprehensive introduction to statistics and data analytics, emphasising their application in engineering decision-making and sustainable process improvement. It equips students with the tools and techniques to extract insights from data, enabling better problem-solving across a variety of industrial and societal contexts. The course covers data types, data preparation, cleansing, and exploratory data analysis. Foundational statistical methods are introduced, including probability theory, probability distributions, and confidence intervals. Students also explore machine learning techniques, including supervised learning (e.g., regression, classification, neural networks) and unsupervised learning (e.g., clustering and segmentation). The course highlights how data analytics can optimise processes, improve efficiency, and support the Sustainable Development Goals (SDGs) by aligning data-driven strategies with societal and environmental objectives. The course uses active and project-based learning, combining conceptual instruction with hands-on analysis using data analytics software tools. Students work in teams to complete a real-world analytics project in the chemical engineering field, applying



appropriate techniques to solve a defined problem and communicate their findings through reports and presentations. Upon completion, students will be able to define problem objectives aligned with sustainability or societal needs, apply appropriate statistical and data analytics techniques using relevant tools, and effectively communicate their results through oral and written formats for engineering decision-making.

SMJK 3133 Engineering Economy & Project Management

This course provides an integrated understanding of engineering economy and project management, enabling students to make informed financial decisions and manage engineering projects effectively. It equips future engineers with the tools to evaluate project alternatives, optimise financial sustainability, and deliver projects on time and within scope. In the engineering economy component, students learn to apply the time value of money, evaluate alternatives using measures of worth, and perform life cycle cost analysis that includes capital, operating, and disposal costs. Topics such as present worth, annual worth, rate of return, and benefit-cost analysis support long-term, resource-efficient decision-making. The project management component covers planning, scheduling, and controlling projects using tools like Critical Path Method (CPM), PERT, Gantt charts, and Earned Value Analysis (EVA). Students also explore project budgeting, risk identification, and legal considerations, including contract and arbitration law. The course uses active learning through engaging classroom activities, case studies and group exercises. Students engage in a decision-making scenario and a project planning task that reflects industrial engineering practices. Upon completion, students will be able to apply engineering economic principles to evaluate alternatives, assess project profitability, plan and manage projects using scheduling techniques, and monitor project performance using EVA for timely and sustainable project execution.

SMJK 3834 Monozukuri 1 (Chemical Plant Design Project 1)

This course is the first phase of the capstone design sequence, where students integrate core chemical engineering knowledge to develop a conceptual process design. The project begins with a feasibility study and progresses toward the creation of a sustainable, safe, and



economically viable chemical plant aligned with real-world industrial practices and societal needs. The project starts with a feasibility study, covering chemical background analysis, chemical reaction route selection, and plant site selection. Students then proceed with process synthesis, mass and energy balance calculations, sustainability evaluation, and simulation using commercial software provided, such as ASPEN PLUS, AVEVA PRO/II, UNISIM, or SuperPro Designer. The design includes the synthesis of Process Flow Diagrams (PFDs) and incorporates considerations for net-zero carbon, lifecycle costing, safety, compliance, and waste management. Supporting topics include report writing, technical presentation skills, and critical evaluation of environmental and economic impacts. The course employs project-based learning, supported by academic and industrial supervisors assigned to each team. Students engage in consultations, design reviews, and iterative development. Industrial guest speakers share insights on current practices, sustainability trends, and challenges in chemical plant design. Active learning is facilitated through peer discussions, simulations, and guided workshops. Upon completion, students will be able to conduct feasibility studies, select appropriate reaction routes and plant locations, design and simulate chemical processes, assess environmental and economic implications, demonstrate teamwork and leadership, uphold ethical and professional standards, and communicate their design solutions effectively through reports and presentations.

SMJK 3732 Integrated Chemical Process Engineering Laboratory

This course introduces students to open-ended experimental work in chemical engineering, integrating concepts from analytical chemistry, reaction engineering, separation processes, and environmental engineering. It provides students with practical experience in applying theoretical knowledge to real-world challenges. Students will investigate problems involving chemical reactions, separation technologies, and pollution control, using both classical and modern laboratory techniques. They are expected to design and conduct experiments, analyse data from industrial and environmental samples, and formulate solutions based on research-based practices. Emphasis is placed on sustainable engineering, critical thinking, and collaborative problem-solving. The course adopts a problem-based, open-ended lab approach supported by research-oriented teaching, encouraging students to explore



experimental design and analysis through current research perspectives and real industrial issues. Upon completion, students will be able to design and carry out chemical engineering experiments, analyse and interpret results using research-based knowledge, practice ethical and safe lab work, collaborate effectively in teams, and communicate their findings confidently through reports and presentations.

SMJK 4844 Monozukuri 2 (Chemical Plant Design Project 2)

This advanced-level capstone course marks the final stage of the chemical engineering design project, where students synthesise and apply knowledge acquired throughout the program to design a complete chemical process plant. It serves as a culmination of their academic and professional preparation. Students engage in a range of activities, including feasibility studies, process route evaluation, site selection, mass and energy balances, heat integration, equipment design and costing, effluent treatment strategies, safety and HAZOP assessments, process control planning, piping and instrumentation diagram (P&ID) development, and economic viability analysis. The course concludes with the presentation of a comprehensive design report to industrial panels. The course is delivered through project-based learning, with each student team supported by academic and industrial supervisors. Learning is further enriched through guest lectures by industry professionals. Upon completion, students will be able to design a safe, sustainable, and economically feasible chemical plant, while demonstrating effective teamwork, communication, ethical conduct, and project management skills aligned with real-world industry expectations.

SMJK 4433 Molecular Biology and Genetic Engineering

This elective course introduces core principles of molecular biology and genetic engineering, focusing on the structure, function, and manipulation of genetic material for biotechnology applications. It serves as an intermediate-level course suitable for students pursuing biotechnology, life sciences, or chemical and environmental engineering. The course covers foundational molecular biology concepts, such as DNA structure, gene expression, and genetic regulation, followed by molecular techniques including recombinant DNA



technology, gene cloning, and PCR. Applications of genetic engineering in medical, agricultural, forensic, and industrial biotechnology are explored, along with discussions on transgenic organisms and ethical implications of genetic modification. The course adopts a problem-oriented and project-based learning approach that fosters collaborative learning, scientific reasoning, and real-world application of genetic technologies, with emphasis on societal and sustainability perspectives. Upon completion, students will be able to apply molecular biology and genetic engineering concepts in biotechnology, identify and select appropriate genetic tools for specific applications, and propose solutions to complex problems with consideration of health, ethics, law, and environmental sustainability.

SMJK 4443 Principles of Bioprocess Engineering

This elective course introduces the application of chemical engineering principles to biological systems, focusing on the design and optimisation of bioprocesses. It serves as a course that bridges engineering and biotechnology for industrial and research applications. The course covers key topics such as fermentation, cell culture, biochemical kinetics, heat and mass transfer, and downstream processing techniques like separation and purification. Practical considerations such as bioprocess equipment design, sterility, scale-up challenges, regulatory compliance, and sustainability are integrated to prepare students for real-world applications. This course adopts a project-based and research-led teaching approach, where students are guided through open-ended problem-solving and exposed to current research practices in bioprocessing. Active learning methods, group projects, and progress presentations foster critical thinking, innovation, and teamwork. By the end of the course, students will be able to apply engineering principles to biological systems, evaluate appropriate unit operations for sustainable bioprocessing, and propose biotechnology-based solutions that address societal, environmental, and industrial challenges.



SMJK 4453 Food Process Engineering

This elective course explores knowledge on the engineering principles involved in food processing, with a focus on safety, quality, and sustainability. It is designed to bridge core chemical engineering concepts with applications in the food industry. Topics include the physical properties of food materials, handling techniques, size reduction, mechanical and thermal processing (e.g., drying, evaporation, sterilisation), and food packaging. Students also explore food plant operations, including Good Manufacturing Practices (GMP), Hazard Analysis and Critical Control Points (HACCP), hygienic design, and safety standards. Recent technological advancements in food processing are discussed to reflect current industry trends. The course uses a combination of active learning and work-based learning (WBL Level 1), including an industrial visit to expose students to real-world food processing environments. Upon completion, students will be able to apply engineering principles to food processing challenges, evaluate appropriate technologies for preservation and packaging, and justify process compliance with GMP, HACCP, and hygienic design standards in support of safe and sustainable food processing systems.

SMJK 4413 Nano & Bio-Material Engineering

This elective course introduces students to the interdisciplinary field of bio-nanomaterials, integrating foundational principles from materials science, chemistry, biology, and engineering. It is designed as a subject suitable for students interested in sustainable and innovative applications of nanotechnology. The course explores the classification, synthesis, and characterisation of bio-nanomaterials, including biodegradable and hybrid nanomaterials, polymer-carbon composites, and lipid-based nanocarriers. Students examine diverse applications in renewable energy, environmental remediation, agriculture, and nanomedicine. Topics such as nanoemulsions, nanofluids, photocatalytic systems, and sustainable production from biomass are also covered, linking advanced material science to



societal challenges. Learning is supported through research-led and project-based approaches, where students work collaboratively to explore and solve open-ended problems related to bio-nanomaterial applications. Upon completion, students will be able to apply knowledge of bio-nanomaterials to solve interdisciplinary problems, select sustainable synthesis and characterisation methods, and propose innovative nanotechnology solutions that support societal, environmental, and industrial sustainability goals.

SMJK 4423 Polymer Science and Engineering

This elective course offers an understanding of polymer science and engineering, combining core concepts from chemistry, physics, and materials engineering. It is designed for students interested in the behaviour, processing, and sustainable application of polymeric materials. Topics include polymer classification, molecular weight determination, physical and thermal behaviour in solid and solution states, polymerisation processes and kinetics, polymer blends and composites, and polymer characterisation techniques. Students also explore polymer processing methods and assess the environmental and practical aspects of polymer applications in various industries. The course incorporates project-based learning strategies, allowing students to explore open-ended problems, synthesise findings, and present practical solutions through collaborative teamwork. Upon completion, students will be able to evaluate polymer properties and behaviour, select suitable polymerisation and processing techniques, and apply engineering principles to propose sustainable polymer solutions for real-world applications.

SMJK 4513 Air Pollution Control Engineering

This elective course introduces the principles and engineering approaches for the control of air pollution, focusing on particulate, gaseous, and vapour pollutants. It is designed as an intermediate-level course for students interested in environmental engineering. Students



will examine the characteristics of major air pollutants, explore sampling and measurement methods, and study the design and application of control systems, including cyclones, fabric filters, electrostatic precipitators, wet scrubbers, and gaseous pollutant treatment. Stack design and pollutant dispersion modelling are also covered to address compliance with regulatory and environmental standards. The course incorporates active learning through classroom activities and problem-solving tasks, as well as project-based assignments, encouraging the application of concepts to real industrial air pollution scenarios. By the end of the course, students will be able to classify air pollutants and control techniques, identify suitable control systems for industrial applications, and justify air pollution mitigation strategies that align with health, safety, and regulatory requirements. course aims to provide the students with an overview of the wastewater systems, treatment methods and processes. Students will be able to acquire knowledge on basic wastewater treatment and process design. Students should be skilled in the design of unit processes for conventional and advanced wastewater treatment systems such as coagulation, sedimentation, and chemical treatment. They would gain fundamental knowledge of wastewater treatment processes and operations.

SMJK 4523 Wastewater Engineering

This elective course offers a study of wastewater engineering, focusing on treatment technologies and the design of related unit processes. It is designed for students with intermediate level knowledge of environmental or chemical engineering and prepares them to tackle real-world water pollution issues. The course covers the physical, chemical, biological, and advanced unit processes involved in wastewater treatment. Key topics include wastewater characteristics, flow rate estimation, conventional and emerging treatment methods, and facility design principles. Regulatory frameworks and sustainability considerations are also integrated to ensure students develop solutions that are technically



sound and environmentally responsible. The course employs a hybrid model combining classroom-based instruction with work-based learning (WBL Level 2) through a day-release model (minimum 36 hours). Students gain first-hand exposure to operational wastewater treatment facilities to reinforce theoretical knowledge with practical application. Upon completion, students will be able to apply wastewater treatment principles to real scenarios, analyse treatment effectiveness, and propose sustainable solutions aligned with environmental regulations and societal needs.

SMJK 4533 Solid & Hazardous Waste Management

This elective course covers the core concepts of solid and hazardous waste management, focusing on sustainable practices for municipal and industrial waste handling. It equips students with essential knowledge for addressing real-world solid and hazardous waste challenges. The course covers the generation, classification, and characteristics of solid and hazardous wastes, including national and international regulations. Students will explore collection systems, transport logistics, material recovery, biological treatment, landfill operations, and treatment technologies for scheduled wastes. Emphasis is placed on integrated and sustainable waste management strategies. The course adopts a project-based and active learning approach, where students engage in open-ended problem-solving, supported by classroom activities and self-directed tasks. Students work in teams to propose sustainable waste management solutions aligned with regulatory and environmental considerations. Upon completion, students will be able to evaluate waste characteristics, recommend appropriate collection and treatment methods, and develop waste handling strategies that align with sustainability goals and scheduled waste regulations.



SMJK 4613 Thermal Power Plant Engineering

This elective course covers the key aspects of power generation technologies, with a focus on established systems used in Malaysia and globally. It provides essential knowledge for evaluating energy systems within the context of sustainability and industrial relevance. Students will study the principles and operation of steam and gas turbine power plants, combined cycle systems, and fuel sources such as natural gas, coal, and nuclear energy. The course also emphasises techno-economic and environmental considerations in power generation system selection and operation. The course adopts a project-based and active learning approach, integrating real-world challenges, classroom activities, and independent learning to foster critical thinking and practical application. Upon completion, students will be able to explain the operation of major power generation systems, compare their performance and environmental impacts, and apply basic principles to evaluate practical scenarios.

SMJK 4623 Green Energy Engineering

This elective course covers the key aspects of current and emerging energy systems, with a focus on sustainable energy supply and consumption. It introduces students to diverse renewable energy sources and their integration into modern energy frameworks. Students will explore the characteristics of various energy forms, energy conversion processes, and system management strategies. The course covers major renewable technologies, including solar thermal, photovoltaic, hydroelectric, wind, wave, tidal, and geothermal energy, with emphasis on sustainability and alignment with the Sustainable Development Goals (SDGs). The course is delivered through a project-based and active learning approach, encouraging student collaboration, critical thinking, and solution development for real-world energy challenges. Upon completion, students will be able to explain the operation and impact of



renewable energy systems, assess their potential for sustainable development, and propose feasible green energy solutions for societal benefit.

SMJK 4633 Hydrogen Technologies

This elective course provides an exploration of hydrogen as a sustainable energy vector, highlighting its role in decarbonising the power and transportation sectors. Students will study the fundamentals of hydrogen production from thermochemical, electrolytic, and biological processes, as well as storage, delivery, and utilisation methods. The course also addresses safety, environmental impact, and policy frameworks relevant to hydrogen deployment in real-world applications. The course is taught through a project-based and active learning approach, integrating engaging classroom activities and conceptual design activities to enhance understanding of hydrogen technologies. Upon completion, students will be able to apply fundamental principles of hydrogen energy, evaluate technologies for production and storage, and propose safe, sustainable hydrogen-based energy systems.

SMJK 4643 Biomass Technology

This elective course introduces biomass as an alternative energy source and sustainable resource, providing students with knowledge of its role in circular and low-carbon energy systems. The course explores biomass composition and properties, various biomass feedstocks, and key conversion processes such as combustion, pyrolysis, gasification, anaerobic digestion, fermentation, and hydrolysis. Applications in producing bio-based fuels, chemicals, and materials are also covered, with emphasis on sustainability and environmental considerations. The course adopts a project-based and active learning approach, supported by research-led teaching, where students explore current developments in biomass conversion and sustainability through literature and case studies. Upon completion, students will be able to apply knowledge of biomass resources and conversion technologies, assess their sustainability impacts, and propose bio-based solutions for energy and material applications.



SMJK 4653 Carbon Capture Utilisation and Sequestration

This elective course introduces the principles and technologies for managing carbon dioxide (CO₂) emissions, focusing on carbon capture, utilisation, and storage (CCUS). It provides knowledge and practical insights into addressing carbon emissions in the context of sustainable development. Students will explore carbon capture technologies, including absorption, adsorption, membrane separation, and other emerging methods. The course also covers carbon utilisation strategies for value-added products and long-term storage options such as geological and biological sequestration. Supporting topics include related thermodynamics, transportation, and integration with circular economy principles. Environmental, economic, and policy aspects are discussed to highlight real-world implementation challenges. The course adopts active learning and project-based learning approaches, where students engage in various engaging classroom activities, and the development of open-ended CCUS system proposals in a team. Upon completion, students will be able to explain CCUS concepts, evaluate the effectiveness of various technologies, and propose sustainable carbon management solutions. The course enhances critical thinking, problem-solving, and the ability to apply engineering knowledge in practical carbon mitigation contexts for global sustainability following Sustainable Development Goals.

SMJK 5543/ MMJL 1123 Life Cycle Assessment

This course introduces students to the principles, methodology, and application of Life Cycle Assessment (LCA) in evaluating the environmental impacts of products, processes, and systems. It supports decision-making in sustainable engineering in accordance with international standards. The course is structured into two main parts. The first part provides the theoretical and methodological foundation of LCA, including goal and scope definition, system boundary setting, life cycle inventory (LCI), environmental impact assessment, and interpretation of results, following the standardised framework of ISO 14040 and ISO 14044. The second part focuses on practical applications, where students assess various systems and technologies across multiple impact categories such as climate change, acidification, and toxicity. The course emphasises consistent system boundaries, holistic thinking, and the importance of LCA. The course begins with active learning through lectures and problem-



solving exercises. It progresses to project-based learning, where students conduct their own LCA studies using publicly available tools and datasets. Students work in teams to assess real-world systems and communicate findings through professional reports and presentations. Upon completion, students will be able to conduct LCA studies, evaluate environmental impacts of products and systems, apply LCA tools and data sources, and communicate outcomes ethically and professionally in line with the principles of ISO 14001 environmental management.

SMJK 5553/ MMJL 1143

Environmental Impact Assessment

This course introduces the principles, methodology, and application of Environmental Impact Assessment (EIA) as a critical tool for informed and responsible environmental decision-making. It provides a structured understanding of the EIA process and its role in sustainable development, with a focus on both Malaysian and international practices. Students will explore the complete EIA cycle, including screening, scoping, impact analysis, mitigation, report preparation, stakeholder engagement, review processes, and environmental monitoring. Emphasis is placed on the components of an EIA report, including assessments of air quality, water, noise, waste management, ecological risks, and socio-economic impacts. Malaysian case studies are examined and compared with EIA practices in Japan. Environmental law, public participation, policy implications, and environmental management plans are also discussed. Students will participate in site visits and audits to evaluate real-world applications of EIA. The course integrates active learning and project-based learning through site visits, EIA report analysis, and hands-on use of monitoring software. Students work individually and in a team to solve environmental problems, simulate EIA processes, and communicate findings professionally. Upon completion, students will be able to review EIA reports critically, analyse complex environmental issues, perform monitoring activities using digital tools, and collaborate effectively in multidisciplinary teams to manage environmental assessments.



SMJK 5563/ MMJL 1313**Industrial Ecology and Cleaner Production**

This This course introduces the principles and practices of industrial ecology and cleaner production, providing essential knowledge for designing sustainable industrial systems. It emphasises the transition from linear to circular industrial models and the integration of environmental considerations into product and process design. Key topics include the theoretical background of cleaner production, sustainable consumption and production (SCP), industrial metabolism, closed-loop systems, and the role of technology in minimising environmental impacts. The course explores practical applications such as industrial symbiosis, product stewardship, extended producer responsibility (EPR), eco-labelling, and environmental standards. Case studies are incorporated to highlight real-world implementation of sustainable industrial strategies. Students will also examine the interface between industry, technology, and the environment from a systems perspective. The course employs active and project-based learning, encouraging students to analyse real-world problems, evaluate sustainability strategies, and propose cleaner production solutions. Class discussions, group work, and reflections on industrial best practices foster ethical awareness and professional responsibility in the context of sustainable development. Upon completion, students will be able to appraise the principles of industrial ecology and cleaner production, propose solutions to complex industrial sustainability challenges, and recognize ethical and professional conduct aligned with sustainable development goals.

SMJK 5573/ MMJL 1333**Renewable Energy**

This course addresses the urgent need for sustainable energy sources and efficient energy utilisation in response to global environmental and energy challenges. It provides students with a broad understanding of current energy issues. It equips them with knowledge of renewable energy technologies and strategies to support sustainable development at national, regional, and global levels. The course covers key energy resources and technologies, including solar, wind, hydro, biomass, and nuclear energy, along with energy conservation, efficiency improvements, and sustainable management practices. Students will explore the technical, environmental, economic, and policy aspects of renewable energy systems. Special attention is given to evaluating energy technology systems in terms of their



sustainability and global warming potential. The course utilises active learning and project-based learning, engaging students in quantitative assessments, comparative analysis of energy systems, and discussions on real-world sustainability challenges in energy production and consumption. Upon completion, students will be able to propose principles of sustainability to address energy security, evaluate renewable energy and efficiency solutions to meet future energy demands, and analyze global warming potential using appropriate modelling and analytical techniques.

PROGRAMME AWARDS REQUIREMENTS

The programme is offered in full-time mode and follows a 2-semester academic year. Various courses are delivered and assessed in each semester, with assessments based on final examinations and coursework conducted throughout the semester.

