MJIIT UTM

UTM UNIVERSITI TEKNOLOGI MALAYSIA | Malaysia-Japan International Institute of Technology (MJIIT)

UNDERGRADUATE (UG)
ACADEMIC GUIDELINES
2025/2026

https://mjiit.utm.my/

Contents

PRELIMINARIES

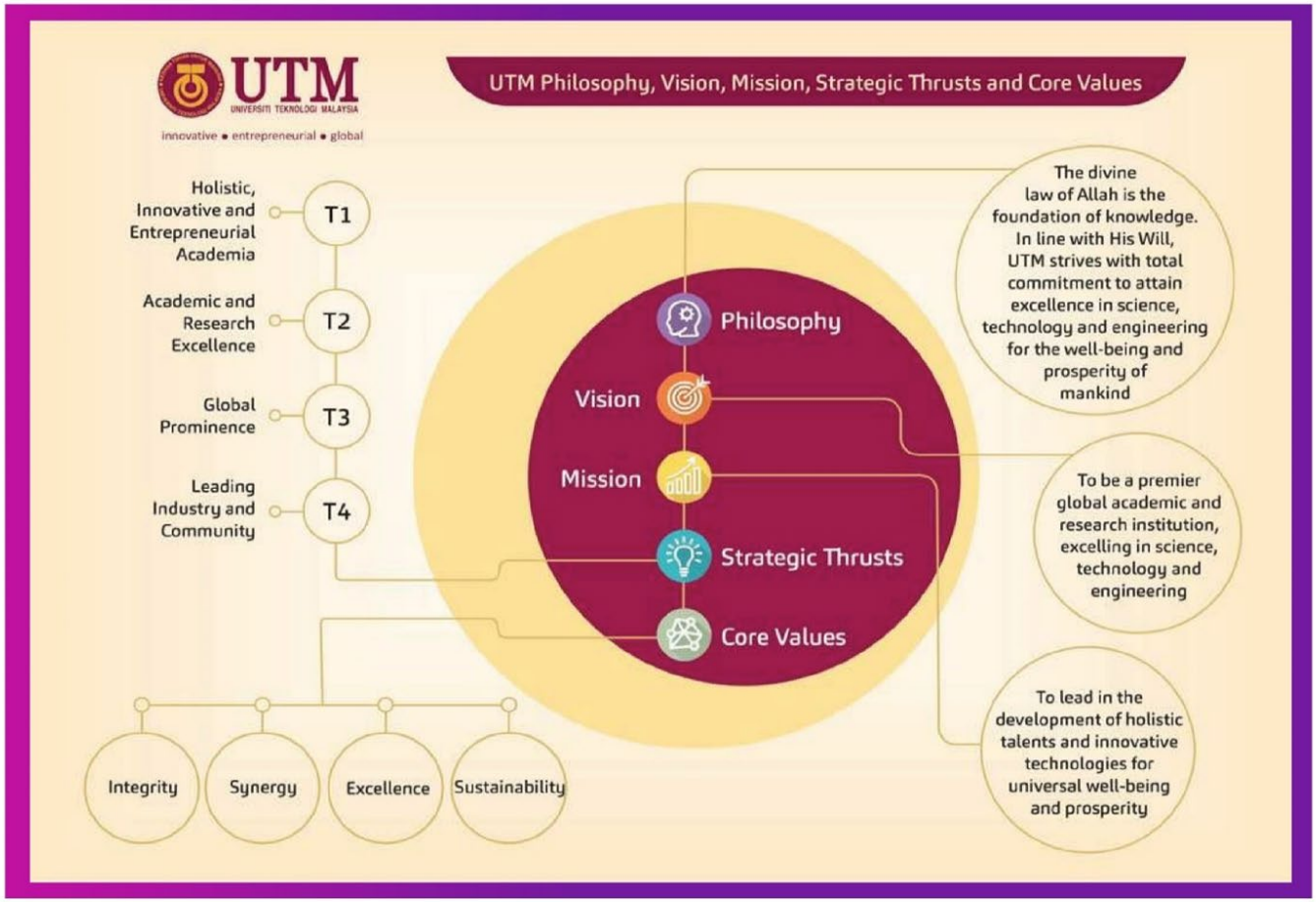
This handbook is designed to equip students with information regarding Full-time Undergraduate Degree Program at MJIIT, Universiti Teknologi Malaysia. It is anticipated that the information given will guide the students on their academics and campus activities throughout their study at MJIIT. The information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

Dean
Malaysia-Japan International Institute of Technology (MJIIT)
Universiti Teknologi Malaysia
Jalan Sultan Yahya Petra, 54100 Kuala Lumpur, Malaysia
Tel: 603-2203 1200 **Fax:** 603-2203 1266 **Email:** mjiit@utm.my

Prepared by:

Deputy Dean (Academic & Student Affairs) Assoc. Prof. Dr. Roshafima binti Rasit Ali **Head of Department** Assoc. Prof. Ir. Dr. Dayang Norulfairuz bt. Abang Zaidel Ir. Ts. Dr. Mohd Hatta bin Mohammed Ariff Ts. Dr. Uswah binti Khairuddin Ts. Dr. Aizul Nahar bin Harun **Programs Coordinator** Assoc. Prof. Dr. Fauzan bin Ahmad Dr. Nurulbahiyah bt Ahmad Khairudin Dr. Ahmad Faiz bin Mohammad Dr. Zatul Alwani binti Shaffiei Dr. Amir Syafiq Syamin Syah bin Amir Hamzah	**Design Concept & Photo Editor** Mr. Muhammad Syafiq bin Yazid **Undergraduate Academic Unit** Mrs. Norfazliana binti Jaafar Mr. Shazuli Azroel bin Sapingi Mrs. Nur Azilah binti Zaini Ms. Syaza Amalia binti Syed Hamzah **Official Undergraduate Email** mjiit.ug@utm.my

UTM PHILOSOPHY, VISION, MISSION, STRATEGIC THRUSTS & CORE VALUES



MJIIT VISION & MISSION

VISION

Leading in cutting edge technology education and research

MISSION

Providing Japanese style engineering education blended with Malaysia distinctiveness for sustainable industry and society

Leading in academic and research excellence in Electronics, Precision, Environmental & Green Technology and Management of Technology

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 center 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 (MJIIT). 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 Center (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, Malaysian 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

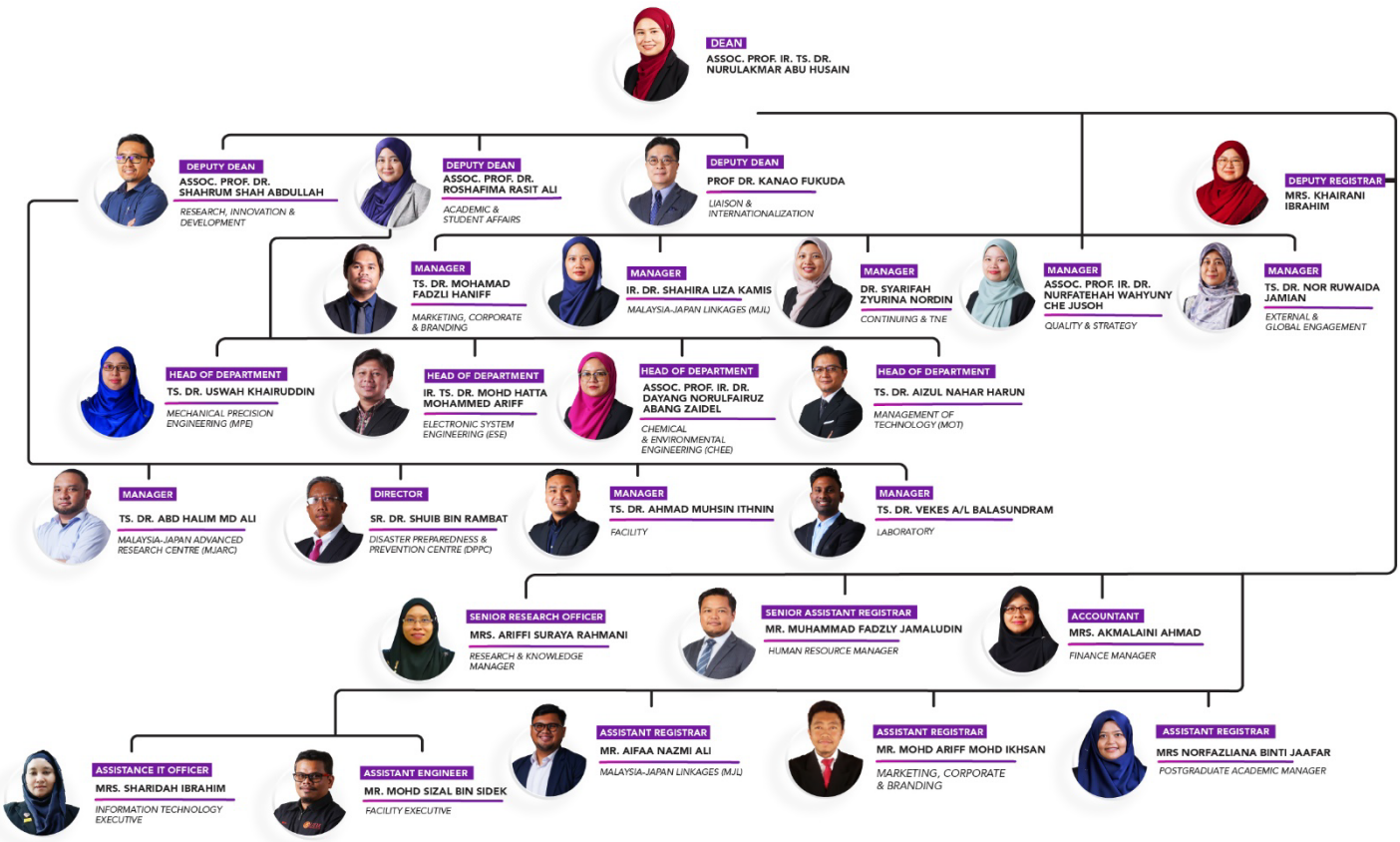
Assalammualaikum, Salam Sejahtera, Konnichiwa

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.

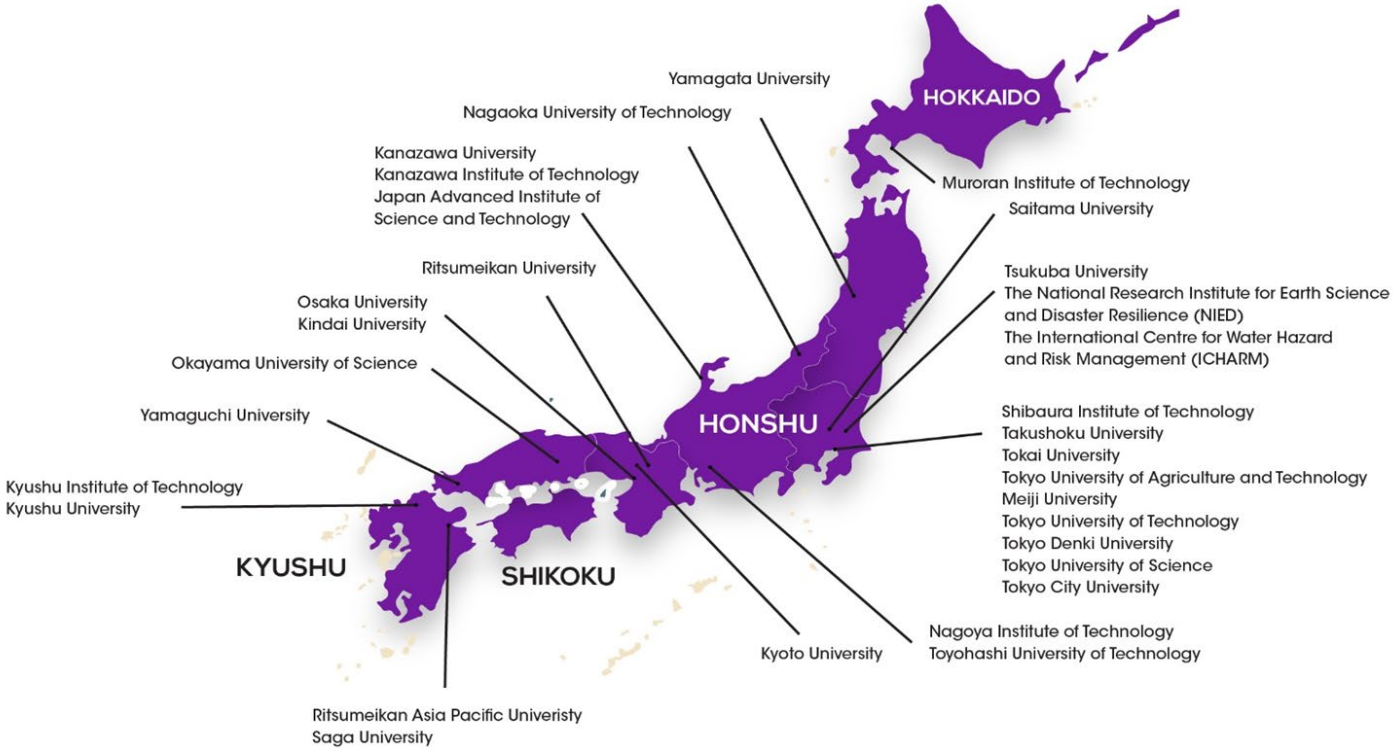
MJIIT provides state-of-the-art facilities for postgraduate students comprising of well-established research laboratories under the auspices of innovative research laboratories (iKohza) featuring the unique mentoring concept of senpai-kohai (senior and junior mentoring). Junior members are nurtured and 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

MJIIT MANAGEMENT ORGANIZATION CHART



JAPANESE UNIVERSITY CONSORTIUM



32 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, MONOZUKIRI
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 ACCOMODATION
AVAILABLE

UNDERGRADUATE (UG) ACADEMIC GUIDELINES **2025/2026**

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Malaysia-Japan
International
Institute of Technology
(MJIIT)

(i-KOHZA)

MJIIT INNOVATIVE KOHZA

UNDERGRADUATE RESEARCH

Undergraduate students are encouraged to participate in research activities throughout their studies. In their final year, students undertake individual Final Year Projects (FYPs), with progress closely monitored by respective supervisors. To support and accelerate students' research development, MJIIT offers the i-Kohza system. Each i-Kohza is led by a senior academic and consists of a team of academics and researchers with shared interests, alongside students as junior members. Through this system, students gain exposure to advanced research equipment and are encouraged to engage in independent and lifelong learning within the context of evolving technological advancements.

Below is the list of i-Kohzas and Centres of Excellence at MJIIT:

i-KOHZA
1. Shizen Conversion & Separation Technology (SHIZEN)
2. Pattern Recognition & Robotics Automation (PRA)
3. Air Resources
4. Communication Systems & Networks (CSN)
5. Intelligent Dynamic System (IDS)
6. Advanced Devices and Material Engineering (ADME)
7. Tribology and Precision Machining (TriPreM)
8. Vehicle System Engineering (VSE)
9. Wind Engineering for (Urban, Artificial, Man-Made) Environment (WEE)
10. Environmental Resilience and Sustainability (ERS)
11. Embedded System (ES)
12. Engineering Materials and Structure (eMAST)
13. Optical Devices and Systems (ODESY)
14. Takasago Thermal/Environmental Systems (TAKASAGO)
15. Chemical Energy Conversions and Applications (ChECA)
16. Metabolic Engineering and Molecular Biology (MemoBio)

17. Algal Biomass (ALGAE)
18. Intellectual Property and Innovation Management (IPIM)
19. Software Engineering of Industrial Revolution (SEIR)
20. Wellness Innovation Technology (WIT)

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

DIRECTOR OF CENTRE OF EXCELLENCE

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

HEAD OF i-KOHZA

i-KOHZA	Head
Pattern Recognition and Robotics Automation (PRA)	Assoc. Prof. Ir. Dr. Zool Hilmi bin Ismail
Shizen Conversion and Separation Technology (SHIZEN)	Prof. Dr. Tomoya Tsuji
Air Resources	Ts. Dr. Nor Ruwaida binti Jamian
Communication Systems and Networks (CSN)	Prof. Dr. Yoshihide Yamada
Intelligence Dynamics and System (IDS)	Prof. Ir. Ts. Dr. Aminudin bin Hj. Abu
Advanced Devices and Materials Engineering (ADME)	Prof. Ir. Ts. Dr. Abdul Manaf bin Hashim
Tribology and Precision Machining (TriPreM)	Prof. Dr. Kanao Fukuda
Vehicle System Engineering (VSE)	Assoc. Prof. Dr. Fauzan bin Ahmad
Wind Engineering for (Urban, Artificial, Man-Made) Environment (WEE)	Dr. Ahmad Faiz bin Mohammad
Environmental Resilience and Sustainability (ERS)	Assoc. Prof. Dr. Shahrum Shah bin Abdullah

Embedded System (ES)	Assoc. Prof. Ir. Dr. Ooi Chia Yee
Engineering Materials and Structure (eMAST)	Prof. Ir. Ts. Dr Saiful Amri bin Mazlan
Chemical Energy Conversions and Applications (ChECA)	Prof. Dr. Mohamed Mahmoud Elsayed Nasef
Metabolic Engineering and Molecular Biology (MemoBio)	Prof. Ir. Dr. Muhamad Ali bin Muhammad Yuzir
Optical Devices and Systems (ODESY)	Dr. Husni Hani Jameela binti Sapingi
Takasago Thermal/Environmental Systems (TAKASAGO)	Dr. Muhammad Thalhah bin Zainal
Algal Biomass (ALGAE)	Assoc. Prof. Dr. Koji Iwamoto
Intellectual Property and Innovation Management (IPIM)	Ts. Dr. Zulhasni Abdul Rahim
Software Engineering of Industrial Revolution (SEIR)	Prof. Dr. Hamido Fujita
Wellness Innovation Technology (WIT)	Prof. Dr. Azila bte. Abd. Aziz

COE RESEARCH INTEREST

Disaster Preparedness & Prevention Centre (DPPC)
• 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

Communication Systems and Network	***Shizen* Conversion & Separation Technology**	**Pattern Recognition & Robotics Automation**
• 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	• Sustainable energy • Biofuels • New materials • Utilization of wastes • Thermodynamic models • Process design & control • Apparatus and assembly design • Chemical engineering • High pressure technologies • Design of chemical processes and control based on mathematical models	• Artificial Intelligence • Pattern Recognition • Computer Vision • Robotic Process Automation • Mechatronics • Robotics & Sensors • Data Analytics • System Optimization • Smart Agriculture • Smart Systems • Smart Logistics • Smart Marketing • Nonlinear Control

Intelligence Dynamics and System	Air Resources	Intellectual Property and Innovation Management
● Noise and Vibration Control ● 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	● Food-Energy-Water-Waste Nexus ● Circular Economy ● Biomass Technology ● Food Security ● Sustainable Development ● ESG	● Intellectual Property Management ● Innovation Management ● Business Analytics ● Technology Management ● Finance ● TRIZ ● Entrepreneurship ● Mathematics
Tribology & Precision Machining	**Advanced Devices & Materials Engineering**	**Vehicle System Engineering**
● Tribology and Surface Engineering ● Mechanical System Development and Control ● Adhesive Technologies and Joining Mechanics ● Polymer and Biomaterial Innovation ● Nanotechnology and Functional Particles	**Material Engineering Area:** ● Synthesis/growth of carbon nanomaterials ● Semiconductors ● Organic/ molecular materials and biomaterials **Micro-nanodevice Area:** ● Novel nanodevices and functional devices covering electronic/photonic devices, microfluidic devices ● Sensors and solar cells	● Bio-signal Processing ● AI & Robotics ● Active Safety & Autonomous Vehicles ● Vehicle Safety ● Product Design ● Structural Dynamics ● Smart Materials

Wind Engineering and Environment	Environmental Resilience and Sustainability	Embedded System
● Heat Urban Island ● Thermal Comfort ● Wind Engineering ● Control Application ● IoT ● Artificial Intelligence ● Air Conditioning (HVAC) ● Urban Microclimate ● Airfoil Serration ● Thermoelectric Harvesting ● Passive Vibration Control	● Environmental Sustainability ● Disaster Risk Reduction ● Flood Modeling ● Artificial Intelligence (AI) ● Geotechnical Monitoring	● Digital Systems Design ● Design-for-Testability ● FPGA ● IoT-enabled System
Chemical Energy Conversions and Applications	**Engineering Materials and Structure**	**Metabolic Engineering and Molecular Biology**
● Nanomaterials and Nanotechnology ● Functional Polymeric Materials ● Homo/Heterogeneous Catalysis ● Photocatalyst ● Fuel Cell & Membrane Technology ● Radiation Grafting ● Biodegradable Plastic ● Environmental Green Chemistry	● Magnetorheological ● Composite ● Artificial Intelligence ● Coating ● Machine Learning ● 3D Printing ● Nanomaterials ● Thin Film	● Biodegradation ● Biocoke production ● Soil-cooling temperate crops ● Gene expression ● Lignin bio-depolymerization, ● Copper biodegradation ● Wastewater treatment

Optical Devices and Systems	Takasago Thermal/ Environmental Systems	Algal Biomass
● Optical Communication ● Optical Sensors ● Optical Amplifiers ● Optical Interconnect	● Carbon Capture, Utilization, and Storage ● Combustion ● Energy saving technologies ● Low energy power consumption technologies ● Heat transfer ● Nanoparticle / Nanofluid ● Mathematical modeling ● Abstract theoretical modelling ● Artificial intelligence ● River System Assessment ● Rainfall Forecasting and Modeling	● Algae ● Microbes ● Biomass production ● Wastewater Treatment ● Organic waste

Software Engineering Of Industrial Revolution	Wellness Innovation Technology
● Software Engineering ● System Development ● Database ● System Analysis and Design ● IoT (Internet of Things) ● Cybersecurity	● Plant extract ● Nanocarriers ● Cosmetic ● Wellness ● Formulation ● Drug delivery systems ● Biosensor ● Biopesticide

	● Natural product ● Bioprocessing ● Food technology ● Enzymatic processes ● Structural bioinformatics ● Computational biology ● Biopolymer

UTM
UNIVERSITI TEKNOLOGI MALAYSIA
Malaysia-Japan International Institute of Technology (MJIIT)

2025/2026 SESSION

ACADEMIC CALENDAR

27 - 28 September 2025 (International) 28 September 2025 (Local)	Registration of New Students Semester I, 2025/2026 Session
17 - 26 September 2025	International Student Orientation Programme
29 September - 3 October 2025	Student Orientation Week

06 October 2025 – 15 March 2026 (23 weeks)	**SEMESTER I**
06 October - 23 November 2025	Lectures Semester I (First Half - 7 weeks)
24 - 30 November 2025	Mid-Semester Break for Semester I (1 week)
01 December 2025 - 18 January 2026	Lectures Semester I (Second Half - 7 weeks)
19 - 25 January 2026	Revision Period for Semester 1 (1 week)
26 January - 8 February 2026	Final Examination for Semester I (2 weeks)
9 February - 15 March 2026	Final Break for Semester I (5 weeks)
7 - 8 March 2026 (International) 12 March 2026 (Local)	Registrations of New Students Semester II, 2025/2026 Session (March intake)
23 February - 6 March 2026	International Student Orientation Programme
13 - 31 March 2026	Faculty Briefing for Academic Matters

16 March – 04 October 2026 (29 weeks)	SEMESTER II
16 March - 03 May 2026	Lectures semester II (First half - 7 weeks)
04 - 10 May 2026	Mid-Semester Break for Semester II (1 week)
11 May - 28 June 2026	Lectures Semester II (Second half - 7 weeks)
29 June - 05 July 2026	Revision Period for Semester II (1 week)
06 - 19 July 2026	Final Examination for Semester II (2 weeks)
20 July – 04 October 2026	Final Break for Semester II (11 weeks)

20 July – 04 October 2026 (10 Weeks)	SHORT SEMESTER
20 - 21 July 2026	Courses Registrations for Short Semester 2025/2026 Session (2 Days)
27 July -18 September 2026	Lectures for Short Semester (8 weeks)
21 September - 4 October 2026	FInal Break for Short Semester (2 Week)

Note: Subject to change

Malaysia Public Holiday

20 October 2025	Deepavali
25 December 2025	Christmas
1 January 2026	New Year's Day
1 February 2026	Thaipusam & Federal Territory Day
2 February 2026	Thaipusam & Federal Territory Day Holiday
17 – 18 February 2026	Chinese New Year Holiday
7 March 2026	Nuzul al-Quran
21 March 2026	Hari Raya Aidilfitri
22 - 23 March 2026	Hari Raya Aidilfitri Holiday
1 May 2026	Labour Day
27 - 28 May 2026	Hari Raya Aidiladha
31 May 2026	Wesak Day
1 June 2026	Agong Birthday & Wesak Day Holiday
17 June 2026	Awal Muharram
25 August 2026	Prophet Muhammad Birthday
31 August 2026	Merdeka Day
16 September 2026	Malaysia Day
8 - 9 November 2026	Deepavali
25 December 2026	Christmas Day

Note: Subject to change

UTM UNIVERSITI TEKNOLOGI MALAYSIA | Malaysia-Japan International Institute of Technology (MJIIT)

DEGREE OFFERED & PROGRAM SPECIFICATIONS

UTM
UNIVERSITI TEKNOLOGI MALAYSIA
Malaysia-Japan International Institute of Technology (MJIIT)

GENERAL INFO
UNDERGRADUATE

ENGINEERING PROGRAMMES SPECIFICATIONS

MJIIT has FIVE (5) 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), Bachelor of Software Engineering with Honours (SE), and Bachelor of Science (Industrial Mathematics) (IM). The entry requirements and Programme Award Requirements for these programmes are tabled 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 2.50

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

and

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

and

must not have any disabilities as follows:

ESE: Physical disability and color blinds that might affect practical work.
MPE: Physical disability that might affect practical work.
CPE: Physical disability that might affect practical work.

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

and

achieve Malaysian University English Test (MUET) **Band 2 and**
must not have any disabilities as follows:
ESE: Physical disability and color blinds that might affect practical work.
MPE: Physical disability that might affect practical work.
CPE: Physical disability that might affect practical work.

C. Others

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

and

achieve any of the following:

Programme	
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 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.*

and

must not have any disabilities as follows:

ESE: Physical disability and color blinds that might affect practical work.
MPE: Physical disability that might affect practical work.
CPE: Physical disability that might affect practical work.

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 honors (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 honors (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 honors (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

Bachelor of Science (Industrial Mathematics) (IM)

A. STPM / Matriculation / Foundation Programme Holders:

Pass SPM with Grade "C" and above for Bahasa Melayu and Matematik

and

Pass KPM Matriculation / UTM *Asasi* / UM *Asasi Sains* / UiTM *Asasi* with CGPA of at least 2.80

and

achieve at least a '**B**' (3.00) in Mathematics (T) and '**B-'** (2.67) in Physics/Chemistry/Biology

and

achieve Malaysian University English Test (MUET) at least **Band 2.0**

B. Diploma/Equivalent Holders:

Pass SPM with Grade "C" and above for Bahasa Melayu and Matematik

and

Pass a diploma/qualification related with the programme from UTM or any institution recognized by Malaysian Government with CGPA at least 3.00

and

achieve at least a '**C**' (3.00) in Mathematics (If not fulfill Grade C for Mathematics in SPM)

and

achieve Malaysian University English Test (MUET) at least **Band 2.0**

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

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

and

Obtained at least Band 2.0 in MUET / Band 5.5 in IELTS / Score 500 in TOEFL PBT / Score 46 in TOEFL IBT

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**

  and

  must not have any disabilities as follows:

  ESE: Blind/Colour Blind/Deaf/Mute/Physical disability that might affect practical work.

  MPE: Blind/Deaf/Mute/Physical disability that might affect practical work.

  CPE: Blind/Deaf/Mute/Physical disability that might affect practical work.

  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 & competency in manifesting cutting edge technologies

PEO 02

PROFESSIONALISM

Demonstrate professionalism through innovative, entrepreneurial & global qualities

PEO 03

SUSTAINABLE SOCIETY

Contribute to sustainable development for the benefits of society

PROGRAMME LEARNING OUTCOMES

ENGINEERING KNOWLEDGE (KW)

Ability to apply knowledge of mathematics, natural sciences, engineering fundamentals, and an engineering specialisation to the solution of complex engineering problems

PROBLEM ANALYSIS (THPA)

Ability to identify, formulate, conduct research literature, and analyse complex engineering problems to reach substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences

DESIGN/DEVELOPMENT (THDS)

Ability to design systems, components or processes and develop solutions for complex engineering problems that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations

INVESTIGATION (THI)

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

PROGRAMME LEARNING OUTCOMES

MODERN TOOL USAGE (SCMT)

Ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, with an understanding of the limitations

THE ENGINEER AND SOCIETY (AD)

Ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems

ENVIRONMENT AND SUSTAINABILITY (GCS)

Ability to understand and evaluate the sustainability and impact of professional engineering solutions of complex engineering problems in societal and environmental contexts

ETHICS (GSE)

Ability to apply ethical principles and commit to professional ethics, responsibilities and norms of engineering practice

PROGRAMME LEARNING OUTCOMES

COMMUNICATION (CS)

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

INDIVIDUAL AND TEAM WORK (TW)

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

LIFE-LONG LEARNING (SC)

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

ENGINEERING PROJECT MANAGEMENT AND FINANCE (ES)

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

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 MPE, 135 credit for CPE, 136 credit for ESE and 128 credit for SE 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**

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Malaysia-Japan
International
Institute of Technology
(MJIIT)

Bachelor of

MECHANICAL PRECISION ENGINEERING

(UT6521005)

MJIIT UTM

ACADEMIC STAFF

DEPARTMENT OF MECHANICAL PRECISION ENGINEERING (MPE)

Ts. Dr. Uswah binti Khairuddin
Head of Department
Ph.D. (Mechanical)
M.Eng. (Electrical – Artificial Intelligence)
B.Eng. (Mechatronics)
Phone: +603-2203 1241/1493
Email: uswah.kl@utm.my

Prof. Ir. Ts. Dr. Aminudin bin Hj. Abu
Ph.D. (Automotive)
M.Eng. (Mechanical Precision)
B.Eng. (Mechanical)
Phone: +603-2203 1253
Email: aminudin.kl@utm.my

Prof. Ir. Ts. Dr. Sheikh Ahmad Zaki bin Shaikh Salim
Ph.D. (Energy & Environmental)
M.Eng. (Mechanical), B.Eng. (Mechanical)
Phone: +03-2203 1483
Email: sheikh.kl@utm.my

Prof. Ir. Dr. Saiful Amri bin Mazlan
Ph.D. (Material)
M.Eng. (Manufacturing)
B.Eng. (Mechanical)
Phone: +03-2203 1463
Email: saifulamri@utm.my

Prof. Dr. Kanao Fukuda
Ph.D. (Tribology)
M.Eng. (Mechanical), B.Eng. (Mechanical)
Phone: +603-2203 1437
Email: fukuda.kl@utm.my

Assoc. Prof. Ir. Ts. Dr. Nurulakmar binti Abu Husain
Ph.D. (Mechanical)
M.Eng. (Automotive)
B.Eng. (Mechanical-Automotive)
Phone: +03-2203 1399
Email: nurulakmar@utm.my

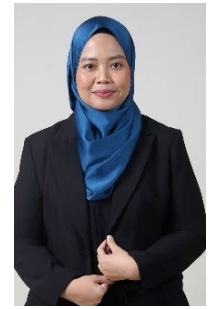
 **Assoc. Prof. Ir. Ts. Dr. Wira Jazair bin Yahya** Ph.D. (Ecosystem) M.Eng. (Mechanical) B.Eng. (Mechanical) Phone: +603-2203 1223 Email: wira@utm.my	 **Assoc. Prof. Ir. Dr. Lim Meng Hee** Ph.D. (Vibration) M.Eng. (Vibration) B.Eng. (Pure Mechanical) Phone: +03-2615 4368 Email: mhlim.kl@utm.my	 **Assoc. Prof. Ir. Dr. Pauziah binti Muhamad** Ph.D. (Mechanical - System Identification in Structural Dynamics) B.Eng. (Mechanical) M.Eng. (Mechanical) Phone: +603-2203 1541 Email: pauziah.kl@utm.my
 **Assoc. Prof. Ts. Dr. Nor'azizi bin Othman** Ph.D. (Mechanical) M.Eng. (Mechanical) B.Eng. (Mechanical) Phone: +03-2203 1305 Email: norazizio.kl@utm.my	 **Assoc. Prof. Dr. Mohamed Sukri bin Mat Ali** Academic Manager (Postgraduate) Ph.D. (Mechanical) M.Eng. (Mechanical) B.Eng. (Mechanical-Aeronautical) Phone: +03-2203 1286/1484 Email: sukri.kl@utm.my	 **Ir. Ts. Dr. Norhasnidawani binti Johari** Ph.D. (Materials Eng.-Nanotechnology) M.Eng. (Materials Eng.) B.Eng. (Materials) Phone: +03-2203 1323 Email: norhasnidawani@utm.my

 **Ir. Dr. Lee Kee Quen** Ph.D. (Mechanical Eng.) B.Eng. (Mechanical Eng.) Phone: +03-2203 1424 Email: lkquen@utm.my	 **Ts. Dr. Ahmad Muhsin bin Ithnin** Ph.D. (Mechanical Eng.) B.Eng. (Automotive Eng.) Phone: +03-2203 1463 Email: ahamdmuhsin@utm.my	 **Ts. Dr. Noor Fawazi bin Noor Rudin** Ph.D. (Mechanical Eng.) B.Eng. (Mechanical Eng.) Phone: +03-2203 1216 Email: fawazi.kl@utm.my
 **Ts. Dr. Mohamad Fadzli bin Haniff** Ph.D. (Electrical Eng.) B.Eng. (Electrical-Mechatronics Eng.) Phone: +603-2203 1517 Email: mfadzlihaniff@utm.my	 **Ts. Dr. Muhammad Hisyam bin Rosle** Ph.D. (Dr. Eng. in Advanced Mechanical Engineering and Robotics) M.Eng. (Mechanical Eng.- Robotics) B.Eng. (Robotics) Phone: +603-2203 1517 Email: m.hisyam@utm.my	 **Ts. Dr. Shahir Yasin bin Mohd Yusuf** Ph.D. (Mechanical Eng.- Additive Manufacturing and Severe Plastic Deformation), M.Eng. (Mechanical Eng. with Sustainable Energy Systems) Phone: +603-2203 1517 Email: shahiryasin@utm.my

 **Ts. Dr. Samsol Faizal bin Anis** Ph.D. (Mechanical Eng.- Metal Fatigue) M.Eng. (Mechanical Eng.) B.Eng. (Mechanical Eng.) Phone: +603-2615 4664 Email: samsol.kl@utm.my	 **Dr. Hafizal bin Yahaya** Ph.D. (Material Science) M.Sc. (Information Technology) B.Sc. (Applied Physics) Phone: +03-2203 1392 Email: hafizal.kl@utm.my	 **Dr. Ahmad Faiz bin Mohammad** Ph.D. (Mechanical Eng. - CFD) M.Phil. (Mechanical Eng. - CFD) B.Sc. (Aerospace Eng.) Phone: +603-2203 1517 Email: ahmadfaiz@utm.my
 **Dr. Farah Liana binti Mohd Redzuan** Ph.D. (Materials Science Eng.) M.Eng. (Materials Science Eng.) B.Eng. (Materials Science Eng.) Phone: +603-2203 1517 Email: farahliana@utm.my	 **Dr. Nur Azmah binti Nordin** Ph.D. (Materials Eng.) B.Eng. (Mechanical – Materials Eng.) Phone: +03-2203 1310 Email: nurazmah.nordin@utm.my	 **Dr. Muhammad Thalhah bin Zainal** Ph.D. (Mechanical Eng.) M.Eng. (Mechanical Eng.) B.Eng. (Mechanical Eng.) Phone: +603-2203 1303 Email: mthalhah@utm.my

Dr. Shahira Liza binti Kamis
Ph.D. (Tribology)
M.Eng. (Bio Tribology)
B.Eng. (Materials)
Phone: +03-2203 1315
Email: shahiraliza@utm.my

Dr. Nur Zalikha binti Khalil
Ph.D. (Materials Science - Powder Metallurgy)
M.Eng. (Mechanical Eng.)
B.Eng. (Mechanical Eng.)
Phone: +603-2203 1517
Email: n.zalikha@utm.my



Dr. Nurshafinaz binti Mohd Maruai
Ph.D. (Mechanical Eng.)
M.Eng. (Radio Eng.)
Phone: +603-2203 1517
Email: nurshafinaz@utm.my

Dr. Noor Ayuma binti Mat Tahir
Ph.D., M.Eng. (Mechanical Eng. - Tribology)
B.Eng. (Mechanical Eng. - Structure and Materials)
Phone: +603-2203 1517
Email: ayuma@utm.my

Dr. Zainudin bin A Rashid
Ph.D. (Mechanical- Aerospace Eng.)
M.Eng. (Mechanical- Composite Material)
B.Eng. (Mechanical Eng.)
Phone: +03-2203 1332
Email: arzainudin.kl@utm.my

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	92	68%
Program Electives	12	9%
Faculty Core a. SHLJ 2252 Japanese for Communication 2 b. SHLJ 2353 Japanese for Communication 3 c. SMJG 2142 Professional Ethics, Safety & Health (Ningen-Ryoku) d. SMJG 3206 Industrial Training e. U*** Free Elective	15	11%
General / University Courses a. Management/Economics/Humanities/Ethics b. Language – English and Japanese c. Co-curriculum	8 6 2	12%
Total	**135**	**100%**
For sciences program, please fill up the following classification.		