To graduate, students must:

- Complete a total of 135 credit hours with a minimum CGPA of 2.00.
- Pass Industrial Training (equivalent to 6 credit hours).
- Complete Capstone Project and Final Year Project.
- Pass five (5) Professional Skills Certificate (PSC)



BACHELOR IN
**ELECTRONIC
SYSTEMS
ENGINEERING**
With Honours (**UT6523004**)



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BACHELOR OF ELECTRONIC SYSTEMS ENGINEERING WITH HONOURS CURRICULUM

1. Awarding Institution			Universiti Teknologi Malaysia	
2. Teaching Institution			Universiti Teknologi Malaysia	
3. Program Name			Bachelor of Electronic Systems Engineering with Honours	
4. Final Award			Bachelor of Electronic Systems Engineering with Honours	
5. Program Code			UT6523004	
6. Professional or Statutory Body of Accreditation			Engineering Accreditation Council (EAC)	
7. Language(s) of Instruction			Bahasa Malaysia and English	
8. Mode of Study (Conventional, distance learning, etc)			Conventional	
9. Mode of operation (Franchise, self-govern, etc)			Self-governing	
10. Study Scheme (Full Time/Part Time)			Full Time	
11. Study Duration			Minimum: 4 years Maximum: 6 years	
Type of Semester	No. of Semesters		No. of weeks per semester	
	Full Time	Part Time	Full Time	Part Time
Normal	8	-	14	-
Short	1	-	10	-

12. Classification of Courses			
Classification		Credit	Percentage (%)
I	Program Core	82	60.7%
II	Program Electives	15	11.1%



III	Faculty Core a) SMJG 1113 ENGINEERING MATHEMATICS b) SMJG 1123 DIFFERENTIAL EQUATIONS c) SMJG 2133 ENGINEERING STATISTICS d) SMJG 2143 NUMERICAL METHODS e) SMJG 3243 PROJECT MANAGEMENT AND ENGINEERING ECONOMICS f) SMJG 2143 PROFESSIONAL ETHICS, SAFETY AND HEALTH (NINGEN-RYOKU) g) SHLJ 2252 JAPANESE FOR COMMUNICATION II h) SHLJ 2352 JAPANESE FOR COMMUNICATION III	22	16.3%
IV	General / University Courses a) Management/Economics/Humanities/Ethics b) Language – English and Japanese c) Co-curriculum/Service Learning	8 6 2	11.9%
	Total	135	100%
<i>For sciences programme, please fill up the following classification.</i>			
No.	Classification	Credit	Percentage (%)
A	Engineering Courses (a) Lectures (b) Laboratory (c) Final Year Project (d) Industrial training	76 6 6 6	69.6%
	Total credit for Part A	94	69.6%



B	Related Courses		
	(a) Applied Science/Math/Free elective	15	30.4%
	(b) Management/Economics/Humanities/Ethics	14	
	(c) Co-Curriculum	2	
	(d) English	4	
	(e) Japanese	6	
	Total credit for Part B	41	30.4%
	Total credit for Parts A and B	135	100%
13. Total credit to graduate		135	



PROGRAMME STRUCTURE FOR OCTOBER INTAKE

Year 1

Semester 1

Code	Course	Credits	L	T	P/S	Lab
ULRS 1042	FALSAFAH DAN CABARAN SEMASA *For Local Students	2	2			
UHLM 1012	BAHASA MALAYSIA KOMUNIKASI 2 *For International Students		2			
UHLB 1112	ENGLISH COMMUNICATION SKILLS (for MUET 3.5 and below)	HW	2			
ULRF 2XX2	KURSUS PEMBELAJARAN SERVIS & PENGLIBATAN KOMUNITI (KOQ)	2			6	
SMJE 1613	PROGRAMMING FOR ENGINEER	3	2			2
SMJE 1623	FUNDAMENTAL OF ELECTRICAL CIRCUITS	3	3	1		
SMJE 1632	INTRODUCTION TO ELECTRONIC SYSTEM ENGINEERING	2	1			2
SMJE 1643	DIGITAL ELECTRONICS	3	3	1		
SMJG 1113	ENGINEERING MATHEMATICS	3	3	1		
Total Credits		18				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory



Year 1 Semester 2

Code	Course	Credits	L	T	P/S	Lab
ULRS 1122	ASPIRASI NEGARA BANGSA *For Local Students	2	2			
ULRS 1012	CITRA MALAYSIA *For International Students		2			
UHLB 2122	PROFESSIONAL COMMUNICATION SKILLS 1	2	2			
SMJG 2243	PROFESSIONAL ETHICS, SAFETY AND HEALTH (NINGEN-RYOKU)	3	3			
SMJG 1123	DIFFERENTIAL EQUATIONS	3	3	1		
SMJE 1653	MEASUREMENT AND INSTRUMENTATION	3	3	1		
SMJE 1663	INTRODUCTION TO ELECTRICAL POWER SYSTEM	3	3	1		
SMJE 1672	ELECTRONIC ENGINEERING LABORATORY 1	2				4
Total Credits		18				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory



Year 2 Semester 3

Code	Course	Credits	L	T	P/S	Lab
UHLJ 1112	JAPANESE FOR COMMUNICATION I	2	2			
ULRS 1032	INTEGRITI DAN ANTI RASUAH	2	2			
SMJE 2613	ELECTRONIC CIRCUITS	3	3	1		
SMJE 2623	DIGITAL SYSTEM DESIGN	3	2			2
SMJG 2133	ENGINEERING STATISTICS	3	3	1		
SMJG 3243	PROJECT MANAGEMENT AND ENGINEERING ECONOMICS	3	3			
Total Credits		16				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 2 Semester 4

Code	Course	Credits	L	T	P/S	Lab
SHLJ 2252	JAPANESE FOR COMMUNICATION II	2	2			
ULRS 3032	KEUSAHAWANAN DAN INOVASI	2	2			
SMJG 2143	NUMERICAL METHODS	3	3	1		
SMJE 2633	CIRCUITS AND SIGNALS	3	3	1		
SMJE 2643	ELECTROMAGNETICS	3	3	1		



SMJE 2652	ELECTRONIC ENGINEERING LABORATORY 2	2				4
SMJE 2663	ELECTRONICS SYSTEM	3	3	1		
Total Credits		18				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 3 Semester 5

Code	Course	Credits	L	T	P/S	Lab
UHLB 3132	PROFESSIONAL COMMUNICATION SKILLS 2	2	2			
SHLJ 2262	JAPANESE FOR COMMUNICATION III	2	2			
SMJE 3613	COMMUNICATION ELECTRONICS	3	3			
SMJE 3623	CONTROL SYSTEM	3	3			
SMJE 3633	MICROPROCESSOR AND MICROCONTROLLER	3	2			2
SMJE 3643	ADVANCED PROGRAMMING	3	3			
Total Credits		16				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory



Year 3 Semester 6

Code	Course	Credits	L	T	P/S	Lab
**** **3	UNIVERSITY FREE ELECTIVE	3	3			
SMJE 3653	DIGITAL SIGNAL PROCESSING	3	3			
SMJE 3662	ELECTRONIC ENGINEERING LABORATORY 3	2				4
SMJE 3673	MONOZUKURI 1	3	3			
SMJE 3683	COMPUTER ARCHITECTURE	3	3			
SMJE 3693	REAL TIME SYSTEM	3	3			
Total Credits		17				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 3 Short Semester

Code	Course	Credits	L	T	P/S	Lab
SMJG 3206	INDUSTRIAL TRAINING	6			18	
Total Credits		6			18	

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 4 Semester 7

Code	Course	Credits	L	T	P/S	Lab
SMJG 4912	UNDERGRADUATE RESEARCH METHODOLOGY	2			2	



SMJE 4613	ARTIFICIAL INTELLIGENCE FOR COMPUTER VISION	3	3			
SMJE 4623	MONOZUKURI 2	3	3			
SMJE 4xx3	ELECTIVE I	3	3			
SMJE 4xx3	ELECTIVE II	3	3			
Total Credits		16				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 4 Semester 8

Code	Course	Credits	L	T	P/S	Lab
SMJG 4926	FINAL YEAR PROJECT	6			6	
SMJE 4xx3	ELECTIVE III	3	3			
SMJE 4xx3	ELECTIVE IV	3	3			
Total Credits		12				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory



PROGRAMME STRUCTURE FOR MARCH INTAKE

Year 1

Semester 1

Code	Course	Credits	L	T	P/S	Lab
ULRS 1122	ASPIRASI NEGARA BANGSA *For Local Students	2	2			
ULRS 1012	CITRA MALAYSIA *For International Students		2			
ULRS 3032	KEUSAHAWANAN DAN INOVASI	2	2			
UHLB 1112	ENGLISH COMMUNICATION SKILLS (for MUET 3.5 and below)	HW	2			
SMJG 2243	PROFESSIONAL ETHICS, SAFETY AND HEALTH (NINGEN-RYOKU)	3	3			
SMJE 1623	FUNDAMENTAL OF ELECTRICAL CIRCUITS	3	3	1		
SMJE 1643	DIGITAL ELECTRONICS	3	3	1		
SMJE 1653	MEASUREMENT AND INSTRUMENTATION	3	3	1		
SMJE 1672	ELECTRONIC ENGINEERING LABORATORY 1	2				4
Total Credits		18				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory



Year 1 Semester 2

Code	Course	Credits	L	T	P/S	Lab
ULRS 1042	FALSAFAH DAN CABARAN SEMASA *For Local Students	2	2			
UHLM 1012	BAHASA MALAYSIA KOMUNIKASI 2 *For International Students		2			
ULRS 1032	INTEGRITI DAN ANTI RASUAH	2	2			
UHLJ 1112	JAPANESE FOR COMMUNICATION I	2	2			
ULRF 2XX2	KURSUS PEMBELAJARAN SERVIS & PENGLIBATAN KOMUNITI (KOQ)	2			6	
SMJE 1613	PROGRAMMING FOR ENGINEER	3	3	1		
SMJE 1632	INTRODUCTION TO ELECTRONIC SYSTEM ENGINEERING	2	2			2
SMJG 1113	ENGINEERING MATHEMATICS	3	3	1		
Total Credits		16				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 2 Semester 3

Code	Course	Credits	L	T	P/S	Lab
SHLJ 2252	JAPANESE FOR COMMUNICATION II	2	2			



UHLB 2122	PROFESSIONAL COMMUNICATION SKILLS 1	2	2			
SMJG 1123	DIFFERENTIAL EQUATIONS	3	3	1		
SMJE 1663	INTRODUCTION TO ELECTRICAL POWER SYSTEM	3	3	1		
SMJE 2633	CIRCUITS AND SIGNALS	3	3	1		
SMJE 2643	ELECTROMAGNETICS	3	3	1		
SMJE 2652	ELECTRONIC ENGINEERING LABORATORY 2	2				4
Total Credits		18				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 2 Semester 4

Code	Course	Credits	L	T	P/S	Lab
UHLB 3132	PROFESSIONAL COMMUNICATION SKILLS 2	2	2			
SHLJ 2262	JAPANESE FOR COMMUNICATION III	2	2			
SMJG 2133	ENGINEERING STATISTICS	3	3	1		
SMJE 2613	ELECTRONIC CIRCUITS	3	3	1		
SMJE 2623	DIGITAL SYSTEM DESIGN	3	3	1		



SMJG 3243	PROJECT MANAGEMENT AND ENGINEERING ECONOMICS	3	3			
Total Credits		16				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 3 Semester 5

Code	Course	Credits	L	T	P/S	Lab
SMJE 3673	MONOZUKURI 1	3	3			
SMJG 2143	NUMERICAL METHODS	3	3	1		
SMJE 2663	ELECTRONICS SYSTEM	3	3			
SMJE 3662	ELECTRONIC ENGINEERING LABORATORY 3	2				4
SMJE 3683	COMPUTER ARCHITECTURE	3	3			
SMJE 3693	REAL TIME SYSTEM	3	3			
Total Credits		17				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 3 Semester 6

Code	Course	Credits	L	T	P/S	Lab
SMJE 4623	MONOZUKURI 2	3	3			
SMJE 4613	ARTIFICIAL INTELLIGENCE FOR COMPUTER VISION	3	3			



SMJE 3613	COMMUNICATION ELECTRONICS	3	3			
SMJE 3623	CONTROL SYSTEM	3	3			
SMJE 3633	MICROPROCESSOR AND MICROCONTROLLER	3	2			2
SMJE 3643	ADVANCED PROGRAMMING	3	3			
Total Credits		18				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 4 Semester 7

Code	Course	Credits	L	T	P/S	Lab
SMJG 4912	UNDERGRADUATE RESEARCH METHODOLOGY	2			2	
SMJE 3653	DIGITAL SIGNAL PROCESSING	3	3			
SMJE 4xx3	ELECTIVE III	3	3			
SMJE 4xx3	ELECTIVE IV	3	3			
**** **3	UNIVERSITY FREE ELECTIVE	3	3			
Total Credits		14				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory



Year 4 Short Semester

Code	Course	Credits	L	T	P/S	Lab
SMJG 3206	INDUSTRIAL TRAINING	6			18	
	Total Credits	6				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory

Year 4 Semester 8

Code	Course	Credits	L	T	P/S	Lab
SMJG 4926	FINAL YEAR PROJECT	6			6	
SMJE 4xx3	ELECTIVE I	3	3			
SMJE 4xx3	ELECTIVE II	3	3			
	Total Credits	12				

Notes: - L- Lecture; T- Tutorial; P/S- Practical/Studio; Lab- Laboratory



ELECTIVE COURSES

CHOOSE FOUR (4) ONLY FROM ANY GROUP (SUBJECT TO COURSE/S OFFERING AND AVAILABILITY).

NOTE: Students are encouraged to enrol courses which are related/aligned to the chosen Final Year Project (FYP) topic.

GROUP 1 COMMUNICATION		
CODE	COURSE	CREDIT
SMJE 4713	WIRELESS AND MOBILE COMMUNICATION	3
SMJE 4723	DATA COMMUNICATION	3
SMJE 4733	OPTICAL COMMUNICATION	3
SMJE 4743	RADIO WAVE AND ANTENNA	3

GROUP 2 INDUSTRIAL AUTOMATION SYSTEM		
CODE	COURSE	CREDIT
SMJE 4763	CONTROL SYSTEM DESIGN	3
SMJE 4773	POWER ELECTRONICS AND DRIVES	3
SMJE 4783	COMPUTER INTEGRATED MANUFACTURING	3
SMJE 4753	ROBOTICS	3
SMJE 4763	CONTROL SYSTEM DESIGN	3



GROUP 3**SEMICONDUCTOR MATERIAL& DEVICE**

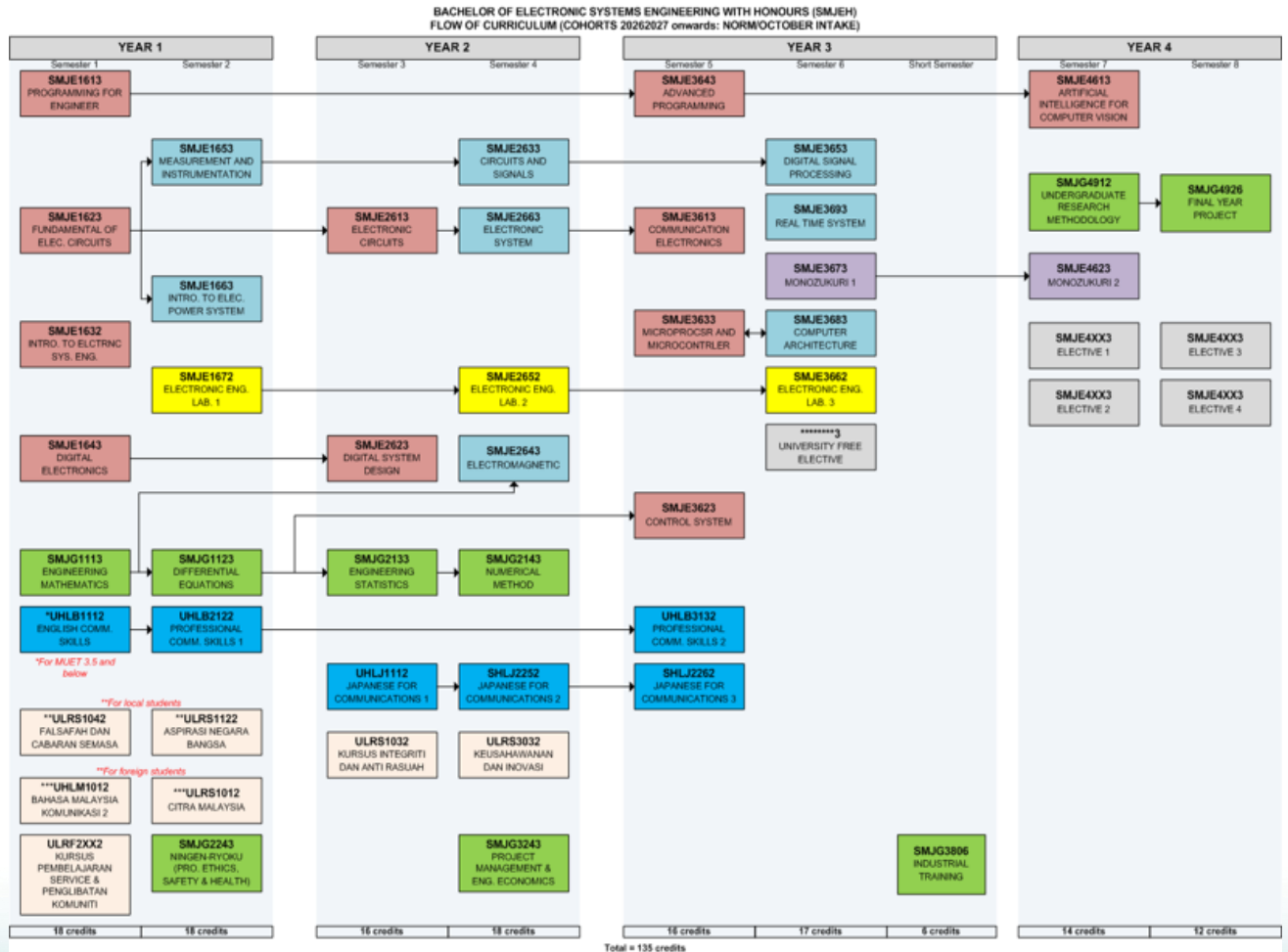
CODE	COURSE	CREDIT
SMJE 4813	SEMICONDUCTOR MATERIAL ENGINEERING	3
SMJE 4823	SEMICONDUCTOR DEVICE ENGINEERING	3
SMJE 4833	SOLID STATE ELECTRONICS	3
SMJE 4843	ELECTRONIC DEVICE FABRICATION AND CHARACTERIZATION	3

GROUP 4**IC DESIGN**

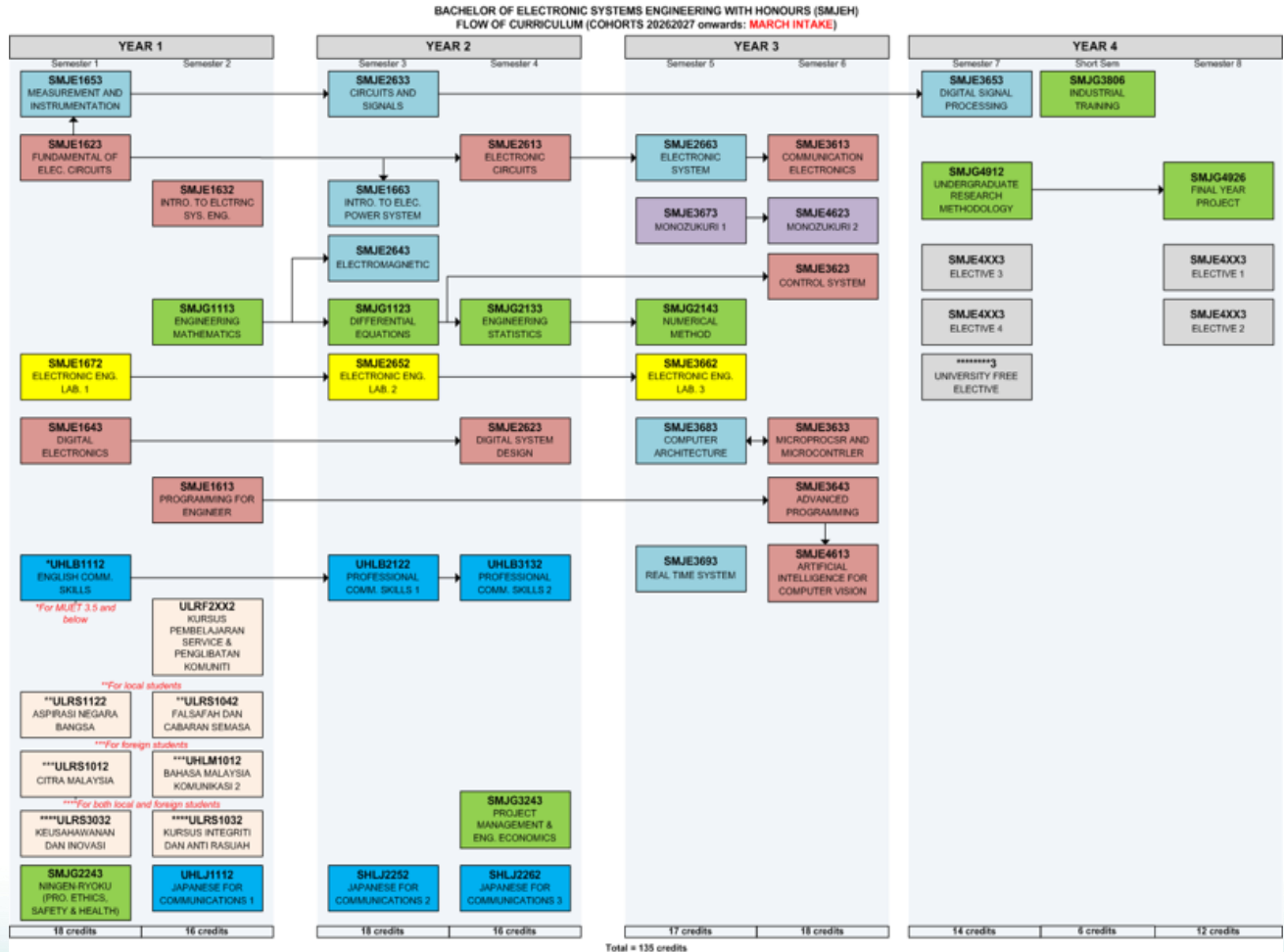
CODE	COURSE	CREDIT
SMJE 4853	ADVANCED DIGITAL DESIGN	3
SMJE 4863	VLSI DESIGN	3
SMJE 4873	DIGITAL SYSTEM VERIFICATION	3
SMJE 4883	INTEGRATED CIRCUIT TESTING AND DESIGN-FOR-TESTABILITY	3



PROGRAM STRUCTURE FLOW CHART (OCTOBER INTAKE)



PROGRAM STRUCTURE FLOW CHART (MARCH INTAKE)



SYNOPSIS OF CORE COURSES

SMJE 1613 Programming for Engineers

This course introduces basic concepts of problem-solving and programming. Students will learn the fundamentals of the C++ programming language, including variables, data types, operators, control structures, functions, arrays, pointers, and file handling. The course emphasizes logical thinking and structured programming techniques for solving engineering problems. Practical sessions and assignments are designed to reinforce understanding and develop students' skills in developing and debugging C programs.