No	**Classification**	**Credit**	**Percentage (%)**
A	**Engineering Courses** a) Lecture b) Laboratory c) Final Year Project d) Industrial Training	 83 5 6 6	74%
	Total credit for Part A	**100**	**74%**
	Related Courses		

B	a) Applied Science/Mathematics	15	
	b) Management/Economics/Humanities/Ethics	8	
	c) Co-Curriculum	2	26%
	d) English language	4	
	e) Japanese	6	
	Total credit for Part B	**35**	**26%**
	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
SMJP 1013	ENGINEERING DRAWING WITH CAD	3	2		3	
SMJP 1022	EXPERIMENTAL METHOD	2	1			3
SMJP 1033	STATICS	3	3	1		
SMJM 1013	ENGINEERING MATHEMATICS I	3	3	1		
SMJP 1201	WORKSHOP PRACTICE	1				3
SMJP 2112	INTRODUCTION TO DESIGN	2	1		3	
UHLM 1012	MALAY LANGUAGE FOR COMMUNICATION 2 ** (for international students)*	2	2			
ULRS 1182	APPRECIATION OF ETHICS AND CIVILISATIONS **(for local students)*	2	2			
UHLB 1112	ENGLISH COMMUNICATION SKILLS *(for MUET 3.5 and below)*	HW	2			
	Total Credits	16				

Year 1 **Semester 2**

Code	Course	Credits	L	T	P/S	Lab
SMJP 1043	PROGRAMMING FOR ENGINEERS	3	2		3	
SMJP 1053	DYNAMICS	3	3	1		
SMJP 1062	MATERIALS SCIENCE	2	2	1		
SMJP 1203	SOLID MECHANICS	3	3	1		
SMJM 1023	ENGINEERING MATHEMATICS II	3	3	1		
UHLJ 1122	JAPANESE FOR COMMUNICATIONS I	2	2			
ULRS 1032	INTEGRITY AND ANTI-CORRUPTION	2	2			

	Total Credits	18				

Year 2 **Semester 3**

Code	Course	Credits	L	T	P/S	Lab
SMJP 2103	FLUID MECHANICS	3	3	1		
SMJP 2092	FUNDAMENTAL OF ELECTRICAL ENGINEERING	2	2	1		
SMJP 2133	APPLIED SOLID MECHANICS	3	3	1		
SHLJ 2252	JAPANESE FOR COMMUNICATIONS II	2				
SMJM 2033	ENGINEERING MATHEMATICS III	3	3	1		
ULRS 1022	PHILOSOPHY AND CURRENT ISSUE	2	2			
UHLB 2122	PROFESSIONAL COMMUNICATION SKILLS 1	2	2			
	Total Credits	17				

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

Year 2 **Semester 4**

Code	Course	Credits	L	T	P/S	Lab
SMJP 2113	MANUFACTURING PROCESSES	3	3	1		
SMJP 2123	THERMODYNAMICS	3	3	1		
SMJP 2131	LABORATORY I	1				3
SMJP 2143	ELECTRONICS	3	3	1		
SMJM 2043	ENGINEERING STATISTICS	3	3			
SMJP 2203	APPLIED FLUID MECHANICS	3	3	1		
ULRF 2**2	SERVICE LEARNING & COMMUNITY ENGAGEMENT COURSES	2			6	
	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
SMJP 3163	ENGINEERING COMPONENT DESIGN	3	2		3	
SMJP 3171	LABORATORY II	1				3
SMJM 3053	NUMERICAL METHOD	3	3			
SMJP 3103	APPLIED THERMODYNAMICS AND HEAT TRANSFER	3	3			
ULRS 3032	ENTREPRENEURSHIP & INNOVATION	2	2			
SHLJ 2352	JAPANESE FOR COMMUNICATION III	2	2			
U***	FREE ELECTIVE	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
SMJP 3303	INTEGRATED DESIGN PROJECT	3	2		3	
SMJP 3213	MECHANICS OF MACHINES AND VIBRATION	3	3			
SMJP 3223	CONTROL ENGINEERING	3	3			
SMJP 4633	CNC CAD / CAM	3	2		3	
UHLB 3132	PROFESSIONAL COMMUNICATION SKILLS 2	2	2			
SMJG 2142	PROFESSIONAL ETHICS & SAFETY (NINGEN-RYOKU)	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			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
SMJP 4102	FINAL YEAR PROJECT 1	2			6	
SMJP 4103	MONOZUKURI PROJECT	3	2		3	
SMJP 4113	MECHATRONICS	3	3			
SMJP 4213	MODELING AND SIMULATION	3	3			
SMJP 4**3	ELECTIVE 1	3	3			
	Total Credits	14				

Year 4 **Semester 8**

Code	Course	Credits	L	T	P/S	Lab
SMJP 4204	FINAL YEAR PROJECT 2	4			12	
SMJP 4**3	ELECTIVE 2	3	3			
SMJP 4**3	ELECTIVE 3	3	3			
SMJP 4**3	ELECTIVE 4	3	3			
	Total Credits	13				

PROGRAMME STRUCTURE FOR MARCH INTAKE

Year 1 **Semester 1**

Code	Course	Credits	L	T	P/S	Lab
SMJP 1043	PROGRAMMING FOR ENGINEERS	3	2		3	
SMJP 2123	THERMODYNAMICS	3	3	1		
SMJP 1062	MATERIALS SCIENCE	2	2	1		
SMJP 2113	MANUFACTURING PROCESSES	3	3	1		
SMJG 2142	PROFESSIONAL ETHICS & SAFETY (NINGEN-RYOKU)	2	2			
UHLJ 1122	JAPANESE FOR COMMUNICATIONS I	2				
ULRS 1032	INTEGRITY AND ANTI-CORRUPTION	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
SMJM 1013	ENGINEERING MATHEMATICS I	3	3	1		
SMJP 1022	EXPERIMENTAL METHOD	2	1			3
SMJP 1033	STATICS	3	3	1		
SMJP 1013	ENGINEERING DRAWING WITH CAD	3	2		3	

SMJP 1201	WORKSHOP PRACTICE	1				3
SMJP 2112	INTRODUCTION TO DESIGN	2	1		3	
ULRS 1182	APPRECIATION OF ETHICS AND CIVILISATIONS ** (for local students)*	2	2			
UHLM 1012	MALAY LANGUAGE FOR COMMUNICATION 2 **(for international students)*	2	2			
UHLB 1112	ENGLISH COMMUNICATION SKILLS *(for MUET 3.5 and below)*	HW				
	Total Credits	16/18*				

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

Year 2 Semester 3

Code	Course	Credits	L	T	P/S	Lab
SMJP 4633	CNC CAD / CAM	3	2		3	
SMJP 2131	LABORATORY I	1				3
SMJP 1053	DYNAMICS	3	3	1		
SMJM 1023	ENGINEERING MATHEMATICS II	3	3	1		
SMJP 1203	SOLID MECHANICS	3	3	1		
ULRF 2**2	SERVICE LEARNING & COMMUNITY ENGAGEMENT COURSES	2			6	
	Total Credits	15				

Year 2 **Semester 4**

Code	Course	Credits	L	T	P/S	Lab
SMJP 2103	FLUID MECHANICS	3	3	1		
SMJP 2092	FUNDAMENTAL OF ELECTRICAL ENGINEERING	2	2	1		
SMJM 2033	ENGINEERING MATHEMATICS III	3	3	1		
SMJP 2133	APPLIED SOLID MECHANICS	3	3	1		
SHLJ 2252	JAPANESE FOR COMMUNICATIONS II	2	2			
UHLB 2122	PROFESSIONAL COMMUNICATION SKILLS 1	2	2			
ULRS 1022	PHILOSOPHY AND CURRENT ISSUE	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
SMJP 2143	ELECTRONICS	3	3	1		
SMJP 3213	MECHANICS OF MACHINES AND VIBRATION	3	3			
SMJP 3223	CONTROL ENGINEERING	3	3			
SMJP 2203	APPLIED FLUID MECHANICS	3	3	1		
SMJM 2043	ENGINEERING STATISTICS	3	3	1		
UHLB 3132	PROFESSIONAL COMMUNICATION SKILLS 2	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
SMJP 3163	ENGINEERING COMPONENT DESIGN	3	2		3	
SMJP 3171	LABORATORY II	1				3
SMJM 3053	NUMERICAL METHOD	3	3			
SMJP 3103	APPLIED THERMODYNAMICS AND HEAT TRANSFER	3	3			
SHLJ 2352	JAPANESE FOR COMMUNICATION III	2	2			
ULRS 3032	ENTREPRENEURSHIP & INNOVATION	2	2			
U***	FREE ELECTIVE	3	3			
	Total Credits	17				

Year 4 **Semester 7**

Code	Course	Credits	L	T	P/S	Lab
SMJP 4102	FINAL YEAR PROJECT 1	2			6	
SMJP 3303	INTEGRATED DESIGN PROJECT	3	1		3	
SMJP 4**3	ELECTIVE 1	3	3			
SMJP 4**3	ELECTIVE 2	3	3			
SMJP 4**3	ELECTIVE 3	3	3			
	Total Credits	14				

Year 4 **Short Semester**

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

Year 4 **Semester 8**

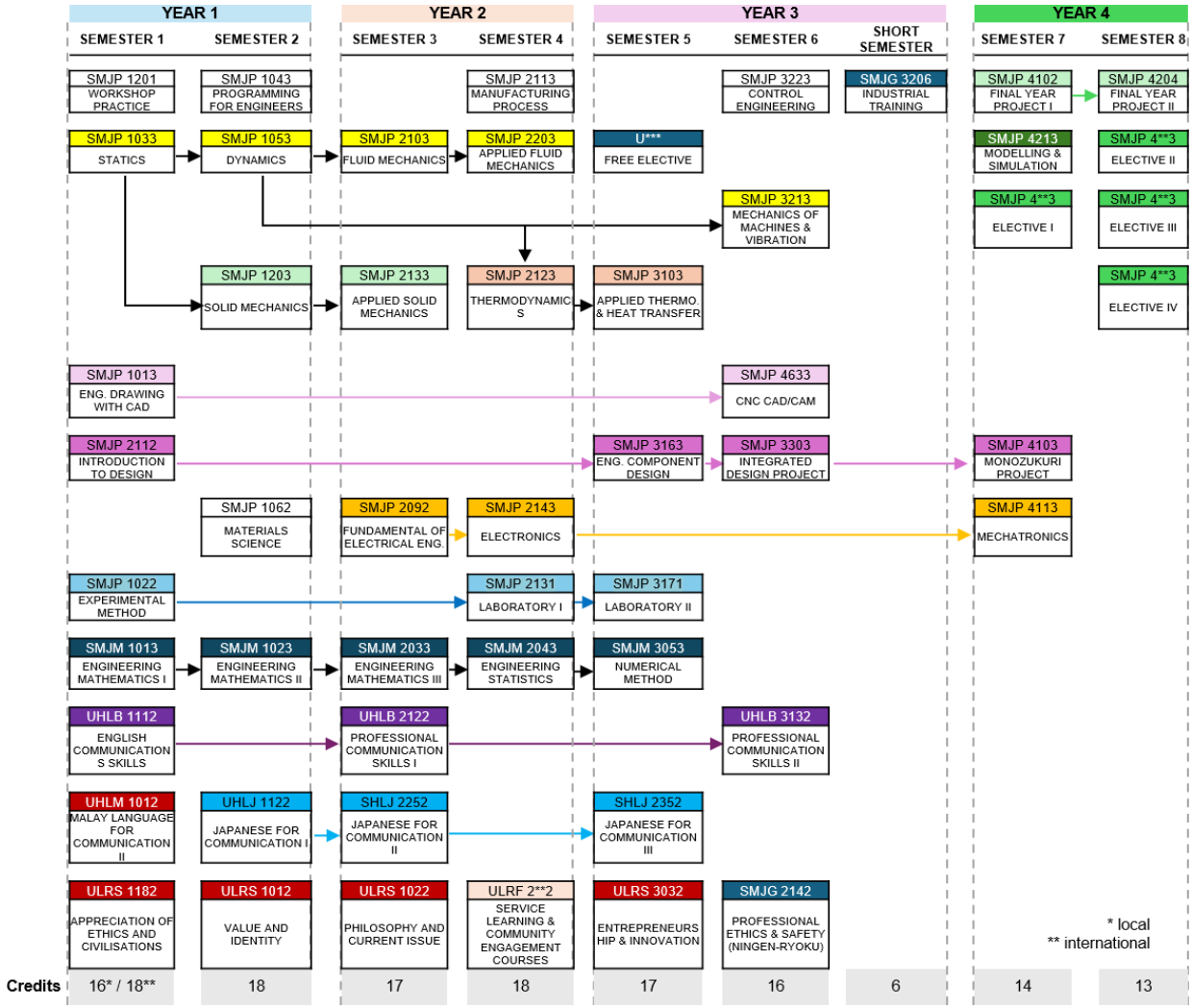
Code	Course	Credits	L	T	P/S	Lab
SMJP 4204	FINAL YEAR PROJECT 2	4			12	
SMJP 4103	MONOZUKURI	3	2		3	
SMJP 4113	MECHATRONICS	3	3			
SMJP 4213	MODELING AND SIMULATION	3	3			
SMJP 4**3	ELECTIVE 4	3	3			
	Total Credits	16				

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

ELECTIVE COURSES
CHOOSE FOUR (4) ONLY

Code	Course	Credit
SMJP 4243	SUB MICROMETRE AND NANOMETRE TECHNOLOGY	3
SMJP 4273	MICROMACHINING PROCESSES	3
SMJP 4293	WELDING ENGINEERING	3
SMJP 4303	NON-DESTRUCTIVE TEST TECHNOLOGY	3
SMJP 4313	DESIGN OF EXPERIMENT	3
SMJP 4323	MECHANICS OF MACHINERY	3
SMJP 4353	ROBOTICS	3
SMJP 4363	MICRO ELECTROMECHANICAL SYSTEM	3
SMJP 4343	MICROPROCESSOR AND MICROCONTROLLER	3
SMJP 4333	SENSORS AND ACTUATORS SYSTEM	3
SMJP 4483	QUALITY ENGINEERING	3
SMJP 4393	NON-TRADITIONAL MACHINING	3
SMJP 4403	ENGINEERING ECONOMICS AND OPERABILITY	3
SMJP 4413	ADVANCED MACHINE MANUFACTURING	3
SMJE 4403	MECHATRONICS SYSTEM DESIGN	3
SMJE 4293	INDUSTRIAL AUTOMATION	3
SMJE 4263	COMPUTER INTEGRATED MANUFACTURING	3
SMJE 4233	INDUSTRIAL HYDRAULICS AND PNEUMATICS	3
SMJP 3063	TRIBOLOGY	3
SMJP 4423	METROLOGY AND INSPECTION	3
SMJP 3263	VIBRATION AND NOISE	3
SMJP 4043	AIR CONDITIONING MECHANICAL VENTILATION	3

PROGRAMME COURSE FLOW CHART



SYNOPSIS OF CORE COURSES

SMJP 1013 Engineering Drawing with CAD

The successful completion of this class will provide students the opportunity to develop significant depth of understanding and skill in using AutoCAD. These skills are the core CAD skills needed for employment in a CAD related business, such as in engineering design, manufacturing, architectural, construction, utilities, and others. In this topic, students will learn how to draw engineering drawings using AUTOCAD for geometrical drawing, orthographic projection, isometric projection etc. At the end, students are required to do a project using AutoCAD.

SMJP 1022 Experimental Method

This course introduces experimental measurements and instrumentation techniques, equipment and measurement procedures used by mechanical engineers. Writing laboratory reports, performing data acquisition and applying statistics to experimental data are introduced in this course.

SMJP 1033 Statics

This course introduces students to the concepts and applications of the first, second and third laws of Newton. The equations of equilibrium for a particle and a rigid body subjected to a system of coplanar forces and three-dimensional force systems will also be discussed. In addition, students will learn how to determine forces in mechanical structures and frictional forces between contact surfaces.

SMJP 1043 Programming for Engineers

This course is designed to expose students to the development of programming skill using a C++ language, which is suitable for the current computer operating system. It emphasizes on the general concept of computer programming that includes steps of problem solving using computer, algorithm and programming logic tools. Students will be introduced to variables

and operators, mathematical operations, commands and functions, program control structures, modularization, and input and output files. Examples, assignments, hands-on exercises and group projects related to various engineering fields will be given to the students. At the end of the course, students should be able to plan, analyse and write computer programs for basic engineering applications. This course embraces authenticity of generic skills (thinking skills) when engaging in the process of completing the tasks.

SMJP 1053 Dynamics

This course introduces students to dynamics that covers particles, rigid bodies and systems in motion. The problem-solving methods based on Newton's laws are applied to solve fundamental, applied and complex problems in kinematics and kinetics. This consists of four main topics: (1) Kinematics of a particle: rectilinear and curvilinear motion, absolute dependent motion and relative motion of two particles; (2) Kinetics of a particle: force and acceleration, work and energy, and impulse and momentum; (3) Planar kinematics of a rigid body: translation, rotation, absolute motion and relative motion; and (4) Planar kinetics of a rigid body: moment of inertia, force and acceleration, work and energy.

SMJP 1062 Materials Science

Materials Science is an important subject that relates materials structure and their properties. This basic knowledge is necessary for every engineer who is involved in designing certain components and products so that the most suitable materials are utilized. This course consists of introduction to atomic structure, interatomic bonding, structure of crystalline solids, diffusion, crystal imperfections, mechanical properties of metal, dislocation, metal strengthening mechanism, phase transformation, carbon steel and nonferrous metals.

SMJP 1201 Workshop Practice

This course presents the principles and hands-on for mechanical engineering programme. In particular, it is designed to provide hands-on experience using mechanical workshop machinery. Workshops involved are particularly of mechanical engineering such as lathe/milling machine, welding machine, air condition and CNC Simulator. Students are given

one project by utilizing those machines to be finished within a given period throughout the semester.

SMJP 1203 Solid Mechanics

This course provides students with the fundamental knowledge of solid mechanics. At the end of the course, the students are expected to be able to determine the strength and stiffness of structures. The structures that will be studied in this course are bars, pins, bolts, shafts, and beams. The types of applied loadings are axial loads, torsional loads, and transverse loads. At the end of the course, students should also be able to determine the mechanical properties of the materials with respect to their strength and stiffness.

SMJP 2092 Fundamental of Electrical Engineering

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.

SMJP 2103 Fluid Mechanics

The aim of this course is to provide students with an understanding of the properties of fluids and to introduce fundamental laws and descriptions of fluid behavior and flow. It will emphasize the concept of pressure, hydrostatic pressure equation and its application in the measurement of pressure, static force due to immersed surfaces, floatation and buoyancy analysis. Dynamic flow analysis inclusive of techniques in solving flow problems is introduced especially to solve flow measurement, mass or volumetric flow rate, momentum in flow and loss in pipe network. Lastly, some basic dimensional analysis and similarities will be introduced. At the end of the course, the students should be able to demonstrate an ability to analyze whether statically, dynamically or kinematically problems related directly to fluids.

SMJP 2112 Introduction to Design

This course is designed to expose students to the concepts and methods to develop an efficient design process and apply it to solve engineering design problems creatively and effectively.

SMJP 2113 Manufacturing Process

This course consists of introduction to manufacturing processes, common aspects in manufacturing, metal casting, bulk metal forming, sheet metal forming, forming of polymer, machining operations, joining processes, and the latest and competitive environments in manufacturing.

SMJP 2123 Thermodynamics

This course consists of basic concepts of thermodynamics, phase changes process of substance, types of energy, first law as well as second law of thermodynamics for close and open systems.

SMJP 2133 Applied Solid Mechanics

The course is an extension to Solid Mechanics. It aims to extend the student's knowledge and understanding of the behavior of materials and structures under a variety of loading conditions. The course covers the plane stress and plane strain transformations, following which several elastic failure criteria are investigated. The students are expected to be able to investigate thick cylinders, structural deformation behavior using the energy method. This includes the instability problems of struts and elasto-plastic bending of beams. Determinate and indeterminate problems will also be examined. At the end of the course, students should be able to calculate and evaluate stress, strain and deformation of structures in normal loading, torsion and bending. They should also be able to evaluate failure modes and estimate fracture life of structures and components. The aspect of designing safe components and structures will also be emphasized to the students.

SMJP 2131 Laboratory I

This course presents the principles and methodology for mechanical engineering programme laboratories. In particular, it is designed to understand the theory and application of measuring instruments and equipment, to discuss and evaluate experimental errors, to provide hands-on experience using laboratory instruments. Experiments involved are particularly of mechanical engineering subjects such as mechanics of machine, strength of material and materials science. Students also learn formal technical writing skills which are required for all written reports.

SMJP 2143 Electronics

This course introduces the fundamentals of electronic materials, device structures, circuits and applications suitable for students majoring in mechanical engineering such as semiconductor diodes, bipolar junction transistors, field-effect transistors, basic gates and integrated circuits. Generally, this course is designed so that the students can have the basic knowledge about electronic engineering - which is required in understanding mechanical engineering.

SMJP 2203 Applied Fluid Mechanics

This course is designed to enhance the basic knowledge that has been developed in the first stage of Fluid Mechanics and expose the students in analyzing the flow field. It will emphasize on the analysis and the importance of boundary layer, ideal and compressible flow in practical engineering applications. The course will also provide the analysis of flow through fluid machines such as pump and turbine. At the end of the course, students should be able to demonstrate and apply the theory to solve problems related to flow of fluids.

SMJP 3163 Engineering Component Design

This course stresses on one aspect of design which is the design for strength. Other aspects of design are touched on the surface. The design for strength means determining the appropriate size and material of structures or components to be designed so that they are free from mechanical failures such as yielding, fracturing and buckling. Students will be

exposed with static and dynamic failure theories. As a start, students are to design simple structures that they have encountered before: rod, beam, shaft and thin and thick cylinders. Following that, students will learn how to design mechanical components that include bolts, welding, bearings, gears and belts. The applications of these components in machinery will also be exposed. Throughout the semester, students will be tested with open-ended design problems that may come in forms of tutorial, test and projects.

SMJP 3171 Laboratory II

This course presents the principles and methodology for the mechanical precision engineering programme. In particular, it is designed to understand the theory and application of measuring instruments and equipment, to discuss and evaluate experimental errors, to provide hands-on experience using laboratory instruments. Experiments involved are particularly of mechanical precision engineering courses such as Fluid Mechanics, Thermodynamics/Heat transfer and Control. Students also learn formal technical writing skills, which are required for all written reports.

SMJP 3103 Applied Thermodynamics and Heat Transfer

This course aims to develop a fundamental understanding of the processes by which heat and energy are interrelated and converted and by which heat is transferred. The course will review major principles of energy conversion and the modes of heat transfer. The basic laws of thermodynamics and the governing equations for heat transfer and thermodynamics will be introduced and subsequently used to solve practical engineering problems involving thermodynamics and heat transfer. The course will also cover fundamental principles of power generation systems.

SMJG 3206 Industrial Training

The industrial training provides students with work-based learning in an 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 a real working

environment. Students may realize their ambition and ascertain their career path from the experience gained during training. 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.

SMJP 3303 Integrated Design Project

The Integrated Design Project includes students in the Mechanical Precision and Electronics Systems disciplines. This course requires application of the 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. This course provides an exposure to teamwork so as to emulate a typical professional design environment, and improve communication and organizational skills. The project stresses the importance of other influences on design such as economics, reliability, performance, safety, ethics and social impacts.

SMJP 3213 Mechanics of Machines and Vibration

This course is a continuation from the Dynamic subject. The chapter usually covered several analysis of gear systems, belt, balancing and crank effort diagrams. Besides that, the topic about governors is also discussed. Basic of vibration chapter will include free vibration and force vibration analysis. Generally, this course is intended to cover that field of engineering theory, analysis and practice that is described as mechanisms of machines and vibration analysis.

SMJP 3223 Control Engineering

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 analyzing 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.

SMJP 4103 Monozukuri Project

This is an advanced course on modeling, design, integration and best practices for use of machine elements such as bearings, springs, gears, cams and mechanisms. Modeling and analysis of these elements is based upon extensive application of physics, mathematics and core mechanical engineering principles (solid mechanics, fluid mechanics, manufacturing, estimation, computer simulation, etc.). These principles are reinforced via a substantial design project wherein students model, design, fabricate and characterize a mechanical system that is relevant to a real world application. Student assessment is based on the student's ability to synthesize, model and fabricate a mechanical device subject to engineering constraints (e.g. cost and time/schedule).

SMJP 4113 Mechatronics

The purpose of this course is to provide a focused interdisciplinary experience for undergraduates that encompass the important elements from traditional courses as well as contemporary developments in mechatronics. These elements include measurement theory, electronic circuits, computer interfacing, sensors, actuators, and the design, analysis, and synthesis of mechatronic systems. This interdisciplinary approach is valuable to students because virtually every newly designed engineering product is a mechatronic system. This course objective to cover a review of basic electrical relations, circuit elements, and circuit analysis and semiconductor electronics. Additionally, the fundamentals of unit systems, statistics, error analysis, and mechanics of materials to support and supplement measurement systems topics are also explained.

SMJP 4633 CNC CAD/CAM

This course provides the fundamental knowledge and principles of Computer Aided Design and Computer Aided Manufacturing and generates the hands-on skill and technical application of CNC CAD/CAM through a given project.

SMJP 4213 Modeling and Simulation

In this course, various numerical analysis tools: scientific numerical computing, dynamic simulation, and finite element analysis software, are introduced. How to identify model geometry, boundary conditions, and material properties are discussed considering the physical interpretation of problems. The interpretation of simulation results is also discussed.

SMJP 4102 Final Year Project I

This course is the first stage of the Final Year Project by research at i-Kohza which involves preliminary study and planning on a project. The aim of this course is to inculcate good Japanese ethical values in problem identification and proposing appropriate solutions. It is designed to expose students to writing a research proposal that emphasizes research philosophy and methodology. At the end of the course, students should be able to write a research proposal in a professional manner. The students should also be able to manage and plan their research according to the given period.

SMJP 4204 Final Year Project II

This course is the second stage of the Final Year Project by research, involving analytical, experimental, or simulation work and studies at the respective i-Kohza lab. The project results will be discussed with their supervisors, i-Kohza members, and department members. By the end of the course, students should be able to work independently, produce a project report, and present their findings. They should also be able to manage and plan their research according to the given timeline.

SMJP 4243 Sub-Micrometre and Nanometre Technology

This course surveys techniques to fabricate and analyze sub-micron and nanometre structures, with applications. Optical and electron microscopy is reviewed. Additional topics that are covered include: surface characterization, preparation, and measurement techniques, resist technology, optical projection, interferometric, X-ray, ion, and electron lithography; Aqueous, ion, and plasma etching techniques; lift-off and electroplating; and ion implantation. Applications in microelectronics, microphotonics, information storage, and nanotechnology will also be explored.

SMJP 4273 Micromachining Processes

The topics cover micromachining techniques, capabilities and limitations of micromachining, material for micromachining, additives films and materials, bulk micromachining.

SMJP 4293 Welding Engineering

The purpose of this course is to become familiar with the concepts and terminology in welding engineering. Students will understand how welding design is built on a foundation of heat flow stress, structural analysis and fitness for services. In this course the students will learn the basic theory of various materials joining processes including arc, resistance, solid state, and high energy density welding.

SMJP 4303 Non-Destructive Test Technology

The purpose of this course is to give students a comprehensive introduction to their major courses. The importance to industry and its application in various fields is discussed and how NDT is used for product quality control. Steel manufacture and types of discontinuities are covered. Instruction shall be supported with power point presentation. The students will build up a general knowledge on how NDT testing methods can improve reliability and safety of mechanical systems.

SMJP 4313 Design of Experiment

This is a basic course in designing experiments and analyzing the resulting data. The course deals mainly with the most common types of experiments that are conducted in industrial settings. The topics covered will include completely randomized design, randomized block design, Latin Squares, nested and repeated measures designs, multiple comparisons, factorial experiments, random and mixed models, confounding and fractional factorials. Course will include at least of tour of businesses where machine design is being practiced.

SMJP 4323 Mechanics of Machinery

This course is a continuation from mechanics machine and vibration subject. The chapter usually covered several analysis of motion analysis in Machinery, Introduction to Kinematic and Kinetics of Rigid Body, Kinematic and Kinetic Analysis of Mechanisms, mechanism, cams, links and slider crank.

SMJP 4353 Robotics

This course provides an overview of robot mechanisms, dynamics, and controls. Topics include planar and spatial kinematics, and motion planning; mechanism design for manipulators and mobile robots, multi-rigid-body dynamics; control design, actuators, and sensors

SMJP 4363 Micro Electromechanical System

This course provides an overview of robot mechanisms, dynamics, and controls. Topics include planar and spatial kinematics, and motion planning; mechanism design for manipulators and mobile robots, multi-rigid-body dynamics; control design, actuators, and sensors.

SMJP 4343 Microprocessor and Microcontroller

This course is an introduction to a microprocessor. Students are exposed to the internal architecture of the microprocessor, various instruction sets, and basic hardware design of

microprocessor-based. Then the students will be taught about microcontrollers and interface with various peripherals.

SMJP 4333 Sensors and Actuator System

This course introduces sensors, transducers and actuation systems. The actuation system covered electrical, mechanical, pneumatic and hydraulic systems. Besides that, sensors and transducers also covered electrical and mechanical types of sensors. Generally, this course is intended to cover that field of engineering theory, analysis and practice that is described as sensors and actuator systems.

SMJP 4483 Quality Engineering

This is a basic course in designing experiments and analyzing the resulting data. The course deals mainly with the most common types of quality conducted in industrial settings. The topics covered will include quality fundamentals, inspection and gauging, SQC, and total quality management (TQM). Course will include at least of tour of businesses where machine design is being practiced.

SMJP 4393 Non-Traditional Machining

This course provides an introduction to special material processing methods including ultrasonic machining, electrical-discharge machining, laser-material processing, chemical machining, electrochemical machining, electron-beam machining, hydrodynamic machining, and surface treatment techniques, in addition to the principles, techniques for the corresponding process will be discussed.

SMJP 4403 Engineering Economics and Operability

This course is designed for investment analysis concepts applied to a wide variety of investment opportunities. The course covers Introduction to mathematical and practical concepts of time value money, application of time value money concepts to development of decision criteria used to evaluate investments in the resource and non-resource industries, proper application of decision criteria to different investment situations, and inflation.

SMJP 4413 Advanced Machine Manufacturing

The course serves the modern methods of manufacturing. These modern methods are based upon the emerging technologies of computer-integrated manufacturing (CIM) and flexible manufacturing (FMS). Students will learn computer-aided design and manufacturing (CAD/CAM), numerically controlled machine tools (CNC), computer controlled material handling (AGV), automatic storage systems (AS/RS), robots, and sophisticated sensory systems.

SMJE 4403 Mechatronics System Design

This course consists of introduction to the synergistic integration of mechanical disciplines, controls, electronics and computers in the design of high-performance machines, devices or processes. This course overviews the principle of mechatronics design and practice to provide extensive coverage of mechanical components and assembly, sensors and actuators, signal conditioning circuits, modelling and simulation, data acquisition hardware and software, and microprocessors.

SMJE 4293 Industrial Automation

This course helps the students to develop their knowledge of industrial automation by exploring various automation technologies such as SCADA, DCS, CAN and industrial buses and work with PLC's in an industrial plant, also system integration with PLCs and computers. The course is backed by extensive laboratory work using automation rigs and equipment. The course would give the students a broad understanding of modern industrial automation technology and will enable them to develop skills in designing, building, programming, debugging and maintaining industrial automated systems.

SMJE 4263 Computer Integrated Manufacturing

This course is designed to highlight the major automation-related subjects within the scope of manufacturing systems. Special emphasis will be given to industrial robotics, computer-aided design and manufacturing (CAD/CAM), numerically controlled machine tools (CNC), computer controlled material handling (AGV), automatic storage systems (AS/RS) and

sophisticated sensory systems such as computerized vision. 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 4233 Industrial Hydraulics and Pneumatics

A significant proportion of automated and manual systems in manufacturing plants around the world utilize pneumatic and hydraulic actuators for fast reliable operation. This course provides the student with (1) an understanding of the fluid power systems, including hydraulic and pneumatic components, (2) safe work practices for hydraulics and pneumatics and includes information on preventive measures for safety hazards in the manufacturing workplace, (3) an overview of basic and advanced pneumatic and hydraulic system components, (4) and guidelines on how to design, operate, and troubleshoot pneumatic and hydraulic systems.

SMJP 3063 Tribology

This course will provide attendees with basic knowledge of "tribology" which covers friction, wear and lubrication issues. The course will start with solid contact mechanism and proceed to how to control friction and wear utilizing scientific and technical knowledge which should be obtained by Year 3. Through the course, the attendees will achieve a technical sense of interdisciplinary approach which is practical and necessary in industrial developments.

SMJP 4423 Metrology and Inspection

This course covers limits, fits and tolerances; linear and angular measurements; comparators; gauge design; interferometry; form and finish measurement; alignment and testing methods.

SMJP 3263 Vibration and Noise

This course is to familiarize the students with the sources of vibration and noise in machines and make design modifications to reduce the vibration and noise and improve the life of the components. Students will learn one degree of freedom, two and multi-degree of freedom, diagnostic and field measurement and noise control.

SMJP 4043 Air Conditioning and Mechanical Ventilation

This course is designed to expose students in Air conditioning and Mechanical Ventilation, skill using analyze well-defined engineering practical problems using conventional and modern tools in their discipline or area of ACRMV specialization. Assist in the formulation of systems, components or processes to meet specified needs of scientific skills. Apply appropriate techniques, resources, and engineering tools to well-defined engineering activities, with an awareness of their limitations. Demonstrate an awareness of and consideration for societal, health, safety, legal and cultural issues and their consequent responsibilities.