SMJE 1623 Fundamentals of Electrical Circuits

This course introduces the fundamental principles of electrical circuit theory, focusing on both direct current (DC) and alternating current (AC) systems. Students will cover topics including, Ohm's Law, Kirchhoff's Laws, series and parallel circuit analysis, nodal and mesh analysis, and network theorems such as Superposition, Thevenin, and Norton equivalents. The course also explores transient and steady-state responses in first- and second-order circuits involving capacitors and inductors. Students will gain insight into sinusoidal AC circuits, phasors, impedance, and comprehensive AC power analysis including real, reactive, and apparent power. The course is delivered through lectures and structured tutorials, with emphasis on analytical thinking and independent learning. By the end of the course, students will be able to apply appropriate techniques to analyse electrical circuits and interpret circuit behaviour using both manual calculations and simulation tools.

SMJE 1632 Introduction to Electronic System Engineering

This course exposes students to electrical and electronics workshop activities. Students will design mini projects using Multisim and Ultiboard softwares along with the PCB automatic tools and present their work. Students also will be exposed to community services activity where will visit/engage with the stakeholder/s to promote awareness on STEM education through a simple project demo or knowledge transfer session particularly in the field of electronics engineering safety and best practice.



SMJE 1643 Digital Electronics

This course delivers the fundamental principles of digital electronics. Introduction to the course begins with numbering systems (with emphasis on binary and hexadecimal) and binary codes. Principles of Boolean algebra and basic logic circuits (the logic gates) are emphasized to build foundation for succeeding topics in combinational logic. Understanding on combinational logic circuits will be extended to MSI logic basic circuits and operations, MSI logic digital ICs and its internal circuitry and applications. Basic principles of digital memories may be presented as a sub-topic in this area. Upon completing combinational logics, fundamentals of sequential logic circuits will be emphasized equally. Underlining principles of sequential logic circuits such as clock triggering, flip-flops, registers and counters will be focussed. State diagrams will be presented with the objective of designing digital logic circuits. Assignments on simple logic circuits and the circuit simulation requires the use of Intel® QuartusII Prime software. Theories and principles of combinational and logic circuits will be enhanced with hands-on experiments in the laboratory.

SMJE 1653 Measurement and Instrumentation

This course deals with the fundamentals of measurement science (metrology), measurement systems and instruments. Whilst the emphases if on electrical measurements the measurement of non-electrical quantities such as pressure and temperature are also covered. Topics include Error and Probability, DC and AC Quantities, Physical Quantities, Data acquisition, Transducer, Coding and Decoding and Telemetry. Students also will be introduced to project management and finance skills for strategic decision making align with problem specification and financial consideration. This is to solve specific problem and propose suitable solution in Electrical and Electronics engineers domain.

SMJE 1663 Electrical Power System

This course introduces students to the fundamentals of electrical power systems, covering generation, transmission, and distribution, as well as AC/DC circuits, phasor diagrams, and power measurement. Students will explore electric power delivery systems, three-phase systems, transformers, induction motors, and synchronous generators. The syllabus also



includes conventional and renewable energy generation and examines the safety, ethical, and environmental aspects of modern power engineering. Teaching and learning activities combine active and problem-based methods, supported by quizzes, tests, final exam, and assignments to reinforce understanding. By the end of the course, students will be able to solve power system challenges, analyse loads and components, apply modern analysis tools, and demonstrate awareness of safety, ethics, inclusion and diversity in power engineering practice.

SMJE 1672 Electronic Engineering Laboratory 1

This course involves fully experimental work in laboratories. The lab works encompass fundamentals of electrical circuit, digital circuit and basic scripting in Linux environment. Instruction guided experiments are to be carried out every week in a small group. Analysis and discussion on experimental data from weekly experiments is recorded in the form of a logbook. Prior to each lab work, students are required to complete a pre-lab assignment written specifically for every lab work topic. A minimum of one (1) open-ended experiment must be performed once the guided experiments are completed.

SMJE 2613 Electronic Circuit

This course provides students with the coverage of major and essential foundation for sound understanding of electronic circuits. Since electronic circuits and integrated circuits (IC) consists of semiconductor devices with passive components, understanding of semiconductor materials and operational principles of semiconductor devices (Diode, BJT, JFET, MOSFET) is essential. The circuitry covered comprises diodes circuits, basic BJT, JFET, MOSFET amplifier and small signal analysis. The frequency response of the amplifier and a concept of IC is also given.

SMJE 2623 Digital Systems Design

This course introduces design methods to construct digital systems, including combinational and sequential circuits, by means of Hardware Descriptive Language (HDL), specifically Verilog. Areas of topics include: (1) Computer-Aided Design (CAD) tools for design, (2) Verilog



Hardware Description Languages (HDL) for simulation and synthesis, and (3) state machine specification, design, and simulation. Principles and fundamentals of digital electronics (SMJE 1643) will be reviewed briefly in a refresher session. In this course, some of the important features of HDL will be examined. The course will enable students to design, simulate, model and synthesize digital logic circuits. The dataflow, structural, and behavioural modelling techniques will be discussed and how they are used to design combinational and sequential circuits. Hands-on experience is gained by implementing logic circuits on the field programmable gate array (FPGA) development board through weekly lab practices and design projects.

SMJE 2633 Circuits and Signals

This course introduces the fundamentals of analogue signal processing, emphasizing the analysis and manipulation of continuous-time signals and systems. It begins by defining the continuous-time domain and its key properties relevant to analogue signal processing. Core topics include signals and systems, linear time-invariant (LTI) systems, convolution and its properties, as well as transformation techniques such as the Laplace Transform, Fourier Series, and Fourier Transform. The course focuses on the application of continuous-time domain and transformation methods in signal processing and general electronic system analysis. It further explores the role of analogue filters in shaping system behaviour. Emphasis is also placed on structuring and outlining signal processing applications within multidisciplinary engineering contexts. Practical implementation is supported through the use of MATLAB for composing and analysing continuous-time domain transformation methods, enabling engineering application analysis and system modelling.

SMJE 2643 Electromagnetics

This core course introduces the unified mathematical framework of electric and magnetic fields, essential for electrical engineering. Students will explore Maxwell's equations, electromagnetic wave propagation, and field interactions with materials. Teaching and learning activities combine active and problem-based methods, supported by tests, final exam, and assignments to reinforce understanding. By completing this course, students will



able to model electric/magnetic fields using vector calculus, formulate Maxwell's equations in differential/integral forms, derive wave equations from first principles and analyse wave propagation in different media.

SMJE 2652 Electronic Engineering Laboratory 2

This course focuses on building students' practical engineering skills through hands-on experiments and design work, covering experimental topics from three courses: Electronic Circuits, Electronic Systems, and Measurement and Instrumentation. Students will apply engineering knowledge to perform experiments, interpret data effectively, and assemble experimental setups using appropriate tools while upholding ethical values, safety, and responsibility. Students will also apply engineering management principles in open-ended project reports, addressing project development timelines and cost estimations. The course begins with safety instructions, group briefings, and structured experiments, leading up to a group-selected open ended experiment involving circuit design, simulation, validation, and reporting. Learning activities include cooperative, collaborative, experimental, and problem-based approaches aligned with relevant Programme Learning Outcomes, taxonomies, and graduate attributes, with assessments through lab practices, reports, peer evaluations, and open-ended tasks. By the end of the course, students will be able to perform, interpret, and manage experiments and design and analyse electronic systems that meet practical engineering standards.

SMJE 2663 Electronics System

This course provides students with the essential foundation for a sound understanding of electronic systems. The course includes characteristics and functions of electronic components such as diodes, transistors, and operational amplifiers. It also covers design and analysis of amplifiers, waveform generators, and basic signal conditioning circuits, and their applications in real-world systems. Circuit behaviour is evaluated through simulation, supported by relevant engineering analysis. The course emphasizes active learning and problem-based approaches, integrating simulation tools and collaborative assignments to promote analytical thinking and real-world application. By the end of the course, students



will be able to apply electronic principles to analyse, simulate, and interpret the behaviour of the electronic systems.

SMJG 2243 Professional Ethics, Safety And Health (Ningen Ryoku)

This course provides knowledge on fundamental principles of professional ethics, safety and health, their application to the engineering profession and sustainable development at local and international level. It also covers the skills and knowledge in promoting and maintaining health and safety in the workplace. The importance of acquiring professional ethics, safety and health will be explored through project-based activities, seminar, etc.

SMJE 3613 Communication Electronics

This course provides foundational knowledge of analogue and digital communication systems, emphasizing both theoretical concepts and practical circuit applications. Students will be introduced to time and frequency domain analysis of signals, along with key techniques in analogue modulation such as amplitude modulation (AM), frequency modulation (FM), and phase modulation (PM). For digital communication, the course covers digital modulation techniques including frequency division multiple access (FDMA), time division multiple access (TDMA), and spread spectrum methods such as code division multiple access (CDMA). Topics also include signal-to-noise ratio analysis, error probability calculations, and multiplexing techniques like TDM and FDM. Students will explore circuit implementations of modulators and demodulators for both analogue and digital systems. Practical understanding will be supported through active learning activities. By the end of the course, students will be able to understand, analyse, and evaluate analogue and digital modulation systems, their corresponding circuits, and communication performance.

SMJE 3623 Control System

This comprehensive course covers the fundamental principles of automatic control systems, exploring system modelling techniques to derive transfer functions. It delves into stability analysis methods, including Routh-Hurwitz criteria and Root Locus plots, to assess and ensure the stability of control systems. Additionally, students will learn various control strategies



such as PID, time response analysis, and steady-state error analysis, gaining proficiency in designing controllers using these strategies. The course also includes in-depth instruction on block diagram reduction techniques, empowering students to simplify and analyse complex control system structures. Hands-on experience with MATLAB and other numerical tools will enable students to conduct stability analysis and design controllers for diverse control system applications.

SMJE 3633 Microprocessor and Microcontroller

This course covers principles and applications of microprocessor and microcontroller systems. The topics include processor architecture, principles of memory in processor system, bus cycles, instruction execution, basic pipelining architecture, interrupts, instruction set, timer, input/output interfacing and related topics. The course is embedded with lab experiments on assembly language programming by utilizing IDE (application software) to design and develop a hardware project of AVR microcontroller-based system on Arduino development board.

SMJE 3643 Advanced Programming

This course is designed to provide students with a comprehensive introduction to open-source programming using Python, with a strong emphasis on its applications in Artificial Intelligence (AI). Students will gain foundational skills in Python programming, problem-solving, and software development while exploring how these tools contribute to the evolving AI landscape. The course blends theoretical knowledge with practical implementation, preparing students for AI-driven challenges and opportunities.

SMJE 3653 Digital Signal Processing

This course introduces the fundamentals of digital signal processing (DSP), starting from the analysis of continuous and discrete signals and systems. It covers the discrete-time Fourier transform (DTFT), z-transform, Discrete Fourier transform (DFT), and fast Fourier transform (FFT) algorithms, with a focus on both theoretical and practical applications. Students will also learn the design and implementation of digital filters, including Finite Impulse Response



(FIR) and Infinite Impulse Response (IIR) filters, and their role in modern communication and signal analysis. The course utilizes a combination of lectures, active learning and problem-solving sessions, and MATLAB-based lab exercises to build analytical and computational skills. By the end of the course, students will be able to analyse signal transformations, design digital filters, and apply DSP techniques to real-world scenarios.

SMJE 3662 Electronic Engineering Laboratory 3

This lab works will cover open-ended experimental topics on THREE courses i.e. (i) Communication Electronics, (ii) Control System and (iii) Microprocessor and Microcontroller. Experiments are to be carried out every week in a small group. Discussion about experimental data with analysis is required to students, through group discussions and their own reports. Repeating discussion and analysis on experimental results are expected to brush up engineering mind of students involved.

SMJE 3673 Monozukuri 1

This Monozukuri 1 course exposes students to the Japanese way of making products by creating innovative works. The course consists of lectures providing students with specific knowledge and skills on project design and analysis, allowing students to design, build and verify their project. This course requires application of the knowledge developed in prior courses and familiarize the students with the engineering design process such as definition, synthesis, analysis and implementation in the collaborative classroom environment that emphasis on the teamwork. Students are also emphasized on the importance of documenting the development progress as well as writing technical reports.

SMJE 3683 Computer Architecture

This course covers how computers represent data and how key components like the CPU, memory, and I/O devices work together. Students will learn about instruction set architecture and the roles of memory and processors, including modern systems. Using a free simulator, students will explore how computer parts operate. They will also find and share updates on current trends in computer architecture.



SMJE 3693 Real Time Systems

This course provides an introduction to real-time embedded systems, focusing on systems that must respond promptly and predictably to external events. Students will explore the fundamental concepts, characteristics, and design principles of real-time systems, including scheduling, task management, inter-task communication, and interrupt handling. The course also covers Real-Time Operating Systems (RTOS) with emphasis on structure, functionality, and practical implementation.

SMJG 3806 Industrial Training

This course provides students with a work-based learning in industrial setting related to their engineering discipline for a period of 12 weeks. Industrial training serves as a training ground for students to develop their interpersonal and communication skills effectively along with an opportunity to exercise professional ethical values in real working environment. An industrial report should be prepared at the end of the training. The report is expected to demonstrate the development of practical and professional skills in engineering through technical experience and application of theoretical knowledge from the university. Students should seek advice from their industry supervisor to ensure that no confidential material is included in the report.

SMJE 4613 Artificial Intelligence for Computer Vision

This course introduces Artificial Intelligence (AI) for Computer Vision, with a focus on Artificial Neural Networks (ANNs) and Convolutional Neural Networks (CNNs). Students will first explore the fundamentals of ANN, followed by CNN theory, data acquisition, model development, and optimization. The course offers hands-on experience using Python, Docker, and Git for building, optimizing, and deploying ANN and CNN models on AI Edge Devices. The course culminates in a mini project where students apply their knowledge to develop AI-based solutions.



SMJE 4623 Monozukuri 2

This Monozukuri 2 requires the application of knowledge gained in earlier courses and familiarizes the students with the engineering design process such as definition, synthesis, analysis and implementation, to the design project. Monozukuri 2 involves complex problem solving and complex engineering activities, including design systems, components or process integrating core areas. This course also provides an exposure to teamwork so as to emulate a typical professional design environment, and improve communication and organizational skills. The project is emphasized on the importance of other influences on design such as economics, reliability, performance, health, safety, cultural, project management, environmental, ethics as well as social impacts.

SMJE 4713 Wireless and Mobile Communication

This course introduces the radio wave technologies essential in mobile communication systems. It begins with an overview of the historical evolution from 1G to 5G and beyond, followed by an explanation of key technologies and architectures that support mobile systems. Topics include radio propagation issues and corresponding solutions, user capacity considerations, and safety regulations related to human exposure to radio waves. The course adopts a blended learning approach through lectures and active learning to enhance both theoretical understanding and practical awareness. Upon completion, students will be able to explain the evolution and structure of mobile networks, analyse radio wave behaviour, and evaluate related system performance and safety aspects.

SMJE 4723 Data Communication

The course introduces the concept of data communication within the concept of electronic systems. Data Communication refers to the movement of data between two or more digital devices. More precisely, data transmission is the physical transfer of data over a point-to-point or point-to-multipoint communication channel using a set of communication protocols. This course expands upon the foundational concepts of Communication Electronics (SMJE3613), delving into the protocols that govern data transfer within the Internet Engineering Task Force (IETF)'s Transmission Control Protocol/Internet Protocol (TCP/IP



suite). Through independent learning, students will gain hands-on experience with network monitoring and packet analysis, utilizing tools like Wireshark and Packet Tracer.

SMJE 4733 Optical Communication

This course provides fundamental understanding of optical communication technology. Basic properties of light, fibers and waveguides will be reviewed. It emphasizes on the fiber transmission characteristics such as attenuation, scattering, dispersion, absorption as well as fiber bending loss which influences optical communication system performance. This course will also cover optical transmitter and receiver system. Basic of laser operation, idea of photon, the spontaneous emission and the stimulated emission are explained. Characteristics of optical detectors will also be explained.

SMJE 4743 Radiowave and Antenna

This course introduces the fundamental theory and practical aspects of radiowave propagation and antenna systems. It begins with transmission line equations and derives mathematical expressions for electromagnetic fields. Key parameters such as wave impedance, propagation constants, and reflection coefficients at terminal boundaries are discussed in detail. The Smith chart is introduced for visualizing impedance transformations, and the basic principles of radiation from antennas are covered. Maxwell's equations are applied to derive expressions for radio wave propagation in free space, and key performance indicators of antenna systems are explained. The course uses a mix of lectures, guided problem-solving, simulations, and practical lab sessions using equipment such as the vector network analyser (VNA) to reinforce understanding. By the end of the course, students will be able to analyse electromagnetic wave propagation, interpret antenna characteristics, and evaluate impedance and radiation behaviour using both analytical and measurement-based methods.

SMJE 4753 Robotics

This course introduces aspects of key technologies in robotic systems, types of robots available worldwide, sensors and actuators for robotics as well as Robot Operating System



(ROS). Students are exposed to overviews of robot usage, configurations, mechanisms, kinematics design, and position analysis. Topics covered are applied to solve complex engineering problems including the practical hands-on of both simulated and physical arm robots.

SMJE 4763 Control System Design

This course introduces advanced techniques in control system design, focusing on both classical and state-space methods. Topics include transient and steady-state response, PID tuning (Ziegler-Nichols), and compensation design using root-locus and frequency-response approaches (Bode, polar plots). Students explore system modelling, state-space representation, and pole-placement strategies for robust controller design. Practical emphasis is placed on performance criteria such as stability, error minimization, and disturbance rejection. By integrating theory with hands-on design methods, this course equips final-year engineering students with the analytical and computational skills needed to develop effective and reliable control systems for modern engineering applications.

SMJE 4773 Power Electronic and Drives

This course focuses on developing students' abilities to analyse, design, and evaluate power electronics systems and converters by applying the V-I characteristics of semiconductor devices, designing converter systems to address complex engineering challenges, investigating sustainable motor drive solutions, and exploring emerging technologies in the field. It begins with the fundamentals of power electronics and semiconductor device physics, enhanced with Matlab simulations, and progresses through topics such as DC-DC converters, bridges, 3-phase inverters, AC and DC drives, snubbing, losses, thermal issues, mitigation strategies, and system reliability. Students also learn about practical applications like solar power, distributed generation, wind energy, and electric vehicles, ending with discussions on the latest power electronics technologies. A combination of active, project-based, and problem-based learning, supported by quizzes, tests, assignments, projects, and reports, ensures students achieve the intended outcomes. By the end of the course, students will be



able to apply device principles, design and analyse converter and drive systems, and recognize practical and emerging trends in power electronics.

SMJE 4783 Computer Integrated Manufacturing

This elective course is designed to highlight the significant automation-related subjects within the scope of manufacturing systems. Special emphasis will be given to digital-twin, computer-controlled material handling systems such as automated guided vehicles (AGV), automatic storage systems (AS/RS) and sensory systems such as computerized vision. To support advanced simulation and integration tasks, the course includes practical exposure to NVIDIA Isaac Sim for digital-twin simulation and ROS 2 (Robot Operating System 2) for real-time robot communication and control. These tools will be used to model, simulate, and evaluate intelligent manufacturing components and workflows in a virtual environment before deployment. The student must be able to install, implement, and operate such systems, together with other engineers and technicians involved in working within the flexible manufacturing environment.

SMJE 4813 Semiconductor Material Engineering

This course introduces the basic physics of the semiconductor materials in order to understand the characteristics, operation, and limitations of semiconductor devices. From this course, the students are expected to understand the basics of crystal structures, quantum mechanics, quantum theory for solids, carrier transport phenomena in equilibrium and non-equilibrium states, fundamental of PN structure and PN diode. All of these basic components are vital for students to understand the operation of the present day and future electronic devices.