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., Industrial Design and Monozukuri) and Final Year Project.
- Pass five (5) Professional Skills Certificate (PSC)

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Malaysia-Japan International Institute of Technology (MJIIT)

Bachelor of

CHEMICAL PROCESS ENGINEERING

(UT6524004)

MJIIT UTM

ACADEMIC STAFF

DEPARTMENT OF CHEMICAL AND ENVIRONMENTAL ENGINEERING (ChEE)

Assoc. Prof. Ir. Dr. Dayang Norulfairuz binti Abang Zaidel
Head of Department (ChEE)
Ph.D. (Enzyme Technology)
M.Sc. (Food Engineering)
B.Eng. (Chemical)
Phone: +603-22031438
Email: dnorulairuz@utm.my

Prof. Dr. Mohamed Mahmoud El- Sayed Nasef
Ph.D. (Chemical Engineering)
M.Eng. (Chemical)
B.Sc. (Chemistry)
Phone: +603-2203 1273
Email: el-sayed@utm.my

Prof. Dr. Tomoya Tsuji
Ph.D. (Chemical Engineering)
M.Eng. (Chemical)
B.Eng. (Chemical)
Phone: +603-2203 1294
Email: t.tsuji@utm.my

Prof. Ir. Dr. Muhamad Ali bin Muhammad Yuzir
Ph.D. (Civil Engineering)
M.Eng. (Environmental)
B.Eng. (Construction)
Phone: +603-2203 1273
Email: muhdaliyuzir@utm.my

Prof. Dr. Siti Hamidah bt Mohd Setapar
Ph.D. (Chemical Engineering)
M.Eng. (Chemical)
B.Eng. (Chemical-Bioprocess)
Phone: -
Email: siti.h@utm.my

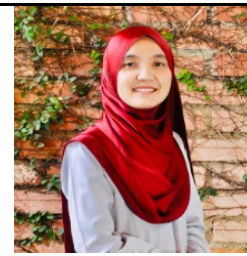
Prof. Dr. Azila bte Abd. Aziz
Ph.D. (Chemical Engineering)
M.Eng. (Biochemical)
B.Eng. (Biochemical)
Phone: -
Email: r-azila@utm.my

 **Assoc. Prof. Dr. Shaza Eva binti Mohamad** Ph.D. (Biology) M.Sc. (Biotechnology) B.Sc. (Biochemistry) Phone: +03-2203 1287 Email: shaza@utm.my	 **Assoc. Prof. Dr. Koji Iwamoto** Ph.D. (Biology Science) M.Sc. (Biophysics & Biochemistry) Phone: +03-2203 1238 Email: k.iwamoto@utm.my	 **Assoc. Prof. Dr. Norhayati binti Abdullah** Ph.D. (Biosciences) M.Eng. (Environmental) B.Eng. (Civil) Phone: +03-2203 1322 Email: norhayati@utm.my
 **Assoc Prof Dr. Aznah binti Nor Anuar** Ph.D. (Environmental Engineering) M.Eng. (Environmental) B.Eng. (Environmental) Phone: +603-2203 1318 Email: aznah@utm.my	 **Assoc Prof. Dr. Roshafima binti Rasit Ali** Ph.D. (Polymer Engineering) M.Eng. (Polymer) B.Eng. (Polymer) Phone: +603-2203 1293 Email:roshafima@utm.my	 **Assoc. Prof. Ir. Ts. Dr. Liew Peng Yen** Ph.D. (Chemical Engineering) B.Eng. (Chemical) Phone: +603-2203 1479 Email:pyliew@utm.my

 **Dr. Nurulbahiyah binti Ahmad Khairudin** Ph.D. (Pharmaceutical Technology) M.Sc. (Biochemical Engineering) B.Eng. (Chemical-Bioprocess) Phone: +603-2203 1263 Email: r-bahiah@utm.my	 **Sr. Dr. Shuib bin Rambat** Ph.D. (Surveying Engineering) M.Eng. (Surveying) B.Eng. (Surveying) Phone: +03-2203 1233 Email: shuibrambat@utm.my	 **Ir. Ts. Dr. Mariam Firdhaus binti Mad Nordin** Ph.D. (Chemical & Process) M.Eng. (Chemical & Process) B.Eng. (Biochemical & Process) Phone: +603-2203 1347 Email: mariamfirdhaus@utm.my
 **Ts. Dr. Nor Ruwaida binti Jamian** Ph.D. (Chemical) M.Eng. (Chemical) B.Eng. (Chemical) Phone: +603-2203 1236 Email: ruwaida.kl@utm.my	 **Ts. Dr. Pramila a/p Tamunaidu** Ph.D. (Energy Science) M.Eng. (Chemical) B.Eng (Chemical) Phone: +603-2203 1523 Email: pramila@utm.my	 **Ts. Dr. Faizah binti Che Ros** Ph.D. (Systems Innovation) M.Eng. (Civil) B.Eng. (Civil) Phone: +603-2203 1283 Email: crfaizah@utm.my

 **Ts. Dr. Khairunnisa binti Mohd Paad** Ph.D. (Chemical Engineering) M.Eng. (Chemical) B.Eng. (Chemical) Phone: +603-2203 1303 Email: khairunnisa.kl@utm.my	 **Ir. Dr. Nurfatehah Wahyuny binti Che Jusoh** Ph.D. (Chemical Engineering) B.Eng. (Chemical) Phone: +603-2203 1324 Email: nurfatehah@utm.my	 **Ts. Dr. Fazrena binti Md Akhir** Ph.D. (Biomedical Sciences) M.Sc. (Biotechnology) B.Sc. (Biology) Phone: +603-2203 1330 Email: fazrena@utm.my
 **Ir. Dr. Tan Lian See** Ph.D. (Chemical Engineering) M.Sc. (Chemical Engineering) B.Eng. (Chemical) Phone: +603-2203 1311 Email: tan.liansee@utm.my	 **Ir. Dr. Norhuda binti Abdul Manaf** Ph.D. (Chemical Engineering) M.Eng. (Safety, Health & Environment) B.Eng. (Chemical) Phone: +603-2203 1265 Email: norhuda.kl@utm.my	 **Ts. Dr. Abd Halim bin Md Ali** Ph.D. (Chemical Engineering) M.Sc. (Environmental Engineering) B.Sc. (Biological and Agricultural Eng.) Phone: +603 2203 1295 Email: abd.halim@utm.my

 **Dr. Liew Wai Loan** Ph.D. (Environmental Engineering) B.Eng (Environment) Phone: - Email: wlliew@utm.my	 **Ts. Dr. Zatil Izzah binti Ahmad Tarmizi** Ph.D. (Chemistry) M.Sc. (Chemistry) B.Sc. (Industrial Chemistry) Phone: - Email: zatil.izzah@utm.my	 **Dr. Nabilah binti Zaini** Ph.D. (Gas Engineering) B.Eng. (Chemical-Gas) Phone: +603-2203 1246 Email: nabilah.zaini@utm.my
 **Ir. Ts. Dr. Vekes a/l Balasundram** Ph.D. (Chemical-Gas Engineering) B.Eng. (Chemical) Diploma (Chemical – Process Plant) Phone: - Email: vekes@utm.my	 **Ir. Ts. Dr Kiew Peck Loo** Ph.D. (Chemical Engineering) B.Eng. (Chemical) Phone: - Email: plkiew@utm.my	 **Dr. Khamarrul Azahari bin Razak** Ph.D. (Civil Engineering) M.Sc. (Geomatic Engineering) B.Eng. (Geomatic) Phone: - Email: khamarrul.kl@utm.my

 **Dr. Nurul Zainab binti Along** Ph.D. (Disaster Management) M.Sc. (Applied Marine Science) B.Eng. (Science) Phone: - Email: nurulzainab.along@utm.my	 **Chm. Dr. Eleen Dayana binti Mohamed Isa** Ph.D. M.Sc (Inorganic Chemistry) B.Sc (Chemistry) Phone: - Email: eleendayana@utm.my	 **Dr. Fatin Syahirah binti Othman** Ph.D. B.Sc (Biology Industry) Phone: - Email: fatin.syahirah@utm.my
 **LAr. Dr. Rohayah binti Che Amat** Ph.D. (Architecture) M.Sc.(Architecture) B.Sc. (Architecture) Phone: - Email: rohayah.cheamat@utm.my	 **Ts. Dr. Mohammad Hussaini bin Wahab** Ph.D. (Regional Environmental System) B.Sc. (Architecture and Civil Engineering) B.Sc. (Architecture and Building Engineering) Phone: - Email: hussaini.kl@utm.my	 **Dr. Wan Nurul Mardiah binti Mohd Rani** Ph.D. (Urban Studies) M.Sc.(Built Environment) B.Sc. (Urban and Regional Planning) Phone: - Email: wnurul.kl@utm.my

Dr. Ahmad Aiman bin Azmi
Ph.D. (Mechanical Engineering)
M.Phil (Chemical)
B.Eng. (Chemical)
Phone: -
Email: ahmadaiman.a@utm.my

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	92	68%
B.	Program Elective	12	9%
C.	Faculty Core a. SHLJ 2252 Japanese for Communication 2 b. SHLJ 2353 Japanese for Communication 3 c. SMJG 2142 Professional Ethics, Safety & Health (Ningen-Ryoku) d. SMJG 3206 Industrial Training e. U*** Free Elective	15	11
C.	General / University Courses a. Management/Economics/Humanities/Ethics b. Language – English and Japanese c. Co-curriculum/Service Learning	 8 6 2	 12%
	Total	**135**	**100**%
For sciences program, please fill up the following classification.			
No	**Classification**	**Credit**	**Percentage (%)**
A	**Engineering Courses** (a) Lectures (b) Laboratory (c) Final Year Project/Design Project (d) Industrial Training	 79 5 13 6	 76%
	Total credit for Part A	103	76%

B	**Related Courses** (a) Mathematics (b) Management/Economics/Humanities/Ethics (c) Co-Curriculum/Service Learning (d) English (e) Japanese	12 8 2 4 6	24%
	Total credit for Part B	32	24%
	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
SMJC 1202	INTRODUCTION TO CHEMICAL PROCESS ENGINEERING	2	2	1		
SMJM 1013	ENGINEERING MATHEMATICS I	3	3	1		
SMJC 1101	ENGINEERING DRAWING WITH CAD	1				3
SMJP 1043	PROGRAMMING FOR ENGINEERS	3	2			3
SMJC 1003	ORGANIC CHEMISTRY I	3	3			
ULRS 1182	APPRECIATION OF ETHICS AND CIVILIZATION **(for local students)*	2	2			
UHLM 1012	MALAY LANGUAGE FOR COMMUNICATION 2 **(for international students)*	2	2			
UHLB 1112	ENGLISH COMMUNICATION SKILLS *(for MUET 3.5 and below)*	HW	2			
	Total Credits	14				

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

Year 1 **Semester 2**

Code	Course	Credits	L	T	P/S	Lab
SMJC 1213	THERMODYNAMICS	3	3	1		
SMJM 1023	ENGINEERING MATHEMATICS II	3	3	1		
UHLJ 1122	JAPANESE FOR COMMUNICATION I	2	2			
SMJC 2013	ORGANIC CHEMISTRY 2	3	3	1		
SMJG 2142	PROFESSIONAL ETHICS & SAFETY (NINGEN-RYOKU)	2	2			

ULRS 1032	INTEGRITY AND ANTI CORRUPTION	2	2			
SMJC 2022	ANALYTICAL CHEMISTRY	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
SMJC 2223	MASS AND ENERGY BALANCE	3	3	1		
SMJM 2033	ENGINEERING MATHEMATICS III	3	3	1		
SHLJ 2252	JAPANESE FOR COMMUNICATION II	2	2			
U***	FREE ELECTIVE	3	3			
SMJC 2113	FLUID MECHANICS	3	3	1		
ULRS 1022	PHILOSOPHY AND CURRENT ISSUE	2	2			
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
SMJC 2701	ORGANIC CHEMISTRY/ ANALYTICAL LAB	1				3
SMJC 2711	CHEMICAL PROCESS ENGINEERING LABORATORY 1	1				3
SMJC 2233	PHYSICAL CHEMISTRY FOR CHEMICAL ENGINEER	3	3	1		
SMJC 2243	CHEMICAL ENGINEERING THERMODYNAMICS	3	3	1		
SMJC 2253	TRANSPORT PHENOMENA	3	3	1		

SMJM 2043	ENGINEERING STATISTICS	3	3	1		
SHLJ 2352	JAPANESE FOR COMMUNICATION III	2	2			
ULRF 2**2	SERVICE LEARNING & COMMUNITY ENGAGEMENT COURSES	2			6	
	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
SMJC 3263	SEPARATION PROCESS 1	3	3			
SMJC 3303	CHEMICAL KINETICS AND REACTOR DESIGN	3	3			
SMJC 3313	PROCESS CONTROL AND INSTRUMENTATION	3	3			
SMJC 3721	CHEMICAL PROCESS ENGINEERING LABORATORY 2	1	1			3
SMJC 3273	NUMERICAL METHODS FOR CHEMICAL ENGINEERS	3	3			
SMJC 3323	FUNDAMENTALS OF MICROBIOLOGY AND BIOTECHNOLOGY	3	3			
ULRS 3032	ENTREPRENEURSHIP & INNOVATION	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
SMJC 3283	SEPARATION PROCESS 2	3	3			
SMJC 3333	INTRODUCTION TO ENVIRONMENTAL ENGINEERING	3	3			

SMJC 3731	CHEMICAL PROCESS ENGINEERING LABORATORY 3	1				3
SMJC 3741	CHEMICAL PROCESS ENGINEERING LABORATORY 4	1				3
SMJC 3293	MATERIAL SCIENCES	3	3			
SMJC 4353	PROCESS SAFETY AND HEALTH	3	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 **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 7**

Code	Course	Credits	L	T	P/S	Lab
SMJC 4813	FINAL YEAR PROJECT 1	3			9	
SMJC 4343	CHEMICAL PROCESS DESIGN	3	3			
SMJC 3123	PROCESS ECONOMICS & PROJECT MANAGEMENT	3	3			
SMJC 4**3	ELECTIVE 1	3	3			
SMJC 4**3	ELECTIVE 2	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
SMJC 4823	FINAL YEAR PROJECT 2	3				9
SMJC 4824	CHEMICAL PLANT DESIGN PROJECT	4	2		6	
SMJC 4**3	ELECTIVE 3	3	3			
SMJC 4**3	ELECTIVE 4	3	3			
	Total Credits	13				

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
UHLB 1112	ENGLISH COMMUNICATION SKILLS *(for MUET 3.5 and below)*	HW	2			
SMJC 1213	THERMODYNAMICS	3	3	1		
SMJC 2233	PHYSICAL CHEMISTRY FOR CHEMICAL ENGINEER	3	3	1		
ULRS 1022	PHILOSOPHY AND CURRENT ISSUE	2	2			
SMJG 2142	PROFESSIONAL ETHICS & SAFETY (NINGEN-RYOKU)	2	2			
SMJC 2022	ANALYTICAL CHEMISTRY	2	2			
ULRS 1032	INTEGRITY AND ANTI CORRUPTION	2	2			
ULRS 1182	APPRECIATION OF ETHICS AND CIVILISATION *(for local students)	2	2			
UHLM 1012	MALAY LANGUAGE FOR COMMUNICATION 2 *(for international students)		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
SMJC 1003	ORGANIC CHEMISTRY I	3	3	1		
SMJC 2223	MASS AND ENERGY BALANCE	3	3	1		
SMJC 1202	INTRODUCTION TO CHEMICAL PROCESS ENGINEERING	2	2	1		
UHLJ 1122	JAPANESE FOR COMMUNICATION I	2	2			

SMJM 1013	ENGINEERING MATHEMATICS I	3	3	1		
SMJC 2113	FLUID MECHANICS	3	3	1		
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 3

Code	Course	Credits	L	T	P/S	Lab
SMJC 2701	ORGANIC CHEMISTRY/ ANALYTICAL LAB	1				3
SMJC 2711	CHEMICAL PROCESS ENGINEERING LABORATORY 1	1				3
SMJC 2013	ORGANIC CHEMISTRY 2	3	3	1		
SMJC 2243	CHEMICAL ENGINEERING THERMODYNAMICS	3	3	1		
SMJC 2253	TRANSPORT PHENOMENA	3	3	1		
SHLJ 2252	JAPANESE FOR COMMUNICATION II	2	2			
SMJM 1023	ENGINEERING MATHEMATICS II	3	3	1		
UHLB 3132	PROFESSIONAL COMMUNICATION SKILLS 2	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
SMJM 2033	ENGINEERING MATHEMATICS III	3	3	1		
SMJC 3263	SEPARATION PROCESSES 1	3	3			
SMJC 3303	CHEMICAL KINETICS AND REACTOR DESIGN	3	3			

SMJC 3313	PROCESS CONTROL AND INSTRUMENTATION	3	3			
SMJC 3721	CHEMICAL PROCESS ENGINEERING LABORATORY 2	1	1			3
SMJC 3273	NUMERICAL METHODS FOR CHEMICAL ENGINEER	3	3			
ULRF 2**2	SERVICE LEARNING & COMMUNITY ENGAGEMENT COURSES	2			6	
	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
SMJC 3283	SEPARATION PROCESSES 2	3	3	0		
SMJC 3333	INTRODUCTION TO ENVIRONMENTAL ENGINEERING	3	3			
SMJC 3731	CHEMICAL PROCESS ENGINEERING LABORATORY 3	1				3
SMJC 3741	CHEMICAL PROCESS ENGINEERING LABORATORY 4	1				3
SMJC 3293	MATERIAL SCIENCES	3	3			
SMJC 4353	PROCESS SAFETY AND HEALTH	3	3			
SMJM 2043	ENGINEERING STATISTICS	3	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
SMJC 4343	CHEMICAL PROCESS DESIGN	3	3			
SMJC 3123	PROCESS ECONOMICS & PROJECT MANAGEMENT	3	3			
SMJC 1101	ENGINEERING DRAWING WITH CAD	1				3
SMJC 3323	FUNDAMENTALS OF MICROBIOLOGY AND BIOTECHNOLOGY	3	3			
SMJP 1043	PROGRAMMING FOR ENGINEERS	3	2			3
ULRS 3032	ENTREPRENEURSHIP & INNOVATION	2	2			
	Total Credits	15				

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

Year 4 **Semester 7**

Code	Course	Credits	L	T	P/S	Lab
SMJC 4824	CHEMICAL PLANT DESIGN PROJECT	4	2		6	
SMJC 4813	FINAL YEAR PROJECT 1	3			9	
SMJC 4**3	ELECTIVE 1	3	3			
SMJC 4**3	ELECTIVE 2	3	3			
SHLJ 2352	JAPANESE FOR COMMUNICATION III	2	2			
	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 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
SMJC 4823	FINAL YEAR PROJECT 2	3			9	
SMJC 4**3	ELECTIVE 3	3	3			
SMJC 4**3	ELECTIVE 4	3	3			
U***	FREE ELECTIVE	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

GROUP 1 SUSTAINABLE RESOURCES

CODE	COURSE	CREDIT
SMJC 4413	FINE CHEMICALS TECHNOLOGY	3
SMJC 4423	POLYMER SCIENCE AND ENGINEERING	3
SMJC 4433	BIOTECHNOLOGY AND BIO-PROCESSING	3
SMJC4443	FUNDAMENTALS AND APPLICATION OF BIO-SENSORS	3

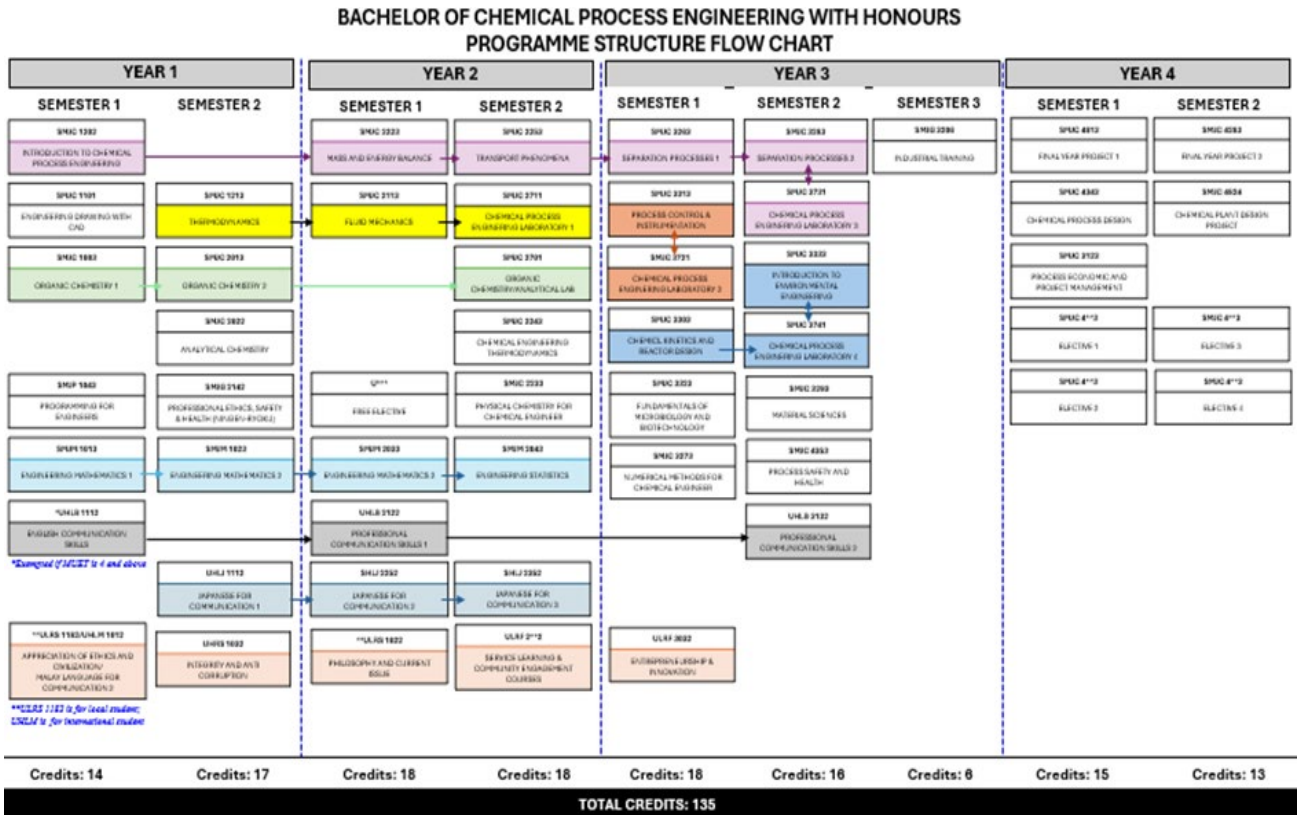
GROUP 2 SUSTAINABLE ENVIRONMENT

CODE	COURSE	CREDIT
SMJC 4513	AIR POLLUTION CONTROL ENGINEERING	3
SMJC 4523	WASTE WATER ENGINEERING	3
SMJC 4533	SOLID AND HAZARDOUS WASTE MANAGEMENT	3
SMJC 4543	ENVIRONMENTAL MICROBIOLOGY AND BIOTECHNOLOGY	3

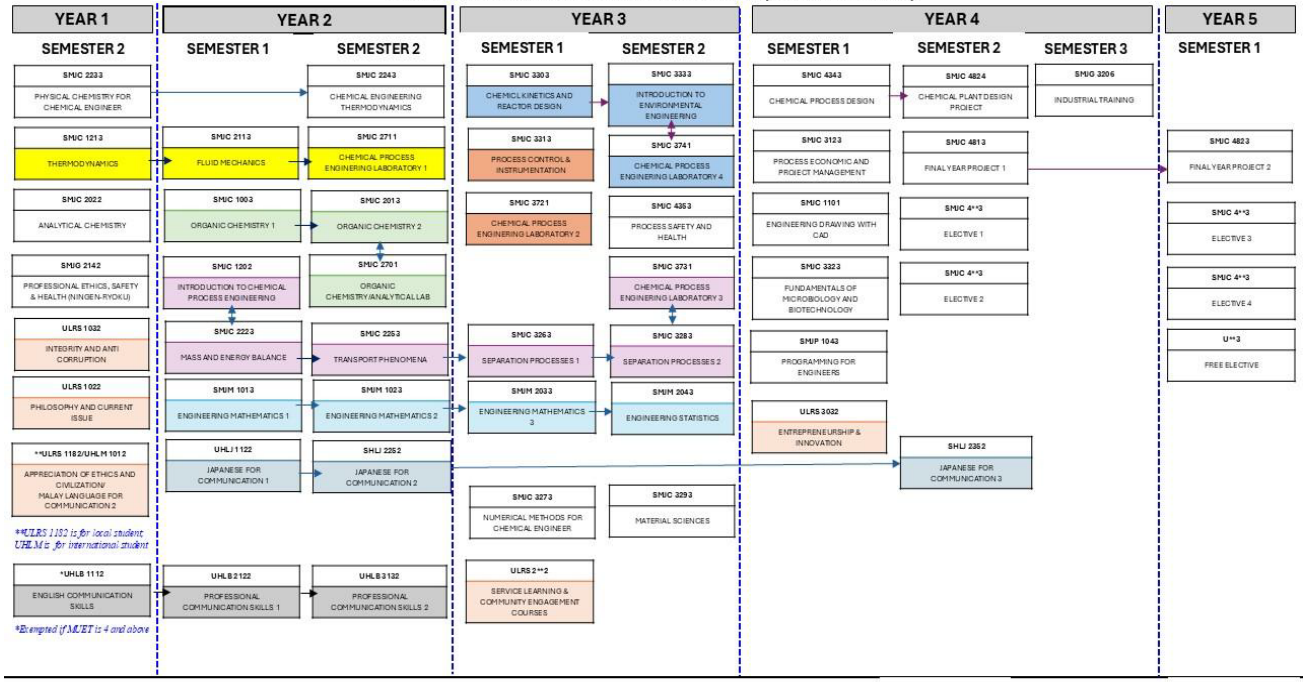
GROUP 3 SUSTAINABLE ENERGY

CODE	COURSE	CREDIT
SMJC 4613	POWER PLANT ENGINEERING	3
SMJC 4623	ENERGY CONVERSION SCIENCE AND TECHNOLOGY	3
SMJC 4633	FUEL CELL FUNDAMENTALS	3
SMJE 4643	BIOMASS TECHNOLOGY	3

PROGRAMME STRUCTURE FLOW CHART



BACHELOR OF CHEMICAL PROCESS ENGINEERING WITH HONOURS
PROGRAMME STRUCTURE FLOW CHART (MARCH INTAKE)



SYNOPSIS OF CORE COURSES

SMJC 1003 Organic Chemistry 1

This course discusses the chemistry of alkanes and the fundamental concepts of functional groups in organic compounds. The functional groups include alkenes, alkynes, aromatic hydrocarbons, alcohols, phenols, organohalogens, ethers, epoxides, and their derivatives. In each topic, the students will be introduced to the structures of the functional groups and the nomenclatures (common names and IUPAC names). Physical properties, preparations, reactions and visual tests will also be discussed. Inter-conversion of the related functional groups and their reaction mechanisms are also included.

SMJP 1043 Programming for Engineers

This course introduces basic concepts of problem solving and programming principles that are appropriate for scientific and technical applications implemented using the C++ language.

SMJC 1101 Engineering Drawing with CAD

This course provides a fundamental background in engineering drawing to the students, which will enable them to work more effectively in the various fields of engineering. It will emphasize on the introduction to engineering drawing, fundamentals of engineering drawing, geometry, orthographic and isometric drawing. This course also introduces the sectional and flowchart drawing and computer aided engineering drawing to the students.

SMJC 1202 Introduction to Chemical Process Engineering

Overview of engineering, the profession and its requirements in the Malaysian scenario. Communication (oral and written) and teamwork skills. Basic calculations and unit conversions. Create an engineering graph and solve iterative problems using computer. The subject also focuses on introducing students to engineering ethics. The course would be embedded with seminar and/or plant visits.

SMJM 1013 Engineering Mathematics I

This course provides basic knowledge in the concept of Engineering Mathematics including matrices, vectors, complex numbers, parametric equations, polar coordinates and power series. It introduces further transcendental functions namely hyperbolic and inverses of hyperbolic and trigonometric functions. Differentiation and integration of these functions are also discussed including the improper integral.

SMJC 1213 Thermodynamics

This course provides the basic fundamentals of thermodynamics for engineering application & problem solving. The topics covered include the first and second laws of thermodynamics, closed system and control volume analysis, entropy, reversible and irreversible processes, properties of pure substances. Application to engineering problems includes vapour power cycles, refrigeration and heat pump & air conditioning systems.

SMJC 2013 Organic Chemistry II

This course discusses the chemistry of fundamental concepts of functional groups in organic compounds. The functional groups of aldehydes, ketones, carboxylic acids and their derivatives, and amines and their derivatives. In each topic, the students will be introduced to the structures of the functional groups and the nomenclatures (common names and IUPAC names). Physical properties, preparations, reactions and visual tests will also be discussed. Inter-conversion of the related functional groups and their reaction mechanisms are also included. Infrared spectroscopy is included as a technique in characterizing the functional groups of organic compounds. This course also introduces students to the classifications, synthesis and reactions of biomolecules such as carbohydrates, peptides, proteins and lipids.

SMJC 2022 Analytical Chemistry

This course provides an introduction to the quantitative and qualitative chemical analysis of materials by emphasizing chemical reactions and instrumental methods and attitudes toward chemical engineering and their application. Also, by presenting instrumental methods and interpreting the results from Molecular, Atomic, and Mass spectrometry and

chromatographic methods, an attempt has been made to give a better understanding of its application in chemical engineering.

SMJM 1023 Engineering Mathematics II

This is an introductory course on differential equations. Topics include first order ordinary differential equations (ODEs), linear second order ODEs with constant coefficients up to fourth order, the Laplace transform and its inverse, Fourier series, and partial differential equations (PDEs). Students will learn how to classify and solve first order ODEs, use the techniques of undetermined coefficients, variation of parameters and the Laplace transform to solve ODEs with specified initial and boundary conditions, and use the technique of separation of variables to solve linear second order PDEs and the method of d'Alembert to solve wave equation.

SMJG 2142 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, seminars, etc.

SMJC 2113 Fluid Mechanics

This course covers the basic principles to fluid mechanics and classification of flow. It comprises but not limited to fluid statics, fluid dynamics, application of Bernoulli and momentum equations, flow in pipes include the usage of Moody chart, flow metering devices, pump, and dimensional analysis.

SMJC 2223 Mass and Energy Balance

This course provides students with the basic principles of chemical engineering material and energy balances as well as calculation techniques to solve the material and energy balance problems for chemical process systems and equipment.

SMJM 2033 Engineering Mathematics III

This course will develop students' understanding of two mathematical concepts which are indispensable to the engineering and technology fields, namely, differentiation and integration of multivariable real functions and vector-valued functions. The basic theory of partial derivatives and multiple integrals of real functions with their applications are discussed. The theory is extended to vector valued functions to describe motion in space, directional derivatives, gradient, divergence and curl, line integrals, surface integrals. Related theorems, namely Green's Theorem, Stokes' Theorem and Gauss or Divergence Theorem and their applications are discussed.

SMJC 2233 Physical Chemistry for Chemical Engineer

This course introduces the fundamentals of physical principles that govern the properties and behavior of chemical systems. Three important aspects are introduced: thermodynamics, electrochemical systems and kinetics. In thermodynamics, students will learn the interrelationship of various equilibrium properties of the system and its changes in processes. In electrochemical systems, electric potential that leads to the determination of thermodynamic properties in the electrochemical cells will be discussed. In kinetics, rate processes of chemical reactions, diffusion, adsorption and molecular collisions are included.

SMJC 2243 Chemical Engineering Thermodynamics

Through this course, students will learn chemical engineering thermodynamic theory and applications in the areas of volumetric properties of fluids, heat effects, thermodynamic properties of fluids, thermodynamics of solutions, and physical and chemical equilibria.

SMJC 2253 Transport Phenomena

The students will be introduced to the basic principles and application of heat and mass transfer engineering. The understanding from this course will lead to better understanding in distillation, absorption, liquid-liquid extraction, membrane separation, leaching, evaporation and other chemical processes.

SMJC 2701 Organic Chemistry / Analytical Lab

This course comprises several laboratory experiments related to organic chemistry. Emphasis is on the basic skills of recrystallization, extraction, separation, reflux and distillation. Upon completion, students should be able to assemble and use basic apparatus for experimental organic chemistry and present scientific data in a clear and logical way and produce a scientific report of their work. Microscale laboratory approach will be implemented to illustrate principles of green chemistry. This course introduces the basic concepts and skills in analytical chemistry practical. The experiments are focused on physicochemical properties of elements and compounds of Group IA, Group IIA, Aluminium, Nitrogen and Sulphur. This course also exposes students to basic skills of handling chemicals and preparing solutions.

SMJC 2711 Chemical Process Engineering Laboratory 1

This subject introduces students to the equipment related to Fluid Mechanics and Thermodynamics. There are four (4) experiments for Fluid Mechanics and one (1) experiment for Thermodynamics. Students will be assessed by their performance in the report submitted and by a test that will be conducted at the end of the course after the students have all completed the experiments.

SMJM 2043 Engineering Statistics

This course introduces and discusses the theories, concepts and practical aspects of probability and statistics. It begins with the discussion on the basic statistics, elementary probability theory, properties of probability distributions, sampling distribution, point and interval estimation of parameters and hypothesis testing. Simple linear regression and one-way analysis of variance are also taught in this course. Statistical tools and software for solving engineering statistics problems will also be incorporated in this course.

SMJC 3123 Process Economics & Project Management

This is a two-in-one course covering both Process Economy and Project Management topics. Engineering economy is the application of economic factors and criteria to evaluate alternatives, considering the time value of money. The engineering economy study involves

computing a specific economic measure of worth for estimated cash flows over a specific period of time. Project Management is the art of planning, scheduling, and controlling project activities to achieve performance, cost, and time objectives, for a given scope of work, while using resources efficiently and effectively.

SMJC 3263 Separation Process 1

This course introduces principles in the separation process between liquid-liquid, gas-liquid, vapour-liquid and solid-liquid separation processes. Different types of unit operations involved in the industries such as humidification process, absorption, distillation, liquid-liquid extraction and solid-liquid extraction are also included. Students will also apply the separation operations process using mass transfer principles.

SMJC 3273 Numerical Methods for Chemical Process Engineering

Numerical methods are the basic algorithms that support computational predictions in solving various mathematical, scientific and engineering problems. This course discusses techniques of solving chemical engineering problems using numerical methods that involve non-linear equations, systems of linear equation, interpolation and curve fitting, numerical differentiation and numerical integration and ordinary differential equations.

SMJC 3283 Separation Process 2

Students will be introduced to several types of unit operations and separation processes such as particle technology, crystallization, solid-liquid separation, filtration, membrane separation processes, drying and evaporation in this subject. Examples and exercises from related industries will be used in this subject.

SMJC 3293 Material Science

Students will learn relationships between structure and physicochemical properties of materials. This course provides a conceptual framework for understanding the structural and physical behavior of materials. It also attempts to present a general picture of material nature and mechanisms that act upon, modify and control their properties.

SMJC 3303 Chemical Kinetics & Reactor Design

This course introduces students to chemical reactor design and theories in the area of chemical reaction engineering with emphasis on homogeneous and heterogeneous reactions. It will examine some problems related to multiple reactions and non-isothermal operations. Students will also work cooperatively on a computer assignment to expose them to solve problems using software packages such as Polymath.

SMJC 3313 Process Control & Instrumentation

In this course, students will gain knowledge on the fundamentals of dynamic process modelling, dynamic process behaviors and process control. Lumped parameter systems modelling, distributed parameter systems, feedback control system design, analysis and tuning are introduced. Model estimation techniques for FOPDT systems are also included. Other commonly found control structures, such as feed forward, ratio and cascade control, and plant-wide control systems design are taught qualitatively

SMJC 3323 Fundamentals of Microbiology and Biotechnology

This course provides up-to-date and concise information on basic and applied aspects of microbiology in a well-illustrated and simple language. The orientation of this lecture is presented in an understandable manner to the student. The lecture overall is divided into three sections: Basic, Applied and Medical Microbiology. The Basic Microbiology section covers chapters on fundamental aspects of microbiology as historical milestones in microbiology, microbial taxonomy, structure, physiology, biochemistry, genetics, molecular biology, and physical and chemical control of microorganisms including principles of antimicrobial chemotherapy. The Applied Microbiology section lays emphasis on the diverse applications of microorganisms in industry, health, environment and agriculture and includes chapters on soil, air and water microbiology, food and environmental microbiology, industrial microbiology and biotechnology.

SMJC 3333 Introduction to Environmental Engineering

This is an introductory course on the aspect of environmental science and engineering on the causes, effects, measurement and controlling of pollution including air, water, solid and hazardous waste. The course covers the fundamental aspects of all these pollution with greater emphasis on three major categories of industrial related pollution i.e water, air and solid waste management.

SMJC 3721 Chemical Process Engineering Laboratory 2

This course covers the fundamentals of dynamic process modelling, dynamic process behaviours and process control. Although more concentration is given to lumped parameter systems modelling, distributed parameter systems are introduced. Feedback control system design, analysis and tuning are dealt with in detail. Also included are model estimation techniques for FOPDT systems.

SMJC 3731 Chemical Process Engineering Laboratory 3

This subject introduces students to the equipment in the separation processes discussed in Separation I and Separation II. There are four (4) experiments representing the Separation I and Separation II course. Students will be assessed by their performance in the report submitted and by a test that will be conducted at the end of the course after the students have all completed the experiments.