SMJE 4823 Semiconductor Device Engineering

This course introduces the physical principles underlying semiconductor device operation and the application of these principles to specific devices. From this course, the students are expected to understand the basics of the characteristics, operation, and limitations of semiconductor devices. By adapting this knowledge, students will be able to develop the



required technical skills in solving problems that arise from scaling down of semiconductor devices, and to recognise the current technology trend in semiconductor device engineering.

SMJE 4833 Solid State Electronics

Solid State Electronics is a comprehensive course that delves into the fundamental principles and applications of semiconductor devices. It encompasses topics such as material properties, junction behaviour, bipolar transistors, field-effect transistors, semiconductor lasers, and solid-state memory. Through in-depth study, students will develop a strong understanding of the underlying concepts and their significance in contemporary electronic technologies

SMJE 4843 Electronic Device Fabrication and Characterization

This course is an introduction to fabrication processes and characterization of semiconductor devices. The focus is on the basic physical phenomenon and underlying technologies that involved in each fabrication process, and the basic techniques for device characterization. Specifically, students will be exposed to two major types of semiconductor growth technologies which are known as Czochralski growth and epitaxy growth technologies. For device fabrication, students will be exposed to the semiconductor device fabrication process technology that involves bottom-up approach and top-down approach. Electrical and structural characterization as well as physical characterization using microscopy technologies will be also described.

SMJE 4853 Advanced Digital Design

This course introduces advanced techniques in digital system design with a focus on RTL (Register Transfer Level) development using hardware description languages (HDLs) such as Verilog. Students will learn to model, simulate, and implement complex digital circuits using a CAD-based design flow, targeting FPGAs or ASICs. Topics include FSM design, timing analysis, and verification. Hands-on labs and projects prepare students for real-world roles as digital hardware designers in industry.



SMJE 4863 VLSI Design

This course covers all aspects of VLSI design and engineering. The lectures mainly focus on theoretical understanding of CMOS fabrication process; MOS transistors and circuits; Circuit design; Standard cell design and timing characterization; Memory design; Clock tree synthesis; Static timing and power analysis; Floor planning, placement, and routing.

SMJE 4873 Digital System Verification

The course focuses on the verification of digital circuits and systems with emphasis on System Verilog, a verification language. It starts with the basics, such as functional verification methodologies, and System Verilog fundamentals, and gradually builds to more complex examples and advanced topics. In addition, the course also covers unified verification methodology (UVM) and assertion-based verification method. At the end of the course, a complete verification system is created using System Verilog.

SMJE 4883 Integrated Circuit Testing and Design for Testability

This course first introduces fault models to model various manufacturing defects which are used in IC testing, which is a process of detecting manufacturing defects in an IC. In addition, we will discuss test generation methods to create test patterns to detect the defects. The course also covers design-for-testability, which is a design method that facilitates testing process for detecting manufacturing defects. Various test structures such as scan, built-in self-test and boundary scan are also discussed.

SMJE 4912 Undergraduate Research Methodology

This course equips students with the essential knowledge and skills to conduct engineering research, focusing on solving complex engineering problems through systematic inquiry and critical analysis. The course covers the formulation of engineering research problems, construction of synthesis matrix, literature review, research design and methodology development, data collection and analysis, and research proposal writing. Students are guided to evaluate the broader sustainability, societal, legal, and economic impacts of engineering research outcomes. Delivered through research-led and experiential learning,



the course emphasises active inquiry, critical evaluation, and exposure to real-world engineering research practices. The course integrates the Teaching-Research Nexus, Emerging Technology for a Future-Oriented Curriculum (FOCU), and Research Infused Experiential Learning (REAL Level 4) to enhance research skills and innovation. By the end of the course, students will be able to formulate and design structured research approaches for complex engineering problems, synthesise current knowledge, and propose solutions with well-considered sustainability and societal impacts. They will also enhance their ability to communicate research effectively and engage in lifelong learning.

SMJE 4926 Final Year Project

This research-based course is designed for final-year students to conduct a supervised research project within their specialisation area independently. It serves as the culmination of the chemical engineering program, emphasising academic rigour and research competence. Students undertake analytical, experimental, or simulation-based investigations at their respective iKohza laboratories under the guidance of an academic supervisor and senpai. The project scope includes literature review, problem formulation, research design, data collection, analysis, and interpretation. Progress is regularly discussed with supervisors and peers, leading to a comprehensive project report and oral presentation. The course integrates the Teaching-Research Nexus, Emerging Technology for a Future-Oriented Curriculum (FOCU), and Research Infused Experiential Learning (REAL Level 4) to enhance research skills and innovation. The course follows a research-oriented learning approach, where students engage in hands-on research under academic supervision and participate in scholarly discussions with iKohza members. Upon completion, students will be able to independently conduct research, critically analyse results, and communicate their findings through formal reporting and presentations. They will also demonstrate project management skills and adherence to academic and professional integrity throughout the research process.



PROGRAMME AWARDS REQUIREMENTS

The programme is offered in full-time mode and follows a 2-semester academic year. Various courses are delivered and assessed in each semester, with assessments based on final examinations and coursework conducted throughout the semester.

To graduate, students must:

- Complete a total of 135 credit hours with a minimum CGPA of 2.00
- Pass Industrial Training (equivalent to 6 credit hours)
- Complete Capstone Project (i.e. Monozukuri 1 & 2) and Final Year Project
- Pass five (5) Professional Skills Certificate (PSC)





UTM
UNIVERSITI TEKNOLOGI MALAYSIA



UNDERGRADUATE (UG) ACADEMIC GUIDELINES 2026 / 2027

BACHELOR IN

SOFTWARE ENGINEERING

With Honours

MALAYSIA-JAPAN INTERNATIONAL INSTITUTE OF TECHNOLOGY



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<https://mjiit.utm.my>

PROGRAMME SPECIFICATIONS

The Bachelor in Software Engineering with Honors is offered on a full-time basis. The full-time programme is offered at UTM's Main Campus in Johor Bahru and co-offered at MJIT, UTM Kuala Lumpur. The duration of study for the full-time programme is subject to the student's entry qualifications and lasts between four (4) years to a maximum of six (6) years.

The programme is offered on full-time basis and is based on a 2-Semester per academic session. Generally, students are expected to undertake courses equivalent to between fourteen (14) to eighteen (18) credit hours per semester. Assessment is based on coursework and final examinations given throughout the semester.

GENERAL INFORMATION

1. Awarding Institution	Universiti Teknologi Malaysia
2. Teaching Institution	Universiti Teknologi Malaysia
3. Programme Name	Bachelor in Software Engineering with Honors
4. Final Award	Bachelor in Software Engineering with Honors
5. Programme Code	SCSEH
6. Professional or Statutory Body of Accreditation	Ministry of Higher Education



7. Language(s) of Instruction			English	
8. Mode of Study (Conventional, distance learning, etc)			Conventional	
9. Mode of operation (Franchise, self-govern, etc)			Self-governing	
10. Study Scheme (Full Time/Part Time)			Full Time	
11. Study Duration			Minimum: 4 yrs (8 semesters) Maximum: 6 yrs (12 Semesters)	
Type of Semester	No. of Semesters		No of Weeks/Semester	
	Full Time	Part Time	Full Time	Full Time
Normal	8 - 12	9 - 20	18	18
Short	-	-	-	-



COURSE CLASSIFICATION

No	Classification	Credit Hours	Percentage
i.	University Courses a) General b) Language c) Co-Curriculum d) IT Entrepreneurship	16	12.5%
ii.	Core Courses	82	64%
iii.	Elective Courses	18	14.1%
iv.	Free Elective	12	9.4%
	Total	128	100%
A	Engineering Courses a) Lecture/Project/Laboratory b) Workshop/Field/Design Studio c) Industrial Training d) Final Year Project	Nil	Nil
	Total Credit Hours for Part A		



B	Related Courses a) Applied Science/Mathematic/Computer b) Management/Law/Humanities/Ethics/Economy c) Language d) Co-Curriculum	Nil	Nil
Total Credit Hours for Part B			
Total Credit Hours for Part A and B		Nil	
Total Credit Hours to Graduate		128 credit hours	

AWARD REQUIREMENTS

To graduate, students must:

- Achieve a total of 128 credit hours with minimum CGPA of 2.0
- Pass industrial training (equivalent to 12 credit hours), which 4 credits will be graded and 8 credits as HW (Compulsory Attendance) status.
- Complete Software Engineering Final Year Projects.
- Pass five (5) Professional Skills Certificate (PSC)



PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

Code	Intended Educational Objectives
PEO1	Competent and innovative in acquiring and applying knowledge towards solving Software Engineering problems.
PEO2	Grow professionally with proficient interpersonal skill within global organization and society.
PEO3	Uphold ethical values with sense of responsibility towards organization and society.

PROGRAMME LEARNING OUTCOMES (PLO)

After having completed the programme, graduates should be able to demonstrate the following competencies:

Code	Intended Learning Outcomes
PLO1	Analyse knowledge, facts concepts, principles, and theories related to Software Engineering.
PLO2	Design creative, innovative and effective solutions to complex software engineering problems.
PLO3	Adapt appropriate methodologies and techniques for analysing, modelling, designing, testing and maintaining large scale software.
PLO4	Demonstrate effective collaboration with stakeholders professionally according to the professional software engineering practice.



PLO5	Communicate effectively both in written and spoken form with engineers, other professionals and community.
PLO6	Utilise digital skills for problem solving in Software Engineering field.
PLO7	Utilise numeracy skills for problem solving in Software Engineering field.
PLO8	Demonstrate leadership, teamwork, accountability and responsibility in delivering services related to field of Software Engineering.
PLO9	Demonstrate self-advancement through continuous academic or professional development.
PLO10	Apply entrepreneurial mind set in delivering solutions under changing industry landscape.
PLO11	Uphold professional and ethical practices in delivering services related to the field of Software Engineering.



COURSE MENU (SEPTEMBER / OCTOBER INTAKE)

YEAR 1: SEMESTER 1***			
Code	Course	Credit	Pre-requisite
SCSE1013	Fundamental Programming Concept	3	
SCST1123	Mathematics for Software Engineer	3	
SCSR1013	Digital Logic	3	
SCST1143	Database Engineering	3	
ULRS1032	Integrity and Anti-Corruption	2	
Sxxxxxx3	Free Elective I*	3	
	TOTAL CREDIT	17	
	CUMULATIVE CREDITS	17	
***Students with IELTS Band less than 5.5 or TOEFL less than 525 or TOEFL IBT less than 60 or CEFR less than B2 or MUET less than Band 4 (Malaysian student) must register for UHLB1112 course * Students must choose University Free Elective courses offered by other faculties or by other departments within MJIT, excluding courses offered by their own department.			

YEAR 1: SEMESTER 2			
Code	Course	Credit	Pre-requisite
SCSE1203	Software Engineering Principles	3	SCSE1013
SCSR1033	Computer Organization and Architecture	3	SCSR1013



SCST1223	Probability and Statistical Data Analysis	3	
SCSE1224	Advanced Programming	4	SCSE1013
SCSR2213	Network Communications	3	
Malaysian Students			
ULRS1182	Appreciation of Ethics and Civilizations		
International Students			
UHLM1012	Malaysia Language for Communication 2		
	TOTAL CREDIT	18	
	CUMULATIVE CREDITS	35	

YEAR 2: SEMESTER 1			
Code	Course	Credit	Pre-requisite
SCSE2133	Software Process and Project Management	3	SCSE1203
SCSE2123	Software Requirements Engineering	3	SCSE1203
SCSE2103	Data Structure and Algorithm	3	SCSE1013
SCSR2043	Operating Systems	3	
SCSM2113	Human Computer Interaction Fundamentals	3	SCSE1203
ULRF2xx2	Service Learning & Community Engagement Courses	2	
	TOTAL CREDIT	17	
	CUMULATIVE CREDITS	52	



YEAR 2: SEMESTER 2			
Code	Course	Credit	Pre-requisite
SCSM2223	Cross-Platform Application Development	3	SCST1143
SCSE2233	Software Design & Architecture	3	SCSE1203
SCSE2243	Application Development Project I	3	SCSE1203, SCSE2123
UHLB2122	Professional Communication Skills1	2	
ULRS1022	Philosophy and Current Issues	2	
Program Electives – Choose 1 (3 credits)			
SCSB2103	Bioinformatics I	3	
SCSP2753	Data Mining	3	
SCSP3213	Business Intelligence	3	
	TOTAL CREDIT	16	
	CUMULATIVE CREDITS	68	

YEAR 3: SEMESTER 1			
Code	Course	Credit	Pre-requisite
UHLB3132	Professional Communication Skills	2	
UHLx1122	Foreign Language Elective	2	
Sxxxxxx3	Free Elective II*	3	
Program Electives – Choose 3 (9 credits)			
SCST3223	Data Analytic Programming	3	



SCSE3143	Ubiquitous Computing	3	
SCSR3113	Cloud Computing	3	
SCSE3103	Cognitive Computing	3	
SCSE3203	Special Topics	3	
SCSM3113	Virtual and Augmented Reality Application	3	
	TOTAL CREDIT	16	
	CUMULATIVE CREDITS	84	
* Students must choose University Free Electives subjects offered by faculties other than Faculty of Computing.			

YEAR 3: SEMESTER 2			
Code	Course	Credit	Pre-requisite
SCSE3242	Software Engineering Project I	2	80 credits SCSE2243
SCSR3133	Secure Software Programming	3	SCSM2213
SCSE3213	Software Quality & Testing	3	SCSE2123 SCSE2233
SCSE3223	Application Development Project II	3	SCSE2243
SCSE3233	Professional Practice in Software Engineering	3	SCSE1203
ULRS3032	Entrepreneurship and Innovation	2	
	TOTAL CREDIT	16	
	CUMULATIVE CREDITS	100	



YEAR 4: SEMESTER 1			
Code	Course	Credit	Pre-requisite
SCSE4108	Industrial Training (HW)	8	92 credits CGPA $\geq$ 2.0
SCSE4114	Industrial Training Report	4	92 credits CGPA $\geq$ 2.0
	TOTAL CREDIT	12	
	CUMULATIVE CREDITS	112	

YEAR 4: SEMESTER 2			
Code	Course	Credit	Pre-requisite
SCSE4214	Software Engineering Project II	4	SCSE324 2
Sxxxxxx3	Free Elective III	3	
Sxxxxxx3	Free Elective IV	3	
Program Electives – Choose 2 (6 credits)			
SCSR4453	Network Security	3	
SCSR 4973	Computer Network & Security Special Topics	3	
SECB3133	Computational Biology I	3	
SCSB3203	Programming for Bioinformatics	3	
SCSR5xx3/ SCSP5xx3/	PRISMS Elective 1	3	



SCSE5xx3			
SCSR5xx3/ SCSP5xx3/ SCSE5xx3	PRISMS Elective 2	3	
	TOTAL CREDIT	16	
	CUMULATIVE CREDITS	128	
*PRISMS elective courses are for PRISMS students only. Information on PRISMS can be found here: https://comp.utm.my/prisms/			

PRISMS ELECTIVE COURSES

For students who intend to enrol in PRISMS, refer to the PRISMS Section for a list of related elective courses associated with the Postgraduate Programme. The PRISMS elective begins with code SECP/J/R5XX3.



COURSE MENU (FEBRUARY / MARCH INTAKE)

YEAR 1: SEMESTER 1***			
Code	Course	Credit	Pre-requisite
SCSE1013	Fundamental Programming Concept	3	
SCST1223	Probability and Statistical Data Analysis	3	
SCSR1013	Digital Logic	3	
SCSR2213	Network Communications	3	
SCSE1203	Software Engineering Principles	3	SCSE 1013
Malaysian Students			
ULRS1182	Appreciation of Ethics and Civilizations	2	
International Students			
UHL1012	Malaysia Language for Communication	2	
	TOTAL CREDIT	17	
	CUMULATIVE CREDITS	17	
***Students with IELTS Band less than 5.5 or TOEFL less than 525 or TOEFL IBT less than 60 or CEFR less than B2 or MUET less than Band 4 (Malaysian student) must register for UHLB1112 course * Students must choose University Free Elective courses offered by other faculties or by other departments within MJIT, excluding courses offered by their own department.			



YEAR 1: SEMESTER 2			
Code	Course	Credit	Pre-requisite
SCSR1033	Computer Organisation and Architecture	3	SCSR1013
SCST1123	Mathematics for Software Engineer	3	
SCSE1224	Advanced Programming	4	SCSE1013
SCST1143	Database Engineering	3	
ULRS1032	Integrity and Anti-Corruption	2	
Sxxxxxx3	Free Elective I*	3	
	TOTAL CREDIT	18	
	CUMULATIVE CREDITS	35	

YEAR 2: SEMESTER 1			
Code	Course	Credit	Pre-requisite
SCSM2213	Cross-Platform Application Development	3	SCST 1143
SCSE2233	Software Design & Architecture	3	SCSE1203
UHLB2122	Professional Communication Skills 1	2	
ULRS1022	Philosophy and Current Issues	2	



ULRF2xx2	Service Learning & Community Engagement Courses	2	
Program Electives – Choose 1 (3 credits)			
SECB2103	Bioinformatics I	3	
SECP2753	Data Mining	3	
SECP3213	Business Intelligence	3	
	TOTAL CREDIT	15	
	CUMULATIVE CREDITS	50	

YEAR 2: SEMESTER 2			
Code	Course	Credit	Pre-requisite
SCSE2133	Software Process and Project Management	3	SCSE 1203
SCSE2123	Software Requirements Engineering	3	SCSE 1203
SCSE2243	Application Development Project I	3	SCSE1203, SCSE2123
SCSE2103	Data Structure and Algorithm	3	SCSE1013
SCSR2043	Operating System	3	



SCSM2113	Human Computer Interaction	3	SCSE 1203
	TOTAL CREDIT	18	
	CUMULATIVE CREDITS	68	

YEAR 3: SEMESTER 1			
Code	Course	Credit	Pre-requisite
SCSR3133	Secure Software Programming	3	SCSM 2213
SCSE3213	Software Quality & Testing	3	SCSE 2123 SCSE 2233
SCSE3233	Professional Practice in Software Engineering	3	SCSE 1203
UHLB3132	Professional Communication Skills 2	2	
ULRS3032	Entrepreneurship and Innovation	2	
UHLJ1122	Foreign Language Elective	2	
	TOTAL CREDIT	15	
	CUMULATIVE CREDITS	83	



YEAR 3: SEMESTER 2			
Code	Course	Credit	Pre-requisite
SCSE3223	Application Development Project II	3	SCSE2243
SCSE3242	Software Engineering Project I	2	80 credits SCSE2243
Sxxxxxx3	Free Elective II*	3	
Program Electives – Choose 3 (9 credits)			
SCST3223	Data Analytic Programming	3	
SCSE3143	Ubiquitous Computing	3	
SCSR3113	Cloud Computing	3	
SCSE3103	Cognitive Computing	3	
SCSE3203	Special Topics	3	
SCSM3113	Virtual and Augmented Reality Application	3	
	TOTAL CREDIT	17	
	CUMULATIVE CREDITS	100	
<i>* Students must choose University Free Electives subjects offered by faculties other than Faculty of Computing</i>			



YEAR 4: SEMESTER 1			
Code	Course	Credit	Pre-requisite
SCSE4214	Software Engineering Project II	4	SCSE3242
Sxxxxxx3	Free Elective III	3	
Sxxxxxx3	Free Elective IV	3	
Program Electives – Choose 2 (6 credits)			
SCSR4453	Network Security	3	
SCSR 4973	Computer Network & Security Special Topics	3	
SECB3133	Computational Biology I	3	
SECB3203	Programming for Bioinformatics	3	
SECR5xx3/ SECP5xx3/ SECJ5xx3	PRISMS Elective 1	3	
SECR5xx3/ SECP5xx3/ SECJ5xx3	PRISMS Elective 2	3	
	TOTAL CREDIT	16	
	CUMULATIVE CREDITS	116	



YEAR 4: SEMESTER 2			
Code	Course	Credit	Pre-requisite
SCSE4108	Industrial Training (HW)	8	92 credits CGPA >= 2.0
SCSE4114	Industrial Training Report	4	92 credits CGPA >= 2.0
	TOTAL CREDIT	12	
	CUMULATIVE CREDITS	128	

PRISMS ELECTIVE COURSES

For students who intend to enrol in PRISMS, refer to the PRISMS Section for a list of related elective courses associated with the Postgraduate Programme. The PRISMS elective begins with code SECP/J/R5XX3.



GRADUATION CHECKLIST

To graduate, students must pass all the stated courses in this checklist. It is the responsibility of the students to ensure that all courses are taken and passed. Students who do not complete any of the courses are not allowed to graduate.