SMJC 3741 Chemical Process Engineering Laboratory 4

This laboratory course contains experiments that cover basic concepts in chemical reaction engineering and pollution control such as kinetic analysis of reaction, water and analysis. All experiments require students to apply fundamental laboratory techniques and skills as well as communication skills. Students, in group will demonstrate a mastery of laboratory techniques and clearly describe the qualitative and quantitative aspects of the experiments performed.

SMJG 3206 Industrial Training

The industrial training provides students with work-based learning in an 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 a real working environment. Students may realize their ambition and ascertain their career path from the experience gained during training. 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.

SMJC 4343 Chemical Process Design

In this course, the students will be exposed to process creation/synthesis, process analysis, and process evaluation in generating inherently safe, economic and environmentally friendly processes. Commercial process simulators also will be used extensively e.g. AVEVA PRO/II, ASPEN PLUS, ASPEN HYSYS, SuperPro to perform detailed (rigorous) plant design calculations and produce process flow diagrams (PFD). The project is carried out by a team of not more than 5 students. By the end of the course, students should be able to prepare a comprehensive report and subsequently present their works. By completing this project, students will develop important generic skills such as team working, problem-solving, life-long learning, creative and critical thinking as well as written and oral communication skills.

SMJC 4353 Process Safety & Health

This course presents fundamental principles of safety and risk assessment in the chemical process industry. In particular, it emphasizes on safety legislations, inherent safety design concept, method of hazard identification, chemical health risk assessment and the various methods of risk assessments. At the end of this course, it is expected that the students will be able to appreciate the theoretical and practical aspect of occupational safety and health

in the chemical process industry and also be able to use the techniques of hazard identification and risk assessment in the design and operation of chemical plants.

SMJC 4813 Final Year Project 1

Final Year Project is conducted within two semesters as Final Year Project I and Final Year Project II. Final Year Project I is the first stage of the Final Year Project by research at i-Kohza which involves preliminary study and planning on a project. The aim of this course is to inculcate good Japanese ethical values in problem identification and proposing appropriate solutions. It is designed to expose students to writing a research proposal that emphasizes research philosophy and methodology. At the end of the course, students should be able to write a research proposal in a professional manner. The students should also be able to manage and plan their research according to the given period.

SMJC 4823 Final Year Project 2

Final Year Project II is the second stage of the Final Year Project by research, involving analytical, experimental, or simulation work and studies at the respective i-Kohza lab. The project results will be discussed with their supervisors, i-Kohza members, and department members. By the end of the course, students should be able to work independently, produce a project report, and present their findings. They should also be able to manage and plan their research according to the given timeline.

SMJC 4824 Chemical Plant Design Project

This course is a continuation from SMJC 4343, provides an opportunity for the final year students to apply and integrate fundamental knowledge that they have learned from all the courses offered from the first year of studies to the fourth year to conceptually design an inherently safe, economic, and environmentally friendly chemical process plant. The students will explore various aspects in designing a process plant, which includes project background, evaluate alternative design and operation options, selection of process route, market survey, site study, gathering data for raw materials and products (e.g. physical properties, cost), constructing process flow sheet, mass and energy balance, heat integration, equipment sizing

and costing, waste treatment, safety, HAZOP and assessment of project profitability. Commercial process simulators also will be used extensively e.g. AVEVA PRO/II, ASPEN PLUS, ASPEN HYSYS, SuperPro to perform detailed (rigorous) plant design calculations and produce process flow diagrams (PFD). The project is carried out by a team of not more than 5 students. By the end of the course, students should be able to prepare a comprehensive report and subsequently present their works. By completing this project, students will develop important generic skills such as team working, problem-solving, life-long learning, creative and critical thinking as well as written and oral communication skills.

SMJC 4413 Fine Chemicals Technology

Through this course, students will be able to learn the fundamental of fine chemicals technologies, including applications to pharmaceutical drugs, coating materials, and electronic materials.

SMJC 4423 Polymer Science & Engineering

This course provides the fundamentals of polymer science and engineering with emphasis on polymeric materials and their classifications, molecular weight, polymers in solution and solid state, thermal properties and the relationship as well as the implication on polymer synthesis.

SMJC 4433 Biotechnology and Bioprocessing

This course will provide knowledge on how biotechnology evolves from the ancient time. It also discusses how this technology contributes towards wealth creation, health improvement, environmental protection and issues related to social security globally. The active involvement of Malaysia in biotechnology for a new source of economic engine is also discussed and evaluated. The course will also expose the students to various industrial bioprocessing areas. It will guide the students to independently acquire and explain

information on some key issues in food engineering, biopharmaceutical engineering, renewable resources and waste management bioprocessing science and technology.

SMJC 4443 Fundamentals and Application of Biosensors

This course covers the principles, technologies, methods and applications of biosensors. Students will be exposed to fundamentals of measurement science that are applied in biosensors such as optical, electrochemical, mass, and pressure signal transduction. At the end of this course students will be able to link fundamentals of engineering principles and bio systems in biosensors and design and construct biosensors instrumentation.

SMJC 4513 Air Pollution Control Engineering

This course introduces the techniques and procedures to design the air pollution control system for particulate, gaseous or vapor. There are two main objectives of the course. Firstly, to present the characteristics of the air pollutants and its method of control. Secondly, to give a formal design training for students based on the actual industrial conditions. Health and safety issues considerations prior to the designing stage of air pollution control are also addressed in the course.

SJMC 4523 Wastewater Engineering

This 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.

SMJC 4533 Solid and Hazardous Waste Management

This introductory course aims to provide an overview of solid and hazardous waste management, whereby the student will be able to have the basic understanding of waste management upon their completion of the course. The course deals with sources, generation and characteristics of industrial and municipal wastes, analysis of collection systems, handling and disposal practices of municipal wastes, significance of industrial wastes as environmental pollutants, pollution prevention and techniques for processing, treatment and disposal of industrial wastes.

SMJC 4543 Environmental Microbiology and Biotechnology

Environmental microbiology is the study of microorganisms that inhabit the earth and their roles in carrying out processes in both natural and human-made systems. The fundamentals include the environmental microbial diversity and the interactions between microbes, microbes with plants and microbes with animals will be covered. The lectures will cover materials from both textbooks and recent research articles. The importance of Environmental microbiology and biotechnology to society and the current understanding towards this area will be looked into.

SMJC 4613 Power Plant Engineering

Electrical energy conversion to other energy is easy, and it is most convenient and safe form of energy for the short time required to transport as much as possible. At the same time to understand the mechanism of this electrical energy generation, to help students acquire education may be a view of future energy problems. The current status and future trends are explained as well as the world's energy situation and transition of power resources. Illustrate points of current hydro, thermal, and nuclear power generation. In addition, also describe

new technologies and systems such as solar power, wind power, and fuel cell power generation.

SMJC4623 Energy Conversion Science and Technology

This course consists of energy supply and consumption principles, different types of energy sources, and energy management & evaluation of various conversion paths in relation to renewable and sustainable energy technology.

SMJC 4633 Fuel Cell Fundamentals

This course provides information about various aspects of the hydrogen-based fuel cell and an introduction to several other fuels and fuel cell technologies. This course is intended for engineers in all disciplines who want to learn more about this type of renewable energy. Among topics discussed are the history of the fuel cell, basics of its operation, comparison of fuel cells with other power sources, and details of several aspects of fuel cells, the various applications and impact to the environment.

SMJC 4643 Biomass Technology

This course deals with biomass and its conversion to alternative energy and resources. Topics cover various conversion technologies and types of biomass including domestic and agriculture waste.

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)

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Malaysia-Japan
International
Institute of Technology
(MJIIT)

Bachelor of

ELECTRONIC SYSTEMS ENGINEERING

(UT6523004)

MJIIT UTM

ACADEMIC STAFF
DEPARTMENT OF ELECTRONIC SYSTEMS ENGINEERING (ESE)

Ir. Ts. Dr. Mohd Hatta bin Mohammed Ariff
Head of Department (ESE)
Ph.D. (Vehicle Dynamic Control)
M.Sc. (High Voltage Engineering)
B.Eng. (Electronics and Electrical)
Phone: +603-2203 1463
Email: mohdhatta.kl@utm.my

Prof. Ir. Ts. Dr. Abd. Manaf bin Hashim
Dr.Eng. (Electronics)
M.Eng. (Electronics)
B.Eng. (Electronics)
Phone: +603-2203 1389
Email: abdmanaf@utm.my

Prof. Dr. Hamido Fujita
Ph.D. (Engineering)
M.Eng. (Engineering)
B.Eng. (Engineering)
Phone: -
Email:fujitahamido@utm.my

Prof. Dr. Yoshihide Yamada
Ph.D. (Electrical)
M.Eng. (Electronics)
B.Eng. (Electronics)
Phone: +603-2203 1307
Email: yoshihide@utm.my

Assoc. Prof. Dr. Shahrum Shah bin Abdullah
Ph.D. (Artificial Neural Networks)
M.Eng. (Control Systems)
B.Eng. (Electrical)
Phone: +603-2203 1203
Email: shahrum@utm.my

Assoc. Prof. Ir. Ts. Dr. Sumiaty binti Ambran
Ph.D. (Optoelectronics)
M.Sc. (Telecommunication)
B.Eng. (Telecommunication)
Phone: +603-2203 1244
Email: sumiaty.kl@utm.my

Assoc. Prof. Ir. Ts. Dr. Azura binti Hamzah
Ph.D. (Fiber Optic Communications)
M.Eng. (Telecommunication)
B.Eng. (Communication)
Phone: +603-2203 1235
Email: azurahamzah@utm.my

Assoc. Prof. Ir. Dr. Kamilia binti Kamardin
Ph.D. (Electronic)
M.Sc. (Electronic)
B.Eng. (Electronic Engineering)
Phone: +603-2203 1430
Email: kamilia@utm.my

Assoc. Prof. Ir. Dr. Ooi Chia Yee
Ph.D. (Computer Design and Test)
M.Eng. (Electrical)
B.Eng. (Electrical)
Phone: +603-2203 1237
Email: ooichiayee@utm.my

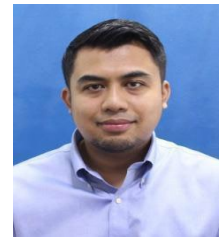
Assoc. Prof. Ir. Dr. Zool Hilmi bin Ismail
Ph.D. (Electrical)
M.Eng. (Mechatronics and Automatic Control)
B.Eng. (Electrical)
Phone: +603-2203 1495
Email: zool@utm.my

Assoc. Prof. Ts. Dr. Mohd Ibrahim bin Shapiai @ Abd. Razak
Ph.D. (Soft Computing and Pattern Recognition for Assembly Process)
M.Eng. (Telecommunication)
B.Eng. (Telecommunication)
Phone: +603-2203 1339
Email: mdibrahim83@utm.my

Assoc. Prof. Dr. Mohd Azizi bin Abdul Rahman
Ph.D. (Functional Control Sys.)
M.Sc. (Control & Automation)
B.Eng. (Electrical)
Phone: +603-2203 1265
Email: azizi.kl@utm.my

Assoc. Prof. Dr. Fauzan bin Ahmad
Ph.D. (Photonics)
M.Eng. (Image Processing)
B.Eng (Mechatronics)
Phone: +603-2203 1227
Email: fauzan.kl@utm.my

Ts. Dr. Sahnius bt Usman
Ph.D. (Electrical, Electronic & Systems Engineering)
M.Eng. (Electrical)
B.Eng. (Electrical-Mechatronic)
Phone: +603-2203 1362
Email: sahnius.kl@utm.my



Ir. Ts. Dr. Mohd Azlan bin Abu
Ph.D. (Electronics)
Msc. (Electronics)
B.Eng. (Electrical)
Phone: +603-22031266
Email: mohdazlan.abu@utm.my

Ts. Dr. Mohd Fitri bin Mohd Yakub
Ph.D. (Automatic Control)
M.Eng. (Mechatronic)
B.Eng. (Electrical-Electronics)
Phone: +603-2203 1285
Email: mfitri.kl@utm.my

Dr. Siti Rahmah binti Aid
Ph.D. (Integrated Design)
M.Eng. (Integrated Design)
B.Eng. (Electronics & Electrical)
Phone: +603-2203 1296
Email: sitirahmah.aid@utm.my

Dr. Husni Hani Jameela binti Sapingi
Ph.D. (Fizik & Astronomi)
Msc. (Photonics Engineering)
B.Eng. (Fizik Industri)
Phone: +603-2203 1517
Email: husnihani@utm.my

Dr. Nurul Hanis binti Azhan
Ph.D. Engineering
(Science & Technology)
M.Eng. (Engineering)
B.Eng. (Engineering)
Email: nurulhanis.a@utm.my

Dr. Kaiyisah Hanis binti Mohd. Azmi
Ph.D. (Electrical and Electronic Engineering)
B.Eng. (Electrical and Electronic Engineering)
Phone: +603-2203 1318
Email: kaiyisahhanis@utm.my

ACADEMIC STAFF

SOFTWARE ENGINEERING (SE) PROGRAM

Dr. Zatul Alwani binti Shaffiei
Ph.D. (Computer Science)
M.Eng. (Computer Science)
B.Sc. (Computer Science)
Phone: - +603-2203 1394
Email: zatulalwani.kl@utm.my

Dr. Halinawati binti Hirol
Ph.D. (Civil Engineering)
M.Eng. (Civil Engineering)
B.Sc. (Geoinformatics)
Phone: +603-2203 1342
Email: halinawati@utm.my

Ts. Dr. Liyana 'Adilla binti Burhanuddin
Ph.D.Engineering(Telecommunication)
M.Eng. (Computer Science)
B.Eng. (Industrial Mathematics)
Email: liyanaadilla@utm.my

Dr. Siti Nur Khadijah Aishah binti Ibrahim
Ph.D. (Educational Technology)
M.Eng. (Computer Science)
B.Sc. (Computer Science)
Phone: - +603-2203 1403
Email: snk.aishah@utm.my

Dr. Neo Chin Chea
Ph.D. Engineering(Electrical Engineering)
B.Eng. (Computer)
Phone: - +603-2203 1226
Email: neochin.chea@utm.my

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			
No.	**Classification**	**Credit**	**Percentage (%)**
A.	Program Core	91	67%
B.	Program Electives	23	17%

C.	General / University Courses a. Management/Economics/Humanities/Ethics b. Language – English and Japanese c. Co-curriculum/Service Learning	 10 10 2	16%
	Total	**136**	**100%**

For sciences programme, please fill up the following classification.

No.	Classification	Credit	Percentage (%)
A	**Engineering Courses** (a) Lectures (b) Laboratory (c) Final Year Project (d) Industrial training	 81 6 6 6	73%
	Total credit for Part A	99	73%
B	**Related Courses** (a) Applied Science/Math (b) Management/Economics/Humanities/Ethics (c) Co-Curriculum (d) English (e) Japanese	 15 10 2 4 6	27%
	Total credit for Part B	37	27%
	Total credit for Parts A and B	**136**	100%
13. Total credit to graduate		**136**	

PROGRAMME STRUCTURE FOR OCTOBER INTAKE

Year 1 **Semester 1**

Code	Course	Credits	L	T	P/S	Lab
SMJE 1013	PROGRAMMING FOR ENGINEER	3	2			2
SMJE 1023	FUNDAMENTAL OF ELECTRICAL CIRCUITS	3	3	1		
SMJE 1032	INTRODUCTION TO ELECTRONIC SYSTEM ENGINEERING	2	1		2	
SMJE 1113	DIGITAL ELECTRONICS	3	3	1		
SMJM 1013	ENGINEERING MATHEMATICS I	3	3	1		
UHLB 1112	ENGLISH COMMUNICATION SKILLS *(for MUET 3.5 and below)*	HW	2			
ULRS 1182	APPRECIATION OF ETHICS AND CIVILISATIONS **(for local students)*	2	2			
UHLM 1012	MALAY LANGUAGE FOR COMMUNICATION 2 **(for international students)*	2	2			
	Total Credits	16/18				

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

Year 1 **Semester 2**

Code	Course	Credits	L	T	P/S	Lab
SMJE 1043	MEASUREMENT AND INSTRUMENTATION	3	3	1		
SMJE 1103	ELECTRICAL POWER SYSTEM	3	3	1		
SMJE 2062	ELECTRONIC ENGINEERING LABORATORY 1	2				4
SMJM 1023	ENGINEERING MATHEMATICS II	3	3	1		
UHLJ 1122	JAPANESE FOR COMMUNICATION I	2	2			

SMJG 2142	PROFESSIONAL ETHICS & SAFETY (NINGEN-RYOKU)	2	2			
ULRS 1032	INTEGRITY AND ANTI CORRUPTION	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
SMJE 2083	ELECTRONIC CIRCUITS	3	3	1		
SMJE 2173	DIGITAL SYSTEM DESIGN	3	2			2
SMJM 2033	ENGINEERING MATHEMATICS III	3	3	1		
SHLJ 2252	JAPANESE FOR COMMUNICATION II	2	1	2		
ULRS 1022	PHILOSOPHY AND CURRENT ISSUE	2	2			
UHLB 2122	PROFESSIONAL COMMUNICATION SKILLS 1	2	2			
U***	FREE ELECTIVE COURSE 1	2	2			
	Total Credits	17				

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

Year 2 Semester 4

Code	Course	Credits	L	T	P/S	Lab
SMJE 2053	CIRCUITS AND SIGNALS	3	3	1		
SMJE 2073	ELECTROMAGNETICS	3	3	1		
SMJE 2122	ELECTRONIC ENGINEERING LABORATORY 2	2				4
SMJE 2133	ELECTRONICS SYSTEM	3	3	1		
SMJM 2043	ENGINEERING STATISTICS	3	3	1		
SHLJ 2352	JAPANESE FOR COMMUNICATION III	2	2			

ULRF 2**2	SERVICE LEARNING & COMMUNITY ENGAGEMENT COURSES	2			6	
	Total Credits	18				

Year 3 Semester 5

Code	Course	Credits	L	T	P/S	Lab
SMJE 3143	COMMUNICATION ELECTRONICS	3	3			
SMJE 3153	CONTROL SYSTEM	3	3			
SMJE 3183	MICROPROCESSOR AND MICROCONTROLLER	3	2			2
SMJE 3813	MONOZUKURI PROJECT	3	3			
SMJM 3053	NUMERICAL METHODS	3	3	1		
ULRS 3032	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
SMJE 3163	DIGITAL SIGNAL PROCESSING	3	3			
SMJE 3192	ELECTRONIC ENGINEERING LABORATORY 3	2				4
SMJE 3303	INTEGRATED DESIGN PROJECT	3	3			
SMJE 3093	COMPUTER ARCHITECTURE AND MULTIMEDIA TECHNOLOGY	3	3			
UHLB 3132	PROFESSIONAL COMMUNICATION SKILLS 2	2	2			
U***	FREE ELECTIVE COURSE 2	3	3			
	Total Credits	16				