NO	CODE	COURSE	CREDIT EARNED (JKD)	CREDIT COUNTED (JKK)	TICK (✓) IF PASSED
CORE COURSES (82 CREDITS)					
1	SCST 1143	Database Engineering	3	3	
2	SCST 1123	Mathematics for Software Engineer	3	3	
3	SCSE 1224	Advanced Programming	4	4	
4	SCSE 1203	Software Engineering Principles	3	3	
5	SCST 1223	Probability and Statistical Data Analysis	3	3	
6	SCSE 1013	Fundamental Programming Concepts	3	3	
7	SCSR 2213	Network Communications	3	3	
8	SCSR 1033	Computer Organization And Architecture	3	3	
9	SCSR 1013	Digital Logic	3	3	



10	SCSM 2223	Cross-Platform Application Development	3	3	
11	SCSM 2113	Human Computer Interaction Fundamentals	3	3	
12	SCSE 2123	Software Requirements Engineering	3	3	
13	SCSE 2133	Software Process and Project Management	3	3	
14	SCSE 2103	Data Structure and Algorithm	3	3	
15	SCSE 2243	Application Development Project I	3	3	
16	SCSE 2233	Software Design and Architecture	3	3	
17	SCSR 2043	Operating Systems	3	3	
18	SCSE 3233	Professional Practice in Software Engineering	3	3	
19	SCSE 3223	Application Development Project II	3	3	
20	SCSE 3213	Software Quality and Testing	3	3	
21	SCSR 3133	Secure Software Programming	3	3	
22	SCSE 3242	Software Engineering Project I	2	2	
23	SCSE 4214	Software Engineering Project II	4	4	
24	SCSE 4114	Industrial Training Report	4	4	



25	SCSE 4108	Industrial Training	8	8	
Program Elective Courses (18 credits)					
Year 2 – Semester 2 (Choose 1)					
26	SCSB 2103	Bioinformatics I	3	3	
27	SCSP 2753	Data Mining	3	3	
28	SCSP 3213	Business Intelligence	3	3	
Year 3 - Semester 1 (Choose 3)					
29	SCST 3223	Data Analytic Programming	3	3	
30	SCSM 3113	Virtual and Augmented Reality Application	3	3	
31	SCSE 3203	Special Topics	3	3	
32	SCSE 3103	Cognitive Computing	3	3	
33	SCSE 3143	Ubiquitous Computing	3	3	
34	SCSR 3113	Cloud Computing	3	3	
Year 4 – Semester 2 (Choose 2)					
35	SCSB 3203	Programming for Bioinformatics	3	3	
36	SCSR 4453	Network Security	3	3	



37	SCSR 4973	Computer Network & Security Special Topics	3	3	
38	SECB3133	Computational Biology I	3	3	
PRISMS ELECTIVE COURSES					
39	SCSJ 5103	Secure Software Engineering	3	3	
40	SCSP 5013	Advanced Analytics for Data Science	3	3	
41	SCSP 5023	Big Data Management	3	3	
42	SCSP 5033	Business Intelligence and Analytics	3	3	
43	SCSP 5063	Statistics for Data Science	3	3	
44	SCSR 5013	Cryptographic Engineering	3	3	
45	SCSR 5023	Digital Forensics	3	3	
46	SCSR 5033	Information Security Assurance and Risk Management	3	3	
47	SCSR 5043	Cloud Computing Security	3	3	
48	SCSP 5063	Statistics for Data Science	3	3	
University Free Electives (Choose 4) (12 credits)					
49	SEAA3913	Environmental Management	3	3	
50	SEAA1713	Soil Mechanics	3	3	



51	SEMM2613	Materials Science	3	3	
52	SETB4233	Bioproduct Development and Processing	3	3	
53	SETN2243	Nuclear Engineering Fundamentals	3	3	
54	SHPR2952	Athletics and Sports Management	3	3	
55	SHPL1112	Basic Food Preparation and Nutrition	3	3	
56	SSCG2423	Bioethics in Research and Development	3	3	
57	SSCT 1613	Microbiology	3	3	
58	SSCC2663	Polymer Processing	3	3	
59	SSCM1023	Mathematical Methods 1	3	3	
60	SSCP2213	Nuclear Physics	3	3	
61	SHMY1033	Social Psychology	3	3	
62	SHMR1013	Principle of Human Resource Development	3	3	
63	SBSC1303	Business Accounting	3	3	
64	SBSD2023	Human Resource Management	3	3	
65	SSPG2223	National Integrity	3	3	
66	SSPB2133	International Business	3	3	



67	SEE1022	Introduction to Scientific Programming	3	3	
68	SMBE1513	Basic Anatomy and Physiology	3	3	
69	SEEU2123	Instrumentation And Measurement	3	3	
70	SEEU3003	Electronics	3	3	
71	SEEU3053	Electrical Technology	3	3	
72	SBEC4812	Sustainable Construction	3	3	
73	SBEH2123	Property Management	3	3	
74	SBEQ1343	Introduction to Quantity Surveying	3	3	
75	SBEA1212	Architectural Communication	3	3	
76	SBET4563	Environmental Management	3	3	
77	SBEW4133	Low Carbon Society	3	3	
78	SBEU4833	Digital Imaging Photogrammetry & Application	3	3	
79	SBEG4633	GIS for Resource Management	3	3	
80	SBEG4643	Spatial Data Management	3	3	
81	SBEZ1652	Introduction to Landscape Architecture	3	3	
82	SCSE 4223	Industry Collaborative Special Topics	3	3	



83	SCSE 4213	Professional Project Report	3	3	
UNIVERSITY GENERAL COURSES					
Cluster 1: Malaysia Core Value					
For Malaysian and International Students					
1	ULRS1022	Philosophy and Current Issues	2	2	
For Malaysian Students					
1	ULRS1182	Appreciation of Ethics and Civilizations	2	2	
For International Students					
1	UHLM1012	Malaysia Language for Communication	2	2	
Cluster 2: Value and Identity					
1	ULRS1032	Integrity and Anti-Corruption	2	2	
Cluster 3: Global Citizen					
1	ULRF2xx2	Service Learning & Community Engagement Courses	2	2	
Cluster 4: Communication and Skills					
1	UHLB2122	Professional Communication Skills 1	2	2	
2	UHLB3132	Professional Communication Skills 2	2	2	



3	UHLJ 1122	Foreign Language Communication	2	2	
Cluster 5: Enterprising Skill					
1	ULRS3032	Entrepreneurship and Innovation	2	2	
University Free Electives					
1	Sxxxxxx3	Any 4 University Free Elective courses (offered by other faculties or other departments within MJIT)	3	3	
OTHER COMPULSORY COURSES – PROFESSIONAL SKILLS CERTIFICATE (PSC)					
Students are required to enroll and pass FIVE (5) PSC courses, to be eligible to graduate. Enroll the PSC courses as follows:					
COMPULSORY PSC COURSES (Enroll All 3 Courses)					
1	GLRB0010	Design Thinking for Entrepreneur			
2	GLRM0010	Talent and Competency Management			
3	GLRL0010	English Communication Skills for Graduating Students (ECS)			
ELECTIVE PSC COURSES (Choose Any 2 Courses only)					
1	GLRT0010	Data Analytics for Organization			
2	GLRM0020	Professional Ethics and Integrity			
3	GLRT0020	Construction Measurement (Mechanical & Electrical)			



4	GLRT0030	OSHE for Engineering Industry and Laboratory			
5	GLRT0040	OSHE for Construction Industry and Laboratory Works			
6	GLRT0050	Quality Management for Build Environment and Engineering Professionals			
7	GLRT0060	Safety and Health Officer Introductory Course			
8	GLRT0070	Industrial Machinery and Lubrication			
Or any other elective PSC courses offered by UTM iLeague. Information on PSC Courses: https://ileague.utm.my/utm-professional-skills-certificate-utm-psc/ Online PSC Registration: https://elearnpsc.utmspace.edu.my/					



COURSE SYNOPSIS

CORE COURSES

SCSR1013 Digital Logic

Digital electronics is the foundation of all microprocessor-based systems found in computers, robots, automobiles, and industrial control systems. This course introduces the students to digital electronics and provides a broad overview of many important concepts, components, and tools. Students will get up-to-date coverage of digital fundamentals-from basic concepts to programmable logic devices. Laboratory experiments provide hands-on experience with the simulator software, actual devices and circuits studied in the classroom.

SCSE1013 Fundamental Programming Concept

This course covers problem solving techniques and the fundamentals of programming. Students will learn to apply programming concepts towards solving problems. Then, students will learn of the techniques of problem solving in programming before implementing the techniques. Furthermore, students will learn the basics of programming and control structures involved. Moreover, students will be introduced to functions, arrays and input and output files. Students will also learn about pointers and structured data, which includes structured and enumerated data types. Students are required to develop programs using computer programming language, in order to solve simple to moderate problems. At the end of this course, students are expected to mastery in problem-solving skill and programming skill.

SCST1123 Mathematic for Software Engineer

This course introduces students to the mathematical, computing and linguistic metaphors of software engineering. The mathematical topics that are covered in this course are set theory, proof techniques, relations, functions, recurrence relations, counting methods, graph theory, trees. This course also discusses on how formal language and computing theories may improve the understanding of programming languages and their work products – software.



This part will emphasize on languages, grammars and abstract machines i.e. regular language, context free language, regular grammar, context free grammar, finite automata, push down automata, and turing machine. At the end of the course, the students should be able to use set theory, relations and functions to solve computer science problems, analyze and solve problems using recurrence relations and counting methods, apply graph theory and trees in real world problems and use abstract machines to model electronic devices and problems.

SCST1143 Database Engineering

This course introduces students to the concept of database system and how it is used in daily human life and profession. The focus of the course is to equip students with the knowledge and skills on important steps and techniques used in developing a database, especially in the conceptual and logical database design phase. Among topics covered are database environment, database design, entity relationship diagram, normalization, and structured query language (SQL). Students will be taught to use a database management system (DBMS). Students are required to design and develop the database component of an information system using the learned techniques, DBMS and a development tool. At the end of the course, students should be able to apply the knowledge of designing and developing a good database system.

SCSE1203 Software Engineering Principles

Pre-requisite: SCSE1013 Fundamental Programming Concepts

This course is designed to give students an introduction to an engineering approach in the development of high-quality software systems. It will discuss the important software engineering concepts in the various types of the common software process models. The students will also learn the concepts and techniques used in each software development phase including requirements engineering, software design and software testing. This course will also expose the students to utilizing object-oriented method (e.g. UML) and tools in analyzing and designing the software. In terms of generic skills, this course will also focus on critical thinking and communication skills of the students.



SCSR1033 Computer Organisation and Architecture

Pre-requisite: SCSR1013 Digital Logic

This course was designed to give the understanding of basic concept of computer organization and architecture. Topics covered in this subject will be on computer performance, types of data and the representative, arithmetic manipulation, instruction execution, micro programmable control memory, pipelining, memory, input/output and instruction format. At the end of this course, the student should be able to understand the concept of overall computer component and realize the current technology in computer hardware.

SCST1223 Probability and Statistical Data Analysis

This course is designed to introduce some statistical techniques as tools to analyse the data. In the beginning the students will be exposed with various forms of data. The data represented by the different types of variables are derived from different sources; daily and industrial activities. The analysis begins with the data representation visually. The course will also explore some methods of parameter estimation from different distributions. Further data analysis is conducted by introducing the hypothesis testing. Some models are employed to fit groups of data. At the end of course the students should be able to apply some statistical models in analysing data using available software.

SCSE1224 Advanced Programming

Pre-requisite: SCSE1013 Fundamental Programming Concept

This course presents the advanced programming techniques and features. The course will cover concepts in Object-Oriented Programming and introduce functional programming paradigm. Basic understanding on control structures, objects and classes is required to enrol in this course. The course will also cover some advanced programming techniques including asynchronous programming. The course will equip the students with the theory and practice on problem solving using such techniques. The course will also provide the students with written and oral communication skills. At the end of this course, students should be able to use appropriate programming techniques and tools to develop programs to solve problem.



SCSR2213 Network Communications

This course will discuss the basic topics of computer network and data communications. Based on TCP/IP Internet protocol stack, the course will apply top down approach. Starts with the important and usage of computer network in commonly applications, the approach will go further detail in the technical aspect in data communication. At the end of this course, students will have an understanding and appreciation of how the network works.

SCSR2043 Operating Systems

This course covers introduction to operating systems, which serve as an interface between computer hardware and the user. The operating system is responsible for the management and coordination of processes, sharing of limited resources of the computer. Students will be exposed to the techniques and algorithms that may be applied in designing an operating system. Topics covered include process management, concurrency and synchronization, deadlock, memory management, file management, secondary storage management and I/O management. At the end of the course, the student shall have a clear understanding on the general concepts that underlie of an operating system.

SCSE2013 Data Structure and Algorithm

Pre-requisite: SCSE 1013 Fundamental Programming Concepts

This course emphasis on data structure concepts theoretically and practically with detail algorithms for each of data structure. Students will learn abstract data type concepts using class and apply the concept in the implementation of data structures. Apart from it, student will learn recursive concept as a programming style and algorithm efficiency analysis with Big O notation. Various sorting and searching techniques will be discussed as data structure operations. Analysis of each algorithm will also be explained. Further, students will be exposed to linear data structures such as linked lists, stack and queue. Non-linear data structures such as tree and binary search tree will be discussed. Along the course, students should be able to implement and apply the theory and concepts of data structure in the assignments and mini project which are conducted in group.



SCSM2113 Human Computer Interaction

Pre-requisite: SCSE1203 Software Engineering Principles

This course will introduce students to human-computer interaction theories and design processes. The emphasis will be on applied user experience (UX) design. The course will present an iterative evaluation-centered UX lifecycle and will introduce a broader notion of user experience, including usability, usefulness, and emotional impact. The lifecycle should be viewed as template intended to be instantiated in many different ways to match the constraints of a particular development project. The UX lifecycle activities we will cover include contextual inquiry and analysis, requirements extraction, design-informing models, design thinking, ideation, sketching, conceptual design, and formative evaluation.

SCSE2123 Software Requirements Engineering

Pre-requisite: SCSE1203 Software Engineering Principles

This course provides an introduction to requirement engineering and a thorough look at the software modelling. It will include requirements engineering topics include types of requirements, requirements elicitation techniques, requirements specification: text-based and model-based, requirements validation and negotiation, as well as requirements management. At the end of this course, the students shall have the skills necessary to conduct requirements engineering process with appropriate principles and methods.

SCSE2133 Software Process and Project Management

Pre-requisite: SCSE1203 Software Engineering Principles

This course is designed to provide students within depth knowledge on software project planning, cost estimation and scheduling, project management tools, factors influencing productivity and success, productivity metrics, analysis of options and risks, software process improvement, software contracts and intellectual property and approaches to maintenance and long-term software development. This course will incorporate a work-based learning approach where students will have some sessions with the industrial partners. At the end of this course, students should be able to know how to manage a software development lifecycle.



SCSM2223 Cross-Platform Application Development

Pre-requisite: SCST1143 Database Engineering

This course will provide students with a foundation on the development of modern applications. It will cover the workflows, tools and frameworks required to develop applications for current and emerging computing devices including mobile, web and desktop platforms. The course will adopt current technologies as a basis for teaching the process of the application development. This course will also expose the students to composing user interfaces, integrating with backends and the application architecture. This course will incorporate a work-based learning approach where students will have some sessions with the industrial partners. At the end of course, the students will be equipped with the competency of the appropriate skills for the development of modern applications as well as personal and entrepreneurial skills.

SCSE2233 Software Design & Architecture

Pre-requisite: SCSE1203 Software Engineering Principles

This course provides the students with an in-depth look at the theory and practice of software architecture and design. It introduces the important concepts related to software architecture and design. It emphasizes on the design and (faithful) implementation of a large scale software using the widely accepted architecture styles and design patterns. It will also expose students to the use of the industrial strength design notations (e.g. UML) and CASE tools (e.g. Ent Arch, Visual Studio). In addition, it provides other aspects of a large and complex software design such as user interface design, management, leadership, and ethics. At the end of this course, the students should be able to use the techniques, architectural styles, and design patterns in software design.

SCSE2244 Applications Development Project 1

Pre-requisite: SCSE1203 Software Engineering Principles, SCST1143 Database Engineering

Application Development Project I provides a cornerstone design experience course for students to integrate software engineering knowledge and skills acquired in previous courses. This course requires student to investigate community needs and solve the related



problems in team. Team based approach integrates knowledge and skill of problem formulation, requirements engineering, architecture, design, implementation, software process and management of a software development to solve a real-world community problem. A combination of teamwork and individual work is required. The requirements elicitation, requirements analysis, design, coding, testing, and implementation of the product will be a team effort. However, individual responsibilities must be clearly identified in every deliverable. This project will be of significant size and like most software projects it will be time and resource limited with firm specified deadlines. As a result, the team will have to set their goals and plan their work accordingly. The course aims to improve awareness of the standard tools and latest techniques or technologies in developing software, and to become more capable team member and leaders in software development projects.

SCSR3133 Secure Software Programming

Pre-requisite: SCSM 2213 Cross Platform Application Development

This course aims to prepare students with knowledge to develop secure application. This is done by exposing common programming errors, ways to locate, and fix them. Besides that, students will learn how to properly use libraries for applying cryptographic functions. At the end of this course student should be able to design and develop secure application based on current security technologies.

SCSE3213 Software Quality and Testing

Pre-requisite: SCSE1203 Software Engineering Principles, SCSE2233 Software Design & Architecture

The content of the course discusses the Software Quality issues much beyond the classic boundaries of custom-made software development by large established software houses. It dedicates significant attention to the other software development and maintenance environment that reflect the current state of industry. This course is designed to provide students with in depth knowledge on software quality assurance components, software testing and its test process. The course covers the basic principles of software quality assurance, software testing and test activities that include the test plan, test design,



monitoring, implementation and test closure. The students will also learn various categories of test design techniques and methods used in both black-box and white-box testing. At the end of this course, students should be able to recognize various types and levels of testing as well as categorizing and applying software testing process and techniques. The students should also be able to do work effectively in a team and lead the team in the test activities throughout the software testing life cycle.

SECJ3032 Software Engineering Project I

Pre-requisite: SCSE2243 Application Development Project I

This is the first part of a 2-part Final Year Project that every student must fulfil successfully. Students are introduced to the methodologies of research and application development through a series of lectures. Students are guided through a step-by-step practice to complete the initial stages of proposal, planning and design of a project. Students must also meet regularly with supervisor(s) who will monitor their continuous progress. Students are required to prepare a report and present their initial work.

SCSE3223 Application Development Project II

Pre-requisite: SCSE2243 Application Development Project I

Application Development Project II provides a capstone design experience course for students to integrate software engineering knowledge and skills acquired in previous courses. This course requires student to investigate community needs and solve the related problems in team. Team based approach integrates knowledge and skill of problem formulation, requirements engineering, architecture, design, implementation, software process and management of a software development to solve a real-world community problem. A combination of teamwork and individual work is required.

SCSE3233 Professional Practise in Software Engineering

Pre-requisite: SCSE1203 Software Engineering Principles

This course exposes students to the professional practice in software engineering. It covers professionalism and its relationship with career development. The course also focuses on



professional ethic in relation to software development by software engineers. It also equips students with the required skills when working in groups or teams including communication. Students will also understand and apply safety in design practice along with legal system such as intellectual property and how to produce a sustainable design as software engineers. This course will incorporate a work-based learning approach where students will have some sessions with the industrial partners.

SCSE4108 Industrial Training (HW)

Pre-requisite: 92 credits CGPA >2.0 SCSE 3242 Software Engineering Project I

Industrial Training refers to the placement of a student at an organization for a minimum of 20 weeks to elevate students' knowledge and skills in a specific database profession and at the same time produce graduates who are credible, creative and proficient. This course aims to provide a platform for the students apply their knowledge learned in the university and boost their skills which needed by a profession. It is also intend for the students to gain exposure in every aspect of real career life. The students will be evaluated based on two components; 1) student performance evaluation by organisation supervisor and 2) student performance evaluation by faculty supervisor. The organization supervisor is expected to assess the student performance based on work performance and students personality. The assessment by faculty supervisor more focusing on students' generic skills.

SCSE4114 Industrial Training Report

Pre-requisite: 92 credits CGPA >2.0 SCSE 3242 Software Engineering Project I

Industrial Training Report refers to the placement of a student at an organization for a minimum of 20 weeks to experience and apply their theoretical knowledge in the industrial training. The students will be evaluated based on four components; 1) technical report, 2) oral presentation, 3) log book and 4) ethics. The aim of the technical report is to educate the students in producing related technical report and able to explain a specific detail on the tasks that have been done during the training. Students need to follow specified format in writing the technical report and submit it within the predetermined date. The students are required to present their training achievement to Industrial Training supervisors



(organization and supervisor). Students need to fill in the online log book daily for the purpose of close monitoring between the students and supervisors. Student also needs to practice the good ethical values and work conduct throughout the training. The passing mark is 60%.

SCSE4214 Software Engineering Project II

Pre-requisite: SCSE3242 Software Engineering Project I

This is the second part of a 2-part Final Year Project that every student must fulfil successfully. In this installation, students are required to execute the next phases of their development plan from Part1. Students are now required to code and integrate the different modules that make up the proposed project. Students will test the developed modules and the final fully-integrate project following software development and research testing who will monitor their continuous progress. Students are required to prepare a report and present their final work.

ELECTIVE COURSES

YEAR 2 - SEMESTER 2 (CHOOSE 1)

SCSB2103 Bioinformatics I

This course introduces the basic knowledge of Bioinformatics to students. It includes theories, applications, and tools. Introduction to Bioinformatics describes bioinformatics theories and tools that can help solve biological problems. It also shows how to efficiently apply bioinformatics applications to bioinformatics data and evaluate the resulting information.

SCSP2753 Data Mining

This subject presents a comprehensive introduction to the understanding of knowledge discovery process in databases. Such methodological understanding is important to tackle projects of all sizes. A number of data mining techniques with its algorithms are explained.



Students explore into the application of these techniques in both lab and industry. Students could apply the knowledge learnt to solve real world problems.

SCSP3213 Business Intelligence

This course focuses on business intelligence to support a wide variety of management tasks in the industry. Students learn to create business intelligence solutions, utilizing data mining methods, and applying intelligence techniques for industrial decision support. Students will involve in projects to learn the start-of-art techniques for business advantages.

YEAR 3 – SEMESTER 1 (CHOOSE 3)

SCST3223 Data Analytic Programming

This course introduces the use of any available open source programming language specifically for Data Science (current trend is Python). Students will learn about powerful ways to store and manipulate data to do data analysis. The course is divided into two parts. In Part 1, students will learn general programming practices and tools. Part 2 will focus more on data analysis, studying statistical techniques, machine learning and presentation of findings.

SCSM3113 Virtual and Augmented Reality Application

This course will introduce students to virtual reality and augmented reality principles and practices. It emphasises on the process of AR/VR interface design and application development. It describes in detail the taxonomy, basic concepts, methods and techniques to enable the VR/AR technologies. Student will learn how to develop AR and VR application and explore the current technologies. Students will develop the basic flow of user interaction for AR and VR using Unity3D software.

SCSE3203 Special Topics

This course provides students with current issues related to software engineering in general and specifically in software development life cycle that includes planning, analysis, design,



implementation, and maintenance. The key objective of this course is to equip the students with the knowledge in current issues mainly the current trend and technology in industry. Based on the given problems, the students should argue and think critically what could be other alternatives besides the current solutions.

SCSE3103 Cognitive Computing

This course introduces students to the fundamentals of cognitive computing. The subject matter focuses on simulating human thought processes in a computerized model. Using self-learning algorithms that use data mining, pattern recognition and natural language processing, the computer can mimic the way the human brain works. this course emphasizes on theoretical and practical aspects of various machine learning algorithms related to represent the cognitive capabilities in computational technologies. The course features practical implementations through assignments undertaken both individually and in groups.

SCSE3143 Ubiquitous Computing

Computing technology, which is also known as Pervasive Computing. Ubiquitous Computing is the result of computer technology advancing that is, computing devices are becoming progressively smaller, more powerful and more connected and this has brought with it a trend toward artifacts having hardware and software embedded within them. These devices can be embedded into cars, airplanes, ships, bikes, posters, signboards, walls and even clothes. This course focuses on the understanding elements involved in designing and building Internet of Things and embedded systems-based Environments. It thus covers independent information devices including but not limited to wearable computers, mobile phones, smart phones, smartcards, wireless sensor-compute nodes etc. and the services made available by them in typical everywhere computing environment. It includes select aspects of human-computer interaction and real-time software design.

SCSR3113 Cloud Computing

This course presents a top-down view of cloud computing, from applications and administration to programming and infrastructure. Its main focus is on parallel programming



techniques for cloud computing and large scale distributed systems which form the cloud infrastructure. The topics include: overview of cloud computing, cloud systems, parallel processing in the cloud, distributed storage systems, virtualization, security in the cloud, and multicore operating systems. Students will study state-of-the-art solutions for cloud computing developed by Google, Amazon, Microsoft, Yahoo, VMWare, etc. Students will also apply what they learn in one programming assignment and one project executed over Amazon Web Services.

YEAR 4 – SEMESTER 2 (CHOOSE 2)

SCSB3203 Programming for Bioinformatics

This course provides students with the fundamental skills for programming in bioinformatics. It starts with introducing students to the command line environment in the Unix/Linux operating system. This will include broad coverage of Unix/Linux utilities as well as shell scripting. This course will then use the Python programming language to illustrate the fundamentals of bioinformatics programming. This course will focus on solving real-world biological problems using bioinformatics algorithms and approaches utilizing Unix/Linux shell scripts as well as Python programming. This course helps students to generate leadership, autonomy, and responsibility skill during problem-solving using bioinformatics analysis.

SCSJ5103 Secure Software Engineering

This course provides the principles of Secure Software Engineering and practical methods to secure requirements, design, implementation, testing, deployment and maintenance in software development. Students will also review policy specific requirements necessary to implement a secure development program within enterprise organizations. The students will also be able to understand software vulnerability, and how to evaluate, and address security risks to software.



SCSP5013 Advanced Analytics for Data Science

Pre-requisite: MCSD1113/MCSD102 Statistic for Data Science

This course provides a solid or advanced understanding of the use of the analytics approach in the examination of data or content to discover deeper insights, make predictions or generate recommendations using sophisticated techniques and tools on real-world problems. Students will learn descriptive analytics using advanced tools to gain insight into the past. Students will also acquire an understanding of predictive analytics using statistical and machine learning techniques to understand the future outcome. Prescriptive analytics provides knowledge in simulation and optimization to quantify the effect of future decisions to advise possible outcomes before a decision is made. The analytical abilities to be acquired by students in this course are to reliably select analytic techniques or methods and specify steps involve in the analysis process and interpret analytically the results obtained from data analytics techniques or tools. At the end of the course, students should be able to implement and apply the knowledge of analytical techniques or tools in real-world problems and be able to make informed decisions or recommendations through analytical interpretations of results.

SCSP5023 Big Data Management

This course provides a fundamental and related skill of data management. The learner will learn various structured and unstructured/semi-structured data modelling. This course also exposed the learner to the technical aspects on SQL and NO-SQL databases including the query language for data manipulation. Further, students will learn the core principle in big data technology and architecture and how it can be implemented and design for big data system.

SCSP5033 Business Intelligence and Analytics

Business intelligence and analytics refers to the solutions implemented by enterprises such as businesses, non-profits and governments using data to gain insights for making better decisions. Business intelligence and analytics is applied in operations, marketing, finance and strategic planning among other functions. The ability to use data effectively to drive rapid,



precise and profitable decision has been critical strategic advantages for companies. With the increasing availability of broad and deep sources of information-so called “Big data”-business intelligent and analytics are becoming an even more critical capability for enterprises of all types and all sizes to identify trends and understand the information that can drive business change and support sustained successful business.

SCSP5063 Statistic for Data Science

This course provides a fundamental concept in statistics for data-science. Students will learn statistical inference including estimation, hypothesis testing and nonparametric tests. Further, students will be introduced to Bayesian inference, linear regression and classification. R will be used to apply these statistical methods. At the end of the course, students should be able to apply the statistical methods to real large data sets.

SCSR4453 Network Security

This course introduces the core security concepts and skills needed to monitor, detect, analyse, and respond to cybercrime, cyberespionage, insider threats, advanced persistent threats, regulatory requirements, and other cybersecurity issues facing organizations. Students will gain practical, hands-on skills needed to maintain and ensure security operational readiness of secure networked systems.

SCSR4973 Computer Network & Security Special Topics

Internet of Things (IoT) is a new concept of connecting things surrounding us to the internet. Students are expected to have strong knowledge on computer network and internetworking prior taking this course. The course review on elements and architecture of IoT, discuss on application and implementation of IoT, and unfold the design challenges and future trends of IoT. Laboratory experiments provide hands-on experience with the simulator software and portray examples of real-world application through simulation.



SCSR5013 Cryptographic Engineering

This subject is a continuation from the introductory cryptography. All networked computers and devices must have cryptographic layers implemented, and must be able to access to cryptographic functions in order to provide security features. In this context, efficient (in terms of time, area, and power consumption) hardware and software structures will have to be designed, implemented, and deployed. Discussion and analysis on how to resist cryptanalytic attacks by protecting access to primary (communication) and secondary (power, electromagnetic, acoustic) channels. Learn the algorithms, methods, and techniques in order to create latest cryptographic embedded software and hardware using common platforms and technologies. In addition to that, Ethical issues in Cryptography are discuss.

SCSR5023 Digital Forensics

This course takes a detailed approach to the use of computers and computer technology in the investigation of incidents, both criminal and civil, in which computer technology play a significant or interesting role. Students completing this course will be familiar with the core computer science theory and practical skills necessary to perform elementary computer/digital forensic investigations, understand the role of technology in investigating computer based crime, and be prepared to deal with investigative bodies at an elementary level.

SCSR5033 Information Security Assurance and Risk Management

The course is aimed at imparting knowledge and skill sets required to assume the overall responsibilities of administration and management of security of an information system. This course covers issues related to administration, management, and governance of security of information systems. Topics include auditing and data management, risk management (risk identification, risk analysis, risk control), contingency planning, incident handling and risk governance. The course will study in detail principles and tools related to these topics. The course will also cover security standards, evaluation and certification process, security planning, ethical and legal issues in information and privacy.



MJIIT

GENERAL COURSES



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MATHEMATICS COURSES

SMJG 1113 Engineering Mathematics

This course provides a solid foundation in engineering mathematics, covering key topics such as matrices, vectors in three-dimensional space, complex numbers, parametric equations, and polar coordinates. Students will explore further transcendental functions, including hyperbolic and inverse trigonometric functions, with emphasis on their differentiation and integration using various techniques. The course also introduces improper integrals, vector operations with applications to geometry, and multiple methods for solving systems of linear equations. Throughout the course, students will develop analytical skills by applying mathematical concepts to solve engineering-related problems.

SMJG 1123 Differential Equations

This course introduces the fundamental concepts and techniques of differential equations, including terminology, classifications, and the formation of equations. It covers first-order ODEs such as separable, homogeneous, linear, exact, and Bernoulli equations, along with direction fields, phase lines, and stability. Students will study the theory of linear ODEs, including existence and uniqueness, the Wronskian and general and particular solutions of homogeneous and non-homogeneous equations. Higher-order linear ODEs with constant coefficients are solved using characteristic equations, undetermined coefficients, and variation of parameters. The course also includes Laplace transforms, inverse transforms, step and delta functions, and solutions to initial value problems. Fourier series for periodic functions, including even, odd, and half-range expansions, are also covered.

SMJG 2133 Engineering Statistics

This course introduces key statistical methods for engineering applications. Topics include data classification, graphical data presentation and measures of central tendency and variability. Students will explore probability concepts, counting rules, and probability distributions such as binomial, Poisson, and normal. The course covers sampling distributions, estimation, hypothesis testing, linear regression, correlation, and basic quality



control techniques including control charts and process capability. Emphasis is placed on applying statistical tools to solve real-world engineering problems.

SMJG 2143 Numerical Methods

This course introduces essential numerical techniques used in engineering analysis. Topics include error analysis, solutions of nonlinear equations such as bisection, false position, and Newton-Raphson methods. The course also covers solving systems of linear equations using Gauss Elimination, Gauss-Jordan, and LU Decomposition. Students will learn iterative methods such as Gauss-Seidel, polynomial interpolation using Newton's and Lagrange's methods, numerical differentiation, and numerical integration through Trapezoidal and Simpson's rules. The course concludes with the numerical solution of ordinary differential equations using Euler and Runge-Kutta methods.

MJIIT NINGEN-RYOKU COURSE

SMJG 2243 Ningen-Ryoku (Professional Ethics, Safety & Health)

This course is designed to equip engineering students with essential knowledge of professional ethics, environmental responsibility, safety and health standards, and the evolving roles of engineers in society. It covers pathways within the engineering profession and routes to professional registration with BEM, IEM, and international bodies. Key focus areas include environmental ethics and sustainability, occupational health and safety, and engineering ethics. In addition, students will explore contemporary professional practice topics such as engineering consultancy and risk management, intellectual property, and entrepreneurship. The course adopts a project-based learning approach, integrating real-life case studies to reinforce ethical engineering practices. By the end of the course, students will be able to identify basic safety and health considerations in engineering settings, recognize fundamental professional engineering responsibilities and demonstrate awareness of ethical principles in research and innovation contexts.



INDUSTRIAL TRAINING

SMJG 3806 Industrial Training

This course provides students with work-based learning in industrial settings related to their engineering discipline for a period of 12 weeks. Industrial training serves as a training ground for students to develop their interpersonal and communication skills effectively along with an opportunity to exercise professional ethical values in a real working environment. An industrial report should be prepared at the end of the training. The report is expected to demonstrate the development of practical and professional skills in engineering through technical experience and application of theoretical knowledge from the university. Students should seek advice from their industry supervisor to ensure that no confidential material is included in the report.

ENGINEERING ECONOMIC AND PROJECT MANAGEMENT

***FOR SMJMH AND SMJEH**

SMJG 3243 Engineering and Project Management

This course aims to provide a thorough understanding of the fundamental knowledge of project management theory and principles. It begins with the reviewing of the evolution of the management theory and the influence of the various schools of thought in management. The issues and challenges faced by the contemporary managers will be discussed within the current business environment context. Then the focus will be shifted to the project management environment. This course is conducted within the context of nine areas of knowledge as stipulated in PMBOK or PRINCE2. The course will relate how the underlying principles of management theory are being applied to the project management perspective at the various phases of its life cycle. Major constraints of time cost quality in the project management environment will be elaborated. The elements of project management critical to the success of a project also are identified and explained.



FINAL YEAR PROJECT

SMJG 4912 Undergraduate Research Methodology

This course equips students with the essential knowledge and skills to conduct engineering research, focusing on solving complex engineering problems through systematic inquiry and critical analysis. The course covers the formulation of engineering research problems, construction of synthesis matrix, literature review, research design and methodology development, data collection and analysis, and research proposal writing. Students are guided to evaluate the broader sustainability, societal, legal, and economic impacts of engineering research outcomes. Delivered through research-led and experiential learning, the course emphasises active inquiry, critical evaluation, and exposure to real-world engineering research practices. The course integrates the Teaching-Research Nexus, Emerging Technology for a Future-Oriented Curriculum (FOCu) and Research Infused Experiential Learning (REAL Level 4) to enhance research skills and innovation. By the end of the course, students will be able to formulate and design structured research approaches for complex engineering problems, synthesise current knowledge, and propose solutions with well-considered sustainability and societal impacts. They will also enhance their ability to communicate research effectively and engage in lifelong learning.

SMJG 4926 Final Year Project

This research-based course is designed for final-year students to conduct a supervised research project within their specialisation area independently. It serves as the culmination of the chemical engineering program, emphasising academic rigour and research competence. Students undertake analytical, experimental or simulation-based investigations at their respective i-Kohza laboratories under the guidance of an academic supervisor and senpai. The project scope includes literature review, problem formulation, research design, data collection, analysis, and interpretation. Progress is regularly discussed with supervisors and peers, leading to a comprehensive project report and oral presentation. The course integrates the Teaching-Research Nexus, Emerging Technology for a Future-Oriented



Curriculum (FOCu) and Research Infused Experiential Learning (REAL Level 4) to enhance research skills and innovation. The course follows a research-oriented learning approach, where students engage in hands-on research under academic supervision and participate in scholarly discussions with i-Kohza members. Upon completion, students will be able to independently conduct research, critically analyse results, and communicate their findings through formal reporting and presentations. They will also demonstrate project management skills and adherence to academic and professional integrity throughout the research process.

JAPANESE LANGUAGE COURSES

Students are required to take all the Japanese Language Courses. It comprises a total of 6 credits, as followed:

Japanese Language Courses	Total Credit
*Japanese for Communication I	2
Japanese for Communication II	2
Japanese for Communication III	2

UHLJ 1122 Japanese for Communication I

This course is designed to introduce basic Japanese Language through integrated grammar and focus on the four language skills namely; speaking, writing, reading and listening. The students will intensively learn to pronounce through drilling activity in class. Basic greetings in daily life and sentence structures will be introduced in a progressive manner. Students will also have substantial practice in oral communication through in-class tasks and



activities. These tasks and activities will enhance students' confidence to converse in Japanese Language adequately.

**Offered by School of Undergraduate Study (UGS)*

SHUJ 2252 Japanese for Communication II

The course is a progression from Japanese for communication I. The course will introduce Kanji, additional grammar and sentence construction to expand students' basic language skills of reading, writing, speaking and listening. The syllabus ranges from the basic Japanese structures to cultured information. The course will employ more active and entertaining activities by students in groups, in the classroom. Learning modules/textbooks, exercise books and CDs will be used during class. CDs will be used to reinforce their listening and speaking ability in class and after class. Japanese Affairs (culture/ethics/geography etc.) will be introduced and the student is required to adopt and practice good values and ethics from the lessons.

SHUJ 2352 Japanese for Communication III

The course is a progression from Japanese for Communication II. The course will introduce Kanji, additional grammar and sentence construction to expand students' basic language skills of reading, writing, speaking and listening. The syllabus ranges from the basic Japanese structures to cultured information. The course will employ more active and entertaining activities by students in groups, in the classroom. Learning modules/textbooks, exercise books and CDs will be used during class. CDs will be used to reinforce their listening and speaking ability in class and after class. Japanese Affairs (culture/ethics/geography etc.) will be introduced and the student is required to adopt and practice good values and ethics.



UNIVERSITY

GENERAL COURSES



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GENERAL COURSES

Undergraduates are required to register for the university general courses during their study. The courses are categorized as follow:

Cluster	University General Courses	Total Credit
1	Malaysia Core Value ULRS 1122 Malaysian Nation-State Aspiration ULRS 1042 Philosophy and Current Challenges <i>*For Local Students</i> ULRS 1132 Malaysian Citra UHLM 1012 Malay Language for Communication 2 <i>*For International Students</i> ULRS 1032 Integrity and Anti-Corruption <i>*For Local & International Students</i>	6
2	Innovation and Leadership Skills ULRS 3032 Entrepreneurship & Innovation	2
3	Communication Skills UHLB 1112 English Communication Skills (HW) <i>*Credit exemption for MUET Band 4.0 and above</i> UHLB 2122 Professional Communication Skills 1 UHLB 3132 Professional Communication Skills 2 UHLX 1112 Foreign Language for Communication Electives	6
4	Global Citizen ULRS 2XX2 Service Learning & Community Engagement Courses	2
TOTAL		16



STRUCTURE FOR UNIVERSITY GENERAL COURSES

Malaysia Core Values	Innovation and Leadership Skills	Communication Skills	Global Citizen
6 CREDITS	2 CREDITS	6 CREDITS	2 CREDITS
Local Student - ULRS 1122 Malaysian Nation-State Aspiration - ULRS 1042 Philosophy and Current Challenges - ULRS 1032 Integrity and Anti-Corruption International Student - ULRS 1132 Malaysian Citra - UHLM 1012 Malay Language for Communication 2 - ULRS 1032 Integrity and Anti-Corruption	ULRS 3032 Entrepreneurship and Innovation	- UHLB 2122 Professional Communication Skills 1 - UHLB 3132 Professional Communication Skills 2 - UHLX1112 Foreign Language for Communication Electives	ULRX2XX2 Service Learning & Community Engagement Courses



CLUSTER 1: MALAYSIA CORE VALUE (6 CREDITS)

For Local Students

ULRS 1122 Malaysian Nation-State Aspiration

This course explores the fundamentals of the formation and development of the Malaysian nation-state, with emphasis on the elements of nationhood, the history of ethnic interactions, and the uniqueness of Malaysian society. The course also discusses theoretical frameworks of unity, the concept of the nation-state, and the vision of the Bangsa Malaysia Idaman, grounded in the values of the Rukun Negara, Vision 2020, Malaysia Madani, and other national initiatives. In addition, the course exposes students to current realities, including territorial and regional sentiments, as well as the challenges of building a harmonious and inclusive society. Emphasis is also placed on the influence and impact of technology and climate change on sustainable development aspirations, particularly the Sustainable Development Goals (SDGs). The teaching and learning (T&L) activities of the course will strengthen students' understanding of Malaysia's aspirations as a progressive and tolerant nation, with emphasis on shared values such as goodwill, acceptance, harmony, and collective values.

ULRS 1042 Philosophy and Current Challenges

This course explains the fundamental principles and philosophical frameworks underlying the development of Malaysian society, with emphasis on key ideas such as the Rukun Negara, National Education Philosophy, Philosophy of Well-Being (Falsafah Sejahtera), and MADANI Philosophy. Philosophical analysis as a tool for thinking is introduced as a systematic intellectual approach to understanding and addressing various contemporary challenges. Through exposure to the key components of philosophical knowledge, students will be equipped to analyse contemporary issues and develop their critical and reflective thinking abilities. By the end of the course, students are expected to evaluate and formulate strategies based on philosophical approaches to address future challenges and, consequently,



contribute to the development of an inclusive, prosperous, and forward-looking Malaysian society.

For International Students

ULRS 1132 Malaysian Citra

This course provides a comprehensive introduction to Malaysia, encompassing its historical evolution, geographical diversity, cultural richness, and socio-political development. Students will explore the formation of modern Malaysia, its multicultural society, linguistic diversity, and unique traditions rooted in its varied ethnic and religious backgrounds. The course also highlights Malaysia's traditional arts and heritage, including elements recognized by UNESCO. Students will gain fundamental knowledge of Malaysia's political and administrative systems, including its federal structure and constitutional monarchy. In addition, the course examines Malaysia's economic transformation, key industrial sectors, and current challenges in the context of digital and sustainable development. Emphasis is also given to Malaysia's position as an international tourism hub, as well as its global achievements in diplomacy, sports, and trade. The final part of the course focuses on Malaysia's future prospects, particularly in relation to smart cities, climate change, youth engagement, and innovation. Through this course, students will develop a holistic understanding of Malaysia's national identity and its evolving role on the global stage. Teaching and learning approaches, including experiential learning, lectures, and assignments, enable students to acquire knowledge while appreciating the realities of life in Malaysia.

UHLM 1012 Malay Language for Communication 2

This course aims to train students to communicate in basic Malay in everyday life. Students will be exposed to spoken and written English easily. Students will be exposed to basic Malay spoken and written. At the end of the course, students are expected to be able to communicate and write simple sentences effectively.



For Local & International students

ULRS 1032 Integrity and Anti-Corruption

This course aims to serve the need of the students to understand and apply the attribute of UTM graduate skills. The course guides students in developing basic communication skills, thinking skills, scholarship skills, teamwork skills, adaptability skills, global citizen skills and enterprise skills to prepare themselves for real world practices. In this course, students will be assessing through debate, case study, group portfolio and projects based learning that requires them to utilize the related skills.

CLUSTER 2: INNOVATION AND LEADERSHIP SKILLS (2 CREDITS)

ULRS 3032 Entrepreneurship and Innovation

This course aims to serve the need of the students to understand and apply the attribute of UTM graduate skills. The course guides students in developing basic communication skills, thinking skills, scholarship skills, teamwork skills, adaptability skills, global citizen skills and enterprise skills to prepare themselves for real world practices. In this course, students will be assessing through debate, case study, group portfolio and projects based learning that requires them to utilize the related skills.

CLUSTER 3: COMMUNICATION SKILLS (6 CREDITS)

Students must accumulate four (4) credits of English Language courses and additional two (2) credits of Foreign Language courses during their study. Each course is taught for two hours per week and the focus is on developing basic skills in reading, writing, listening and speaking using different languages, science and technology materials.



ENGLISH COMPULSORY COURSES

UHLB 1112 **English Communication Skills**

This course emphasizes the four language skills. It focuses on developing students' productive and receptive skills through student-centred activities in academic situations. This includes reading academic texts, listening for main ideas and details, taking notes, writing clearly and coherently, and participating in oral presentation and class discussions. Additionally, enrichment grammar activities are also incorporated to integrate the skills and knowledge. At the end of this course, students should be able to use the English language in daily and academic activities.

**Credit exemption for MUET Band 4.0 and above*

UHLB 2122 **Professional Communication Skills 1**

This subject prepares students for advanced academic communication in English with emphasis on oral communication skills. Students will be assigned projects that require them to look for and extract relevant information from various sources. In the process of completing the projects assigned, students will put into practice various skills developed in the earlier subject as well as skills in collecting data through interviews and questionnaire surveys, integrating and presenting information (in oral and written form), time management and group interaction. The various oral activities such as presenting a proposal of the project, giving a briefing on the progress of the report and presenting the completed report are designed to build students' oral communication skills and confidence in expressing themselves, i.e. skills that are much needed in their studies and career.

UHLB 3132 **Professional Communication Skills 2**

This course aims to introduce and expose students to the basic principles of communication at the workplace. Students will be given the opportunities to practice effective meeting and discussion skills in formal and informal communicative events and read and write appropriate workplace related documents. Students will also be exposed to situations where they learn



to function as individuals and team members and interact verbally and nonverbally with appropriate language, style and gestures.

FOREIGN LANGUAGE FOR COMMUNICATION ELECTIVE

UHLJ 1122 Japanese for Communication I

This course is designed to introduce basic Japanese Language through integrated grammar and focus on the four language skills namely; speaking, writing, reading and listening. The students will intensively learn to pronounce through drilling activity in class. Basic greetings in daily life and sentence structures will be introduced in a progressive manner. Students will also have substantial practice in oral communication through in-class tasks and activities. These tasks and activities will enhance students' confidence to converse in Japanese Language adequately.

**Please refer to Page 250*

CLUSTER 4: GLOBAL CITIZEN (2 CREDITS)

ULRX2XX2 Service Learning & Community Engagement Courses

The rules are applicable for students who are studying in the full-time programs at the University:

- 1) The total number of credits for the Bachelor's Degree program is two (2).
- 2) Course registration:
 - (i) Students shall register for courses every semester within the specified Course Registration Period.
- 3) Credit transfer (credit exemption)
 - (i) Credit transfer for co-curricular courses shall be permitted only for students who are graduates of UTM Diploma programmes.





UTM
UNIVERSITI TEKNOLOGI MALAYSIA



UNDERGRADUATE (UG) ACADEMIC GUIDELINES 2026 / 2027

MALAYSIA-JAPAN INTERNATIONAL INSTITUTE OF TECHNOLOGY

SEMESTER SYSTEMS & GUIDELINES



utmmjiit_official

<https://mjiit.utm.my>

Academic Advisory System

Students will be divided into several groups and one academic staff will be appointed as an academic advisor for each group to ensure maximum advantages to the students. The objectives of this system are:

- (i) To guide and assist students in adapting themselves to the academic system of the University, especially at the initial stage.
- (ii) To advise students in solving academic related matters such as workload, selection of courses and to explain the aim and purpose of the courses.
- (iii) To identify and provide counselling to problematic students as well as to develop a balanced character and positive attitude among students.
- (iv) To act as a link between students and MJIT

With various services and facilities provided, the faculty expects students to be responsible in their study plan. The academic advisor should not be held responsible for the students' failure in completing their study on time. The students are advised to consult their academic advisor for the following matters:

- (i) To obtain information on the semester system and other matters related to their study, during the first week of each semester.
- (ii) To obtain endorsement for registration or withdrawal of courses.
- (iii) To seek advice in planning for their study, particularly in terms of course selection, total number of credits and duration of study.
- (iv) To obtain endorsement for the application of graduation award.



MJIT Students Labelling / Group Identification

Each batch will be identified by their program and their enrolment year.

1	Year
S	Bachelor Degree
M J	Faculty
E	Program
H	With Honours

Example: **2 S M J E H**

2	S	MJ	E	H
2 nd Year	Bachelor	MJIT	Electronic System	With Honours



Academic Year

The University Academic Year is divided into two regular semesters, namely Semester I and Semester II. Each semester consists of 14 weeks of lectures, as shown in the table below. The University also offers a short semester between the academic year. The short semester is not included in the total number of semesters.

**Please refer to (E)*

SEMESTER I

Lectures	14 weeks
Mid Semester Break	1 week
Study Break	1 week
Final Examinations	2 weeks
Total (A)	<u>18 weeks</u>
End of Semester Break (B)	<u>5 weeks</u>

SEMESTER II

Lectures	14 weeks
Mid Semester Break	1 week
Study Break	1 week
Final Examinations	2 weeks
Total (C)	<u>19 weeks</u>



- (ii) The registration of the courses for the upcoming semester must be made by the students during an allocated time within their current semester that will be announced by the undergraduate office.
- (iii) Students must register with the correct course codes and section number.
- (iv) Students can only register for the courses approved by the MJIT.
- (v) Students are responsible to amend any error in the course registration slip within the stipulated period.
- (vi) Registration of *HS* Course (Hadir Sahaja - HS)
 - (a) Students are allowed to register for not more than two (2) courses with HS status per semester with permission or direction by the faculty.
 - (b) The credits for courses registered under HS status are not included in the calculation of GPA and CGPA. However, students who register for the HS courses must meet the attendance requirement and complete all assignment and coursework given by the lecturer.
 - (c) The registration of HS courses will appear in the examination results and in the students' transcript, provided that item (vi)(b) above is fulfilled.
- (vi) Withdrawal of Courses (*Tarik Diri* – TD)
 - (a) With the approval of the course lecturer and the verification of the academic advisor, students can apply to withdraw from any registered course no later than Friday of week eight (8) of the respective semester.
 - (b) The course withdrawal is subject to the minimum credit for the semester, unless approval is obtained from the Dean.
 - (c) A 'TD' status will appear in the course registration record, result slip and transcripts for the withdrawn course.



Credit Scheme

Each course has a credit value to signify the importance, learning time and the nature of the course. The credit value of courses may vary depending on the nature of courses as shown in the following table:

Credit value

Type of meeting	Total of meeting hours per semester	Credit value	Student learning time per credit
Lecture	14	1	40
Practical / Studio/ Project / Site Work	28 to 40	1	40

Credit Load Per Semester

- (i) All full-time students, except those with Conditional Status (Kedudukan Syarat - KS) or those in the final two (2) semesters must register for no less than the Minimum Credit requirement that is 12 credits per semester, inclusive of HS and HW courses. However, if the student is in the final two semesters, credits number less than minimum credits is allowed.
- (ii) Students who would like to register for more than eighteen (18) credits must obtain approval from the Dean. However, students are not permitted to take more than twenty (20) credits in any semester.
- (iii) A student with a KS status is allowed to register between **nine (9) to twelve (12) credits only** for the following semester. Their pre-registration of courses will be cancelled and they must re-register within a specified time.



Credit Earned

- (i) Credit Earned is defined as credit of the Passed course including the Compulsory Attendance (HW) course but not the Audit (HS) course.
- (ii) For students who are given Credit Transfer, the Credit Earned is the sum of the total transferred credit and the Passed credit.

Credit Counted

Credit Counted is the credit taken in the current and in all semesters which are used to calculate the GPA and CGPA, respectively. The credit of the HS and HW courses are not included in the Credit Counted.

Vertical Credit Transfer

- (i) Vertical credit transfer can be given to students who have diplomas and degrees (of similar level) recognized by the Senate.
- (ii) The limit of vertical credit transfer that may be granted cannot exceed 30% (or according to the percentage set by the relevant Professional Bodies) of the total number of credits required for the award of a degree.
- (iii) Applications for vertical credit transfer should be made after programme registration within 2 weeks of the first semester starts.
- (iv) Only courses with a minimum grade C can be considered for vertical credit transfer. The faculty may specify a higher minimum grade (if necessary).
- (v) Students are not allowed to register for a course that has been granted a vertical credit transfer. If students still register, they must withdraw the course (Tarik Diri, TD).
- (vi) Vertical credit transfer is not allowed from a higher level to a lower level programme.



- (vii) Vertical credit transfer is not allowed for any course in a minor programme.
- (viii) Vertical credit transfer will be re-evaluated if there is a change in a student's programme.
- (ix) No Vertical Credit Transfer is allowed for programmes which have been undertaken and have obtained a degree in the same field and level from other Institute of Higher Learning (IHLs).
- (x) The number of semesters that can be used is subject to the amount of approved vertical credit transfer as shown in Table below.

Total No. of Vertical Credit Transfer	Maximum Duration (Semester)
<20	(1.5 x regular duration) - 0
20-33	(1.5 x regular duration) - 1
34-50	(1.5 x regular duration) - 2
51-60	(1.5 x regular duration) - 3

Horizontal Credit Transfer

- (i) Students who are taking courses through student mobility programme at other IHLs recognised by the Senate can apply for Horizontal Credit Transfer.
- (ii) The course that is given the horizontal credit transfer is a course that has been approved by the faculty before the students join the mobility programme.
- (iii) There is no limit to horizontal credit transfer between programmes within the University.
- (iv) Students from other IHLs in Good Status (KB) may be considered for horizontal credit transfer at the University



- (v) The limit of horizontal credit transfer allowed from other IHLs is not more than 50% of the total credit for graduation. Total vertical and horizontal credit transfer must not be more than 80% of the total credit for graduation.
- (vi) Horizontal credit transfer will be re-evaluated if there is a change in a student's programme.
- (vii) Students are required to register all the courses to be transferred within the first two weeks of the current semester.
- (viii) Students returning from mobility programmes should inform the faculty of the grade obtained for all of the courses they enrol in as soon as they receive the results from the IHL.
- (ix) For the same programme, horizontal credit transfer can be considered for Good Status (KB) students who withdraw from study. This is subject to a period not exceeding three (3) years from the date of withdrawal. The original record of the student is retained and the number of semesters that can be used is the balance of the predetermined number of semesters. This process can only take place once during the course of study for the programme.
- (x) As per Item (ix), for a different programme, the number of semesters that can be used is subject to the amount of approved horizontal credit transfer as shown in table below:

Total No. of Horizontal Credit Transfer	Maximum Duration (Semester)
<20	(1.5 x regular duration) - 0
20-33	(1.5 x regular duration) - 1
34-50	(1.5 x regular duration) - 2
51-60	(1.5 x regular duration) - 3



Students who opt to use the horizontal credit transfer facility must fulfil the period of residence of at least TWO (2) regular semesters at the University.

Students may apply for a horizontal credit transfer through APEL(C) without bringing a grade. The maximum credit is subject to 30% of the total credit for graduation

Students may apply for horizontal credit transfer for MOOC and microcredential (MC) courses provided that they pass a qualification test set by the University for the course. The maximum number of credits is subject to 30% of the total credit for graduation.

Approved Horizontal Credit Transfer will be taken into account in the calculation of student's GPA and CGPA.

Students are not allowed to spend their final semester at another IHL using the Horizontal Credit Transfer facility unless they obtain consent from the Senate.

Only students with an active registration status are eligible to opt for the Horizontal Credit Transfer.

Assessments and Grade

A student's performance in any course is reflected by the grades obtained. The relationship between marks, grades and credit points is shown in the table below:

The Relationship Between Marks, Grades and Credit Points

Marks	Grade	Value Point
90 – 100	A+	4.00
80 – 89	A	4.00
75 – 79	A-	3.67
70 – 74	B+	3.33
65 – 69	B	3.00
60 – 64	B-	2.67



55 – 59	C+	2.33
50 – 54	C	2.00
45 – 49	C-	1.67
40 – 44	D+	1.33
35 – 39	D	1.00
30 – 34	D-	0.67
00 – 29	E	0.00

The passing grade for any course is set by the Faculty upon the Senate’s approval. Generally, D+ is the minimum passing grade.

Failed Courses

Students who fail any core courses or general courses must repeat the course at another semester and pass. For CGPA calculation, Counted Credit and the final grade will be recorded, while the Counted Credit and grade from the previous failed course will be removed from the student’s record.

For elective courses, if a student fails the course, students may choose to retake the course or choose another elective course and pass. If the student takes a different elective course, the previous failed course’s Counted Credit and grade will be retained in the student’s record. His final total credits will be more than the originally set graduation credits.

Students must make an effort to repeat any courses at the earliest opportunity, every time the course is offered by the faculty.



Final Examination

The final examination must be conducted within a specific time frame, according to guidelines set by the University.

Special Examination

A special examination can be conducted for cases as follows:

- (a) A student who cannot sit for the final examination due to illness that has been verified by a Medical Officer of the University or any Government Hospital. The mark for the special examination under this case will replace the final examination mark only, while the mark for the coursework remains the same.
- (b) A final semester student with a Good Standing (*Kedudukan Baik* – KB) status but fails one (1) course taken during any of his/her last two semesters, exclusive of the Industrial Training semester.
- (c) The special examination is given only once for a course in a particular semester, except with the permission of the Senate.
- (d) A student who fails to sit for the special examination will be given a zero (0) mark for the final examination.

A special examination cannot be conducted for cases as follows:

- (a) courses that do not have a final semester examination; or
- (b) students who did not sit for the final examination without a reason acceptable to the University; or



- (c) students whose attendance in all forms of course meetings is less than 80% of the total meeting time; or
- (d) students who failed due to disciplinary actions; or
- (e) students who did not retake the course when it was offered in that semester.

Academic Standing

A student's performance is assessed using both GPA and CGPA

$$\text{GPA} = \frac{\text{Total Credit Point of particular semester}}{\text{Total Credit Counted of particular semester}}$$

$$\text{CGPA} = \frac{\text{Total Credit Point value of all semesters}}{\text{Total Credit Counted of all semesters}}$$

A student's academic standing is determined at the end of every regular semester based on his/her CGPA is as shown below:

Academic CGPA

Standing	CGPA
Pass (KB)	$\text{CGPA} \geq 2.00$
Conditional (KS)	$1.70 \leq \text{CGPA} < 2.00$
Fail (KG) (Dismissal)	$\text{CGPA} < 1.70$

With approval from the Senate, a student who obtains a $\text{GPA} < 1.00$, but maintains a $\text{CGPA} > 1.70$ can:

- (i) continue his/her study; or
- (ii) be suspended in the following semester; or



(iii) be dismissed from the programme.

Students who obtained KS for 3 consecutive semesters will be given the status KG and terminated from the programme.

For more information on the academic status, please refer to the UTM Undergraduate Academic Guideline, 16th Edition, Part 6 (39-41).

UTM PROFESSIONAL SKILLS CERTIFICATE

The UTM PSC courses are non-credit courses offered to all UTM Bachelor's Degree students to enhance their skills and experience.

All students are required to take five (5) PSC courses, consisting of three (3) mandatory courses and two (2) elective courses, to graduate or as amended by the University.

More information on PSC can be found at the UTM undergraduate School website: <https://ugs.utm.my/utm-professional-skills-certificate-utm-psc/>

Computation of GPA and CGPA

Example of GPA calculation for first year student:

Semester 1

Course	Credit Counted (k)	Marks (%)	Grade	Grade Points (m)	Total Grade Points (k*m)
SMJE 1013	3	78	A-	3.67	11.01
SMJE 1023	3	72	B+	3.33	9.99
SMJE 1032	2	80	A	4.00	8.00
SMJM 1013	3	75	A-	3.67	11.01
UHLB 1412	2	89	A	4.00	8.00
UKQS 1**1	1	71	B+	3.33	3.33



SMJG 1012	2	80	A	4.00	8.00
	16				59.34

Total Credit Counted (TCC) = 16

Total Grade Points (TGP) = 59.34

GPA = $TGP = \frac{59.34}{16} = 3.71$; for Semester 1, CGPA = GPA

Example of CGPA calculation

Semester 2

Course	Credit Count (k)	Marks (%)	Grade	Grade Points (m)	Total Grade Points (kxm)
SMJE 1043	3	86	A	4.00	12.00
SMJE 1053	3	80	A	4.00	12.00
SMJE 1063	2	86	A	4.00	8.00
SMJM 1023	3	76	A-	3.67	11.01
UHLB 1**2	2	72	B+	3.33	6.66
UHAS 1152	2	86	A	4.00	8.00
UKQ* 1**1	1	90	A+	4.00	4.00
	16				61.67

Total Credit Counted (TCC) for Semester 2 = 16

Total Grade Point (TGP) for Semester 2 = 61.67

GPA for Semester 2 = $\frac{61.67}{16} = 3.85$

CGPA for semester 2 = $\frac{59.34+61.67}{16+16} = 3.78$

16+16



Award and Recognition

The Royal Academic Prize

The prize is contributed by the Office of the Keeper of the Royal Seal. The prize is awarded to one (1) Bumiputera and one (1) non-Bumiputera graduates who have obtained a First Class Degree and are actively involved in co-curricular activities. The prize includes cash of RM2,500, a certificate and a medal.

The Chancellor's Award

This award is bestowed to the best two (2) graduates who have obtained a First Class Honours Degree. The award consists of cash, a certificate and a medal.

The Vice-Chancellor's Award

This award is bestowed to the best graduate who has obtained a First Class Honours Degree from each faculty. The award consists of cash, a certificate and a medal.

The Alumni's Prize

The prize is given to the best graduate from each faculty. The prize consists of cash and a certificate.

The Academic Prize

The prize is given to the best graduate for each programme in each faculty. The prize is contributed by Statutory and Professional Bodies and Private Companies. The prize consists of cash, a medal and a book or Certificate of Appreciation.

The Dean's List

A student who obtains a GPA of 3.67 and above will be awarded a Dean's List Certificate, provided that he/she has registered for at least 12 credits for that semester excluding courses with HS and HW status. The remark "Dean's List" will be printed on the student's transcript.



Marzuki Khalid Award

This award is bestowed annually to the best MJIT graduates having high achievement in academic and co-curricular activities who obtained First Class Honours Degree. The award includes RM 1,000.00 and a certificate.



STUDENT'S AFFAIRS



1) VISA APPLICATION AND IMMIGRATION

The Immigration Department of Malaysia requires all International Students who have been offered to study at any local Institution of Higher Learning, to apply and obtain a valid student pass (visa) throughout their studies.

Application for student pass or enquiry on immigration related matters are managed by UTM International Office. Please be informed that the application only applies to registered students of UTM. Please contact UTM International Office at 03-4819 9092 / isckl@utm.my or walk-in to UTMKL Services Counter at Level 2 Menara Razak UTMKL for inquiry / further information.

2) MJIT LIBRARY

Operation Hours

Monday to Friday (8.00 am - 4.30 pm)

Closed on Saturday, Sunday and Public Holidays

Location

Level 2, MJIT building

You are able to borrow material from MJIT Library using your student card.

3) UTM KL LIBRARY (PERPUSTAKAAN SULTANAH ZANARIAH)

Operation Hours

Monday to Friday (8.00 am - 6.00 pm)

Closed on Saturday, Sunday and Public Holidays



SERVICES

Catalogue

- UTM Library OCEAN (WebOPAC) is a computerized online catalogue of the materials held in the library. OCEAN consists of an index of the bibliographic data catalogued in the system, offering a variety of search capabilities such as the author, title, call number, subjects, together with an interactive request and renewal functionality.
- For more information go to opac.utm.my

Borrowing & Returning

- For borrowing purposes, users must produce their UTM ID cards or library membership card.
- Materials can be borrowed or returned at all three campuses (Johor Bahru, Pagoh and Kuala Lumpur).
- You can borrow from other university libraries through the Inter Library Loan (ILL) services.
- The number and duration of loans depend on the category of users as stipulated by the library.
 - Undergraduate- 10 books / 2 weeks
 - Postgraduate - 20 books / 1 month
- Books can be renewed 2 times if there are no holds for the item
- Fines of overdue will still be charged if renewal is made after the due date.

Other Services

- Online Training
- Request Library Class - opening gateways to information
- Computer Facilities



- Online Databases - provide access to journal literature either by providing the full text of articles or to article references and abstracts.
- Topic Guides - starting points for finding resources in specific subject areas.

Additional Information

- Visit the library website at <https://library.utm.my/>
- View the handbook at <https://online.fliphtml5.com/rjlh/upuu/#p=1>
- Assistance Service Desk in each library: telephone 03-4819 9077 or email at lib-enquirykl@utm.my
- Study & Discussion Rooms Bookings - small rooms are provided at the library for group work or individual study.



4) STUDENT ACCOMMODATION

UTM Kuala Lumpur provides residential colleges that can accommodate up to 2500 students in one academic session. These colleges are located at Taman Setapak Jaya known as Kolej Siswa Jaya (KSJ) which is approximately 2 km from UTM Kuala Lumpur campus. For information, please contact 03-4819 9086 or email to zairul.kl@utm.my.

- **UTM HOTEL & RESIDENCE**

Located in the heart of Kuala Lumpur, with a spectacular view of KLCC, UTM Hotel & Residence offers convenient and well-equipped accommodation to students. For reservation, please contact 018-790 0879/03-2180 5343, or email to jana.kl@utm.my.

5) UTM KL HEALTH CENTRE

In UTM Kuala Lumpur, we provide health facilities for the staff and students by having facilities of health centres not only limited in the campus vicinity but also in the residential area (Kolej Siswa Jaya). The clinic in UTM KL campus operates during office hours for weekdays. After office hours and public holiday, we will be operating via on-call mode in the residential area (Kolej Siswa Jaya). In case of emergency, please contact the following number:

Office/Emergency: 03-4819 9079

6) TRANSPORTATION SERVICES

In UTM Kuala Lumpur, we provide bus services for the student to mobilize to or from UTM KL campus and Kolej Siswa Jaya (KSJ). The buses are available every day except on semester breaks and public holiday. The bus service during weekdays start as early as 7.00 am in the



morning until 10.30 pm depends on the needs of the students and its' travels from Kolej Siswa Jaya (KSJ) to UTM Kuala Lumpur every 30 minutes. Weekend bus services are available upon request.

The bus services are not limited for the return campus trip only. Students can also request bus services for any student activities. For bus reservations, students may fill the form that is provided by the Student Affairs & Alumni Office (HEPA).

7) EMERGENCY CONTACTS

UTM KL Security Section	03-4819 9071
UTM KL Health Centre	03-4819 9079
UTM KL OSHE	03-4819 9076
Police/Ambulance/Fire & Rescue/Civil Defence	999
To call from any handphone	999/112





UTM
UNIVERSITI TEKNOLOGI MALAYSIA



UNDERGRADUATE (UG) ACADEMIC GUIDELINES **2026 / 2027**

MALAYSIA-JAPAN INTERNATIONAL INSTITUTE OF TECHNOLOGY

STUDENTS

DRESS CODE



utmmjiit_official

<https://mjiit.utm.my>

UTM students should follow dress code regulations. Students' failure to comply with any of these regulations will be given a warning or fined not more than RM 50.00 (for first offense). Students will be referred to disciplinary authority for repeated offenses.

1. Students are expected **TO BE CLEAN, WELL GROOMED and DRESSED** in a manner appropriate to the Malaysian custom or norms.
2. Students must **MAINTAIN A PROFESSIONAL APPEARANCE** by wearing **collared** shirts/t-shirts, shoes, slacks or long skirts while attending classes and/or on official visits to Faculty/Administration buildings.
3. Avoid **WEARING INAPPROPRIATE CLOTHING or FOOTWEAR** including: -
 - a. Shorts skirts or boxer shorts
 - b. Round-neck T-shirt
 - c. Sleeveless shirts
 - d. Tight slacks/pants
 - e. Slippers/sandals
4. During any formal/official university event, male students are **REQUIRED TO BE DRESSED** by wearing long sleeved shirts, necktie, slacks (not jeans) and leather shoes or **COMPLETE NATIONAL OUTFIT**. Female students are **REQUIRED TO WEAR 'BAJU KURUNG'** or any **APPROPRIATE SUIT** such as long skirts or loose slacks.
5. Female students are not allowed to **WEAR FACE VEILS ('NIQAB')** on campus.
6. Headgears such as **BANDANA or CAPS** must be removed while on formal/official visits or business on campus, except during sport activities.
7. For male students, **HAIR MUST BE NEATLY, TRIMMED and REASONABLE IN LENGTH. COLORING and FREESTYLE HAIRDO** are strictly prohibited.



8. **MALE STUDENTS** are strictly prohibited **TO PUT ON ANY FEMALE COSTUMES and/or ACCESSORIES** and **VICE VERSA**.
9. Male students are strictly prohibited **TO WEAR BANGLES, BRACELETS, EARRINGS and NECKLACES**; and female students are prohibited to have their **EARS PIERCED MORE THAN ONCE PER EAR**, as it is against the norms of Malaysian society.
10. **TATTOOS** are prohibited on any parts of the body.
11. Students **MUST PUT ON** their **MATRIC CARD** at all times while on campus/premises. The **Matric Card MUST BE WORN** and **DISPLAYED** at chest level.



TATACARA BERPAKAIAN PELAJAR UTM STUDENT DRESS CODE

PAKAIAN MENGHADIRI MAJLIS RASMI DI UNIVERSITI
 DRESS CODE DURING ANY FORMAL EVENT IN THE CAMPUS



Kad Pribatin Siswa WAJIB DIPAKAI
 semasa berada di kawasan kampus
 dan dipamerkan di bahagian hadapan
 paras dada.

All students MUST DISPLAY their MATRIC CARD
 to access any service in the campus. Pribatin
 Siswa Card must be WORN and
 DISPLAYED at the chest level.



LARANGAN PROHIBITIONS

- Rambut berwarna
Coloured hair
- Rambut panjang / Berekor
Long / Rat tail hairstyle
- Bertatu
Tattoo
- Berselipar / Bercepal
Slippers
- Baju leher bulat
Round collared shirt
- Bertopi / bandana
Cap / Hat / Bandana
- Berpakaian menyerupai
berlainan jantina
Cross-dressing
- Baju tanpa lengan
Sleeveless shirt
- Berpundak
Purdah
- Berskirt / berseluar pendek
atas paras lutut
Skirt / Shorts above knee level
- Bertindik hidung / Bersubang
di telinga lebih daripada satu
Nose piercing / Multiple earrings in
one ear
- Pakaian ketat / jarang / singkat
Tight / transparent / short attire

PERINGATAN WARNING



Pelajar yang didapati ingkar, boleh dikenakan
 AMARAN atau DENDA TIDAK MELEBIHI RM50.00
 (Kesalahan Pertama) atau dihadapkan kepada
 Jawatankuasa Tatatertib Pelajar bagi
 kesalahan berulang.

Failure to comply with any of these regulations will
 result in a WARNING or a FINE OF NOT MORE THAN RM50.00
 (for First Offence) or being referred to the Student
 Disciplinary Committee for any subsequent offence.



MAKLUMAT LENGKAP BOLEH DIRUJUK DALAM
 BUKU PERATURAN MAHASISWA UTM
 MORE INFORMATION CAN BE FOUND IN
 THE STUDENT REGULATIONS BOOK

DILULUSKAN DALAM MESYUARAT JAWATANKUASA PENGURUSAN UTM BIL. 18/2020 BERTARIKH 10 AGOST 2020
 ENDORSED BY UTM MANAGEMENT COMMITTEE MEETING NO. 18/2020 DATED 10TH AUGUST 2020

JAWATANKUASA TATATERTIB PELAJAR UTM
 STUDENT DISCIPLINARY COMMITTEE OF UNIVERSITI TEKNOLOGI MALAYSIA

Versi Mac 2024





UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Jalan
Tunahan Noh Canselor
(Hal Ehwal Pelajar dan Alumni)

TATACARA BERPAKAIAN PELAJAR UTM

STUDENT DRESS CODE

**PAKAIAN MENGHADIRI
KULIAH / TUTORIAL / MAKMAL
(TERMASUK URUSAN RASMI DI FAKULTI /
PERPUSTAKAAN / PEJABAT PENTADBIRAN
DI DALAM KAWASAN KAMPUS)**

**DRESS CODE FOR ATTENDING
LECTURES / TUTORIALS / LABORATORIES
(INCLUDING OFFICIAL VISIT TO FACULTY / LIBRARY /
ADMINISTRATION OFFICE IN THE CAMPUS)**



**MAKLUMAT LENGKAP
BOLEH DIRUJUK DALAM
BUKU PERATURAN
MAHASISWA UTM**
MORE INFORMATION
CAN BE FOUND IN
THE STUDENT
REGULATIONS BOOK



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di kawasan kampus dan dipamerkan
di bahagian hadapan paras dada.

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Coloured hair
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Long / Rat tail hairstyle
- Bertatu
Tattoo
- Berselipar / Bercajal
Slippers
- Baju leher bulat
Round collared shirt
- Bertopi / bandana
Cap / Hat / Bandana
- Berpakaian menyerupai
berlainan jantina
Cross-dressing
- Baju tanpa lengan
Sleeveless shirt
- Berpurdah
Purdah
- Berskirt / berseluar pendek
atas paras lutut
Skirt / Shorts above knee level
- Bertindik hidung / Bersubang
di telinga lebih daripada satu
Nose piercing / Multiple earrings
in one ear
- Pakaian ketat / Jarang / singkat
Tight / transparent / short attire

PERINGATAN WARNING



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kesalahan berulang

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subsequent offence

DILULUSKAN DALAM MESYUARAT JAWATANKUASA PENGURUSAN UTM BIL. 18/2020 BERTARIKH 10 OGOS 2020
ENDORSED BY UTM MANAGEMENT COMMITTEE MEETING NO. 18/2020 DATED 10TH AUGUST 2020

JAWATANKUASA TATATERTIB PELAJAR UTM
STUDENT DISCIPLINARY COMMITTEE OF UNIVERSITI TEKNOLOGI MALAYSIA

Version: March 2024





UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Jabatan
Tindakan Nakh Cawader
(Hal Ehwal Pelajar dan Alumni)

TATACARA BERPAKAIAN PELAJAR UTM

STUDENT DRESS CODE

PAKAIAN KE TEMPAT UMUM
DRESS CODE FOR PUBLIC PLACES



MAKLUMAT LENGKAP BOLEH DIRUJUK DALAM
BUKU PERATURAN MAHASISWA UTM
MORE INFORMATION CAN BE FOUND IN
THE STUDENT REGULATIONS BOOK



LARANGAN PROHIBITIONS

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Coloured hair
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Long / Rat tail hairstyle
- Bertatu
Tattoo
- Berpakaian menyerupai
berlarian/jantina
Cross-dressing
- Baju tanpa lengan
Sleeveless shirt
- Berpurdah
Purdah
- Berskort / berseluar pendek
atas paras lutut
Skirt / Shorts above knee level
- Bertindik hidung / Bersubang
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JAWATANKUASA TATATERTIB PELAJAR UTM
STUDENT DISCIPLINARY COMMITTEE OF UNIVERSITI TEKNOLOGI MALAYSIA

Version/ Mac 2024





UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Jabatan
Tinjauan Nakh Canselor
(Hal Ehwal Pelajar dan Alumni)

TATACARA BERPAKAIAN PELAJAR UTM

STUDENT DRESS CODE

PAKAIAN SUKAN / RIADAH SPORTS DRESS CODE



MAKLUMAT LENGKAP BOLEH DIRUJUK DALAM
BUKU PERATURAN MAHASISWA UTM
MORE INFORMATION CAN BE FOUND IN
THE STUDENT REGULATIONS BOOK



LARANGAN PROHIBITIONS

- Pakaian ketat / jarang / singkat
Tight / transparent / short attire
- Rambut panjang / Berekor
Long / Rat tail hairstyle
- Bertatu
Tattoo
- Bertindik hidung / Bersubang di telinga lebih daripada satu
Nose piercing / Multiple earrings in one ear
- Berseluar pendek
atas paras lutut
Shorts above knee level
- Baju tanpa lengan
Sleeveless shirt
- Rambut berwarna
Coloured hair



Tatacara Berpakaian bagi aktiviti sukan perlu
berpandukan kepada **ETIKA BERPAKAIAN KHUSUS
UNTUK ATLET** di padang.

Dress Code for sports activities must
comply with **SPECIFIC DRESS CODE FOR ATHLETES**.

PERINGATAN WARNING



Pelajar yang didapati ingkar, boleh dikenakan
AMARAN atau **DENDA TIDAK MELEBIHI RM50.00**
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STUDENT DISCIPLINARY COMMITTEE OF UNIVERSITI TEKNOLOGI MALAYSIA

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GENERAL **STUDENTS ACTIVITIES**



Student activities are designed to foster a holistic development approach, equipping students with diverse skills essential for their personal and professional growth. These activities encompass academic, cultural, and social dimensions, providing a vibrant environment that encourages active participation and engagement. Through involvement in various societies, organizations, and events, MJIIT students have the opportunity to develop a broad range of skills including leadership, teamwork, communication, and problem-solving. This comprehensive skill set not only enhances their academic performance but also prepares them to excel in a dynamic and competitive global landscape as well as gain valuable intercultural insights and skills that are highly valued in the global marketplace.

Student	Co-curricular	Professional activities
• First Year Experience (FYE) • Student Society (CHEMPRO, ELECSYS, PREMECH, SOF-EA and Sakura Kai) • Student Exchange Program • Industrial visit • Mobility Program • MJIIT Sport Day • Japan Day • Social and Community Engagement • MJIIT entrepreneurship • MJIIT Open Day	• Uniform Bodies (Civil Defence) • Volunteerism • Sport, Recreation and Cultures • Service Learning (SULAM)	• UTM Professional Skills Certificate (UTM PSC) • Become student member: - Board of Engineer Malaysia (BEM) - Institution of Engineers Malaysia (IEM) - Malaysia Board of Technologists (MBOT) - Institution of Chemical Engineers (ICHEME) - Institute of Electrical and Electronics Engineers (IEEE)



• Chem-E-Car Competition • Robocon • MJIIT Career Fair • PENTAS MJIIT • MJIIT Dean's List Award		- Institution of Engineering and Technology (IET) - Institution of Mechanical Engineers (IMechE) • Autodesk training • CIDB (Green Card)
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GENERAL INFORMATION ABOUT **MALAYSIA**



GENERAL INFORMATION FOR MALAYSIA

Kuala Lumpur is the capital and the most populous city of Malaysia. The Federal Territory of Kuala Lumpur covers an area of **243 km² (94 sq. mi.)** and has a population of approximately **2.1 million** based on the latest available official estimates. **Greater Kuala Lumpur**, also known as the **Klang Valley**, is a major metropolitan area with a population of **more than 8.8 million**, with the metropolitan population estimated at approximately **9.18 million in 2026**. Greater Kuala Lumpur is one of Malaysia's most important urban and economic centres and is experiencing continued population and economic growth.

ARRIVING AT KUALA LUMPUR INTERNATIONAL AIRPORT (KLIA)

Kuala Lumpur International Airport (KLIA Terminal 1) and **Kuala Lumpur International Airport Terminal 2 (KLIA Terminal 2)** serve both domestic and international flights. The airport is located in Sepang, approximately 50 km south of Kuala Lumpur city centre. Upon arrival, you may travel to Kuala Lumpur city centre or Universiti Teknologi Malaysia (UTM) via the KLIA Ekspres, taxi, ride-hailing services, or airport bus services.

The KLIA Ekspres provides a non-stop rail connection between **KLIA and KL Sentral**, the city's main transportation hub. The journey takes approximately 28 minutes, with train services operating daily from early morning until after midnight. Trains depart at regular intervals of approximately 15–20 minutes. For further information, please visit the official [KLIA Ekspres website](#).

Information on public transportation options and fare rates can be accessed through the official [KLIA \(Terminal 1\)](#) and [KLIA2 \(Terminal 2\)](#) websites.



CURRENCY

The currency of Malaysia is the Malaysian Ringgit (RM), which is equivalent to 100 sen. Foreign currencies can be exchanged at banks, licensed money changers, and airport currency exchange counters. The approximate interbank exchange tracking values indicate USD 1.00 $\approx$ RM 4.07*, or Yen 100 = RM 2.63*.

** Note: Foreign exchange markets fluctuate constantly; currency values are subject to change.*

VOLTAGE

The electricity supply in Malaysia is 220-240 volts a.c. at 50 Hz which follows the U.K. configuration.

WEATHER

Malaysia features a tropical rainforest climate characterized by hot, humid weather year-round. Daily midday peak temperatures routinely average around 34°C, dropping to a cooler 24°C at night.

The country experiences two distinct monsoon seasons:

- **Northeast Monsoon (November to March):** Brings increased cloud cover and heavier rainfall, making afternoon weather patterns slightly cooler.
- **Southwest Monsoon (May to September):** Generally drier but still prone to sudden, short tropical showers.



VISA

Citizens of many nations enjoy visa-free entry privileges for social visits lasting up to 90 days. To verify your specific visa criteria or apply for an Electronic Visa (eVISA), check the official immigration directory at <https://malaysiavisa.imi.gov.my>.

SHOPPING HOURS

Most shopping malls and retail outlets operate from 10:00 a.m. to 10:00 p.m. daily. Restaurants and cafés generally operate until late evening, while some establishments remain open 24 hours.

TELEPHONES

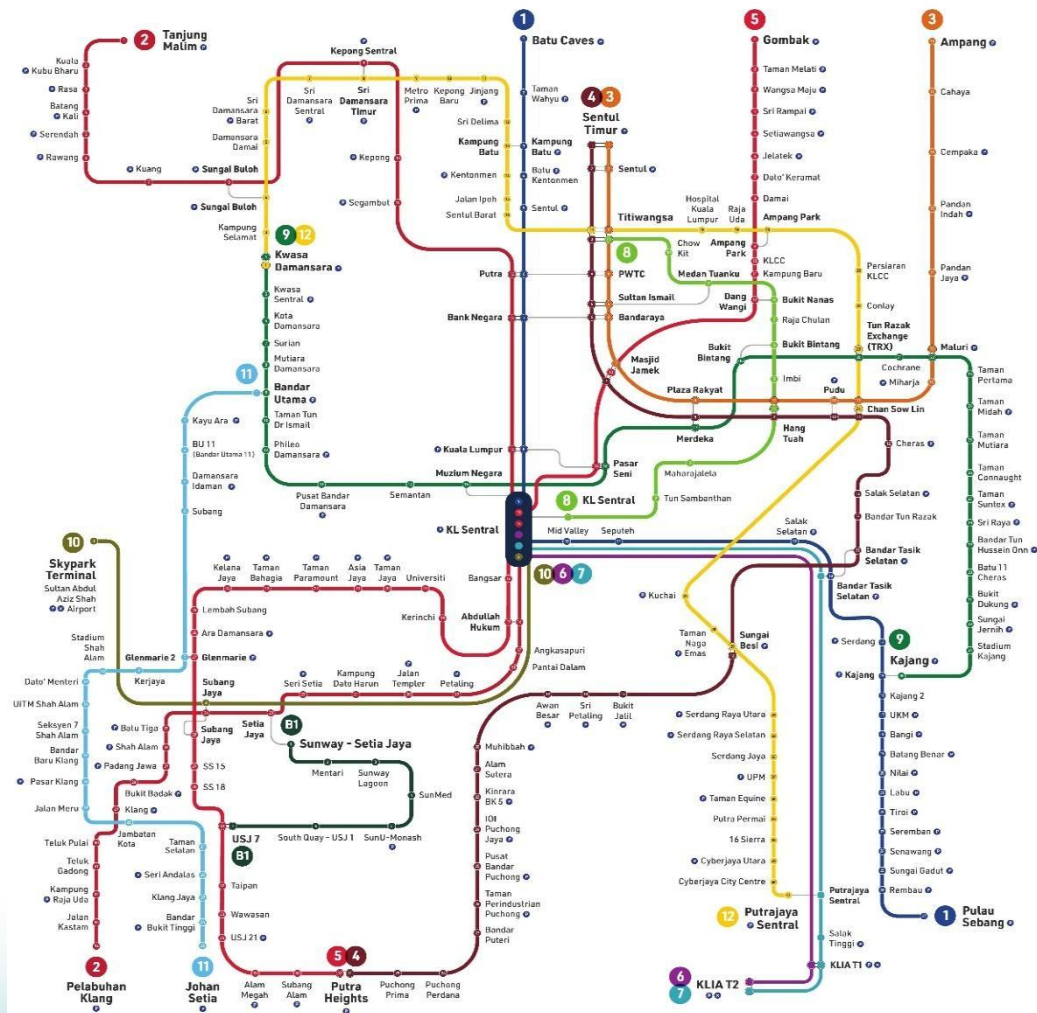
The international dialling code is “00” to be followed by the respective country code. For Malaysia, the country code is “+60”.

PUBLIC TRANSPORTATION

Kuala Lumpur has an extensive public transportation network comprising Mass Rapid Transit (MRT), Light Rail Transit (LRT), Monorail, KTM Komuter, buses, and ride-hailing services.



THE KLANG VALLEY INTEGRATED TRANSIT MAP



[MyRAPID PULSE](#)



ADMINISTRATIVE AND TECHNICAL

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Mrs. Nor Fadhillah binti Mohd Radzi
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Ms. Norashikin binti Muhamad Ameri
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Mrs. Yanti Hajar binti Hamzah
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Mrs. Mahsuri binti Khalid
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Mrs. Noor Akma binti Abdul Hamid
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Mrs. Nur Azilah binti Zaini
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Mrs. Nurul Nazieha binti Mohd Shari
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Mrs. Puteri Zakirah binti Shaffiei
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Mrs. Rini Emellina binti Mohd Bachuri
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Mrs. Rozlinda binti Mohd Ruslan
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Mrs. Siti Nor Yusma binti Mohd Yusof
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Mr. Muhammad Syafiq bin Yazid
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Nur Aqilah binti Nasir
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Mr. Saiful Rahman bin Abdul Razak
Operation Assistant (N1)
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Mr. Muhammad Faiz bin Mohd Rasid
Operation Assistant (N1)
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UTM
UNIVERSITI TEKNOLOGI MALAYSIA



MALAYSIA-JAPAN INTERNATIONAL INSTITUTE OF TECHNOLOGY

UNDERGRADUATE (UG) **ACADEMIC GUIDELINES**

2026 / 2027



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