Year 3 **Short Semester**

Code	Course	Credits	L	T	P/S	Lab
SMJG 3206	INDUSTRIAL TRAINING	6			18	
	Total Credits	6	0	0	18	0

Year 4 **Semester 7**

Code	Course	Credits	L	T	P/S	Lab
SMJE 3203	ARTIFICIAL INTELLIGENCE	3	3			
SMJE 4912	FINAL YEAR PROJECT 1	2			2	
SMJE 4**3	ELECTIVE 1	3	3			
SMJE 4**3	ELECTIVE 2	3	3			
SMJE 4**3	ELECTIVE 3	3	3			
SMJE 4212	NINGEN RYOKU (SPECIAL LECTURE)	2	2			
	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
SMJE 4924	FINAL YEAR PROJECT 2	4			4	
SMJE 4**3	ELECTIVE 4	3	3			
SMJE 4**3	ELECTIVE 5	3	3			
SMJE 4**3	ELECTIVE 6	3	3			
	Total Credits	13				

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
SMJE 1113	DIGITAL ELECTRONICS	3	3	1		
SMJE 1043	MEASUREMENT AND INSTRUMENTATION	3	3	1		
SMJE 1023	FUNDAMENTAL OF ELECTRICAL CIRCUITS	3	3	1		
SMJE 2062	ELECTRONIC ENGINEERING LABORATORY 1	2				4
UHLJ 1122	JAPANESE FOR COMMUNICATION I	2	2			
SMJG 2142	PROFESSIONAL ETHICS & SAFETY (NINGEN-RYOKU)	2	2			
ULRS 1032	INTEGRITY AND ANTI CORRUPTION	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
SMJE 1013	PROGRAMMING FOR ENGINEER	3	2			2
SMJE 1032	INTRODUCTION TO ELECTRONIC SYSTEM ENGINEERING	2	1		2	
SHLJ 2252	JAPANESE FOR COMMUNICATIONS II	2	1	2		
UHLB 2122	PROFESSIONAL COMMUNICATION SKILLS 1	2	2			
SMJE 2083	ELECTRONIC CIRCUITS	3	3	1		
SMJM 1013	ENGINEERING MATHEMATICS I	3	3	1		
UHLB 1112	ENGLISH COMMUNICATION SKILLS	HW	2			

	(for MUET 3.5 and below)					
ULRS 1022	PHILOSOPHY AND CURRENT ISSUE ** (compulsary for local and international students)*	2				
	Total Credits	17				

Year 2 Semester 3

Code	Course	Credits	L	T	P/S	Lab
SMJE 2053	CIRCUITS AND SIGNALS	3	3	1		
SMJE 1103	ELECTRICAL POWER SYSTEMS	3	3	1		
SMJE 2122	ELECTRONIC ENGINEERING LABORATORY 2	2				4
SMJM 2043	ENGINEERING STATISTICS	3	3	1		
SMJM 1023	ENGINEERING MATHEMATICS II	3	3	1		
SHLJ 2352	JAPANESE FOR COMMUNICATION III	2	2			
ULRF 2**2	SERVICE LEARNING & COMMUNITY ENGAGEMENT COURSES	2			6	
	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
SMJE 3143	COMMUNICATION ELECTRONICS	3	3			
SMJM 2033	ENGINEERING MATHEMATICS III	3	3	1		
SMJE 3813	MONOZUKURI PROJECT	3	3			
SMJM 3053	NUMERICAL METHODS	3	3	1		
SMJE 2173	DIGITAL SYSTEM DESIGN	3	2			2
ULRS 3032	ENTREPRENEURSHIP & INNOVATION	2	2			
	Total Credits	17				

Year 3 **Semester 5**

Code	Course	Credits	L	T	P/S	Lab
SMJE 2073	ELECTROMAGNETICS	3	3	1		
SMJE 2133	ELECTRONICS SYSTEM	3	3	1		
SMJE 3192	ELECTRONIC ENGINEERING LABORATORY 3	2				4
SMJE 3303	INTEGRATED DESIGN PROJECT	3	3			
UHLB 3132	PROFESSIONAL COMMUNICATION SKILLS 2	2	2			
U***	FREE ELECTIVE COURSE 1	3	3	1		
	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
SMJE 4912	FINAL YEAR PROJECT 1	2			2	
SMJE 3153	CONTROL SYSTEM	3	3			
SMJE 3183	MICROPROCESSOR AND MICROCONTROLLER	3	2			2
UHLM 1012	MALAY LANGUAGE FOR COMMUNICATION 2 **(for International students)*	2	2			
SMJE 4212	NINGEN RYOKU (SPECIAL LECTURE)	2	2			
ULRS 1182	APPRECIATION OF ETHICS AND CIVILISATIONS ** (for local students)*	2	2			
SMJE 4**3	ELECTIVE 1	3	3			
U***	FREE ELECTIVE COURSE 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
SMJE 4924	FINAL YEAR PROJECT 2	4			4	
SMJE 3093	COMPUTER ARCHITECTURE AND MULTIMEDIA TECHNOLOGY	3	3			
SMJE 3203	ARTIFICIAL INTELLIGENCE	3	3			
SMJE 3163	DIGITAL SIGNAL PROCESSING	3	3			
SMJE 4**3	ELECTIVE 2	3	3			
	Total Credits	16				

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
SMJE 4**3	ELECTIVE 3	3	3			
SMJE 4**3	ELECTIVE 4	3	3			
SMJE 4**3	ELECTIVE 5	3	3			
SMJE 4**3	ELECTIVE 6	3	3			
	Total Credits	12				

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

ELECTIVE COURSES

CHOOSE SIX (6) 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 4113	OPTICAL COMMUNICATION	3
SMJE 4123	RADIO WAVE AND ANTENNA	3
SMJE 4133	WIRELESS AND MOBILE COMMUNICATION	3
SMJE 4343	DATA TRANSMISSION	3

GROUP 2 INDUSTRIAL AUTOMATION SYSTEM

CODE	COURSE	CREDIT
SMJE 4233	INDUSTRIAL HYDRAULICS AND PNEUMATICS	3
SMJE 4243	CONTROL SYSTEMS DESIGN	3
SMJE 4253	POWER ELECTRONICS AND DRIVES	3
SMJE 4263	COMPUTER INTEGRATED MANUFACTURING	3
SMJE 4293	INDUSTRIAL AUTOMATION	3

GROUP 3 BIO-ELECTRONIC SYSTEM

CODE	COURSE	CREDIT
SMJE 4303	INTRODUCTION TO BIO-ENGINEERING	3
SMJE 4313	IMAGE PROCESSING	3
SMJE 4333	BIOMEDICAL IMAGING SYSTEM	3
SMJE 4353	ROBOTICS	3

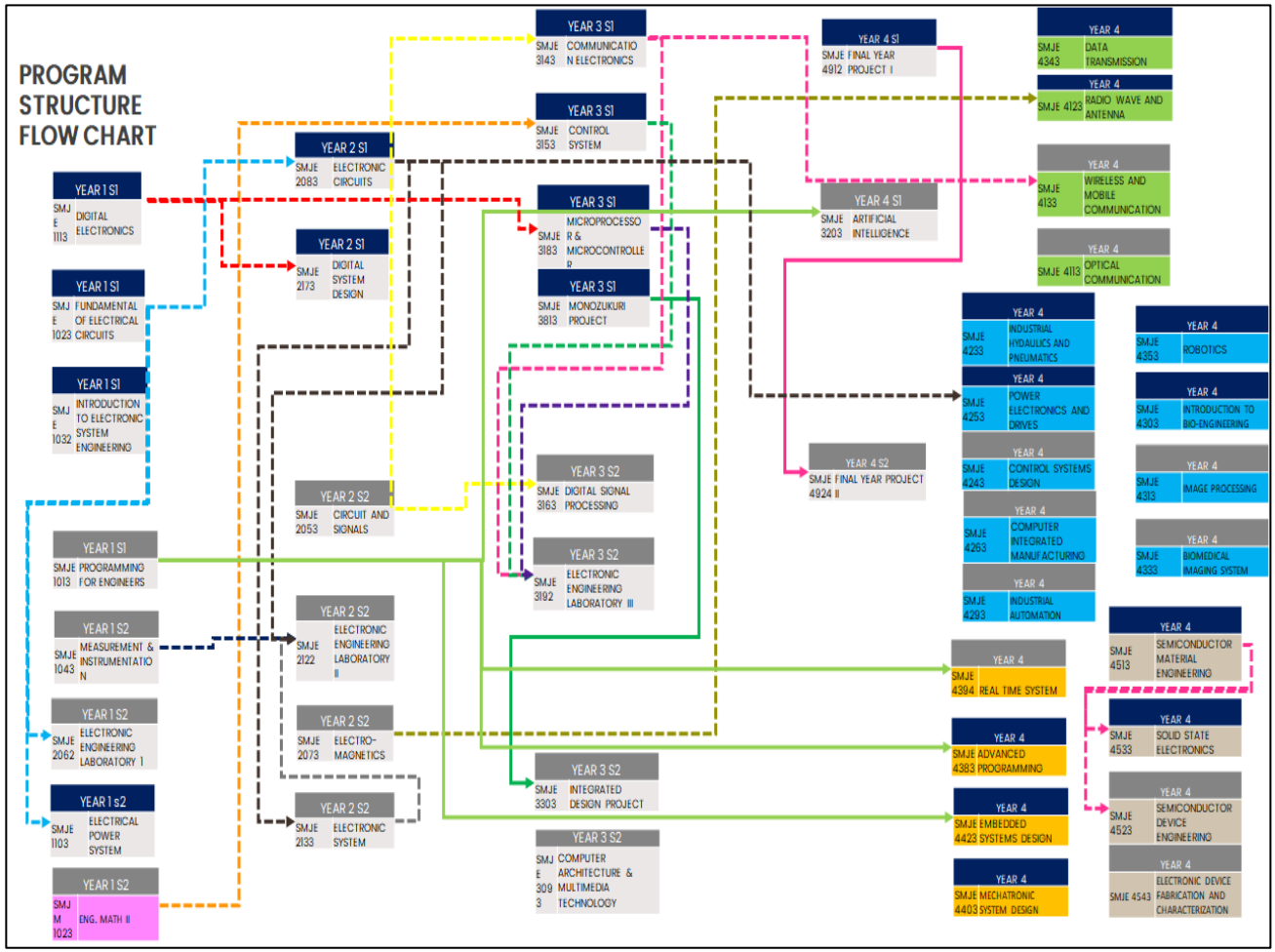
GROUP 4 EMBEDDED SYSTEM

CODE	COURSE	CREDIT
SMJE 4383	ADVANCED PROGRAMMING	3
SMJE 4393	REAL TIME SYSTEMS	3
SMJE 4403	MECHATRONIC SYSTEM DESIGN	3
SMJE 4423	EMBEDDED SYSTEMS DESIGN	3

GROUP 5 MATERIAL AND DEVICE

CODE	COURSE	CREDIT
SMJE 4513	SEMICONDUCTOR MATERIAL ENGINEERING	3
SMJE 4523	SEMICONDUCTOR DEVICE ENGINEERING	3
SMJE 4533	SOLID STATE ELECTRONICS	3
SMJE 4543	ELECTRONIC DEVICE FABRICATION AND CHARACTERIZATION	3

PROGRAM STRUCTURE FLOW CHART



SYNOPSIS OF CORE COURSES

SMJE 1013 Programming for Engineers

This course introduces basic concepts of problem solving and programming principles appropriate for scientific and technical applications implemented using the C++ language. The course covers algorithm design, program development, C++ programming language syntax, data types, selection statements, iteration statements, functions, arrays, pointers, structures and classes.

SMJE 1023 Fundamentals of Electrical Circuits

By making use of electrical characteristics of individual electric and electronic elements, several kinds of circuits which realize particular functions will be treated. The devices treated are mainly linear passive devices such as resistors, capacitors, and inductors. Topics include basic electrical circuit laws and properties, circuit analysis and theorems, DC/AC networks.

SMJE 1032 Introduction to Electronic System Engineering

This course exposes students to various areas of electronic engineering related fields. Students will be attending lectures from related industries as well as industrial visits. Students also will be exposed to the practical skills in the electronics and electrical workshop.

SMJE 1043 Measurement and Instrumentation

This course in general deals with electronic measuring devices and methods as well as non-electrical quantities required to measure such as pressure and temperature, etc. This course has also included the discussion and instruction on digital measuring devices and systems. Topics include Error and Probability, DC and AC Quantities, Physical Quantities, Data acquisition, Transducer, Coding and Decoding and Telemetry.

SMJE 1103 Electrical Power System

Students will be exposed to the importance of electric power engineering in society. Importance of professional responsibility such as tight safety through engineering is also put on. Topics covered are: Load flow analysis, unbalanced faults analysis and protection requirements, Short circuits, Power system stability, DC machines, Transformers, Power generation. Lectures on safety problems are also given.

SMJE 1113 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 a 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. Underlying principles of sequential logic circuits such as clock triggering, flip-flops, registers and counters will be focused. 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® Quartus II Prime software. Theories and principles of combinational and logic circuits will be enhanced with hands-on experiments in the laboratory.

SMJE 2053 Circuits and Signals

This course introduces fundamentals of Analog signal processing. The course covers the introduction of signals and systems, LTI systems, Properties of Convolution, Laplace Transform, Fourier Series and Transform as well as Analog filters.

SMJE 2062 Electronic Engineering Laboratory 1

This course involves fully experimental work in laboratories. The lab works encompass fundamentals of electrical circuit and digital electronics. Instruction guided experiments are

to be carried out every week in a small group. Analysis and discussion on experimental data from the weekly experiment 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 2073 Electromagnetics

This course provides students with the fundamentals of electromagnetics. Electromagnetics is a very important course for electrical and electronic engineers. Physical properties of the electric field and the magnetic field are explained in unified form with the help of mathematics. Several principles underlying the electric and the magnetic fields are summarized as Maxwell's equations. Expressions of the electromagnetic wave derived from Maxwell's equations give physical insight into the wave.

SMJE 2083 Electronic Circuits

This course provides students with the coverage of major and essential foundations for sound understanding of electronic circuits. The circuitry covered comprises small signal (ac), power amplifiers, oscillators, and operational amplifiers. A concept or idea of integrated circuits is also given.

SMJE 2122 Electronic Engineering Laboratory 2

Based on not only the knowledge of electrical and electronic engineering but also skills experience in Basic Engineering Laboratory and Electronic Engineering Laboratory 1, more application-oriented components and systems are treated in this Laboratory. This laboratory work will cover experimental topics on FOUR courses i.e. (i) Measurements and Instrumentation, (ii) Electrical Power Systems, (iii) Electronic Circuit and (iv) Electronic System.

SMJE 2133 Electronic Systems

This course provides students with the essential foundation for sound understanding of electronic systems. The circuits covered are transistors amplifiers, power amplifiers, feedback amplifiers, operational amplifiers application circuits, oscillators, power supplies and multivibrators.

SMJE 2173 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 1113) will be reviewed briefly in the 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 behavioral modelling techniques will be discussed and how they are used to design combinational and sequential circuits. Hand-on experience is gained by implementing logic circuits on the FPGA development board through weekly lab practices and design projects.

SMJE 3093 Computer Architecture and Multimedia Technologies

This course introduces the organization and architecture of computer systems. The course covers data representation, instruction sets, memory systems, input and output devices, processor architectures, and advanced architecture for multimedia computing.

SMJE 3143 Communication Electronics

This course provides fundamentals of analog and digital communication systems. Methods for analyzing time and frequency characteristics of signal, amplitude and angle modulation methods and circuit configurations, communication error calculations, access methods for multiplex communications, code division multiple access techniques.

SMJE 3153 Control System

The course will introduce the basic concept and components of automatic control systems and some methods of analysis and design feedback control systems. The students will be exposed to use of numerical analysis tools such as MATLAB for control system analysis and design.

SMJE 3163 Digital Signal Processing

This course covers continuous signal and system analysis through Fourier and Laplace transforms. For discrete signal and system analysis, z-transform and discrete and fast Fourier transforms are used. Moreover, FIR and IIR digital filters are explained.

SMJE 3183 Microprocessor and Microcontroller

This course is designed to cover the fundamentals of microprocessor and microcontroller which later leads students to work on lab experiments with microcontrollers with the ultimate objective that at the end of the course, students are able to design and develop a simple microcontroller system for real applications The fundamentals on microprocessor and microcontrollers emphasizes on assembly language programming, hardware interfacing, software design, and applications. Topics include microcontroller software architecture, assembly instruction set, addressing modes, memory map, general purpose inputs/outputs (GPIO), timers, serial/parallel communication interfaces, and interrupts. This course also gives students the exposure and training necessary to effectively use an integrated development environment (IDE) for developing their application programs in assembly language and C. Topics included in this course are referred from a number of textbooks.

SMJE 3192 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 the engineering mind of students involved.

SMJE 3203 Artificial Intelligence

This course introduces students to the fundamentals of three important techniques of artificial intelligence (AI), namely, artificial neural networks (ANN), genetic algorithm (GA), and fuzzy logic. These techniques have been successfully applied by many industries in consumer products and industrial systems. ANN provides strong generalization and discriminant properties and offers a simple way of developing system models and function approximation. GA is an adaptive heuristic search algorithm based on the evolutionary ideas of natural selection and genetics for optimization and search problems. Fuzzy logic offers flexibility in developing rule-based systems using natural language type of rules. They are highly applicable for many pattern recognition applications. This course gives the students appropriate knowledge and skills to develop, design and analyze effectively these AI techniques for practical problems with some degree of accuracy. The students will also be given hands-on programming experience in developing fuzzy logic and neural networks systems as well as genetic algorithms, to effectively solve real world problems.

SMJG 3206 Industrial Training

The students are placed in industries that best suit their area of studies for ten weeks. This course gives a chance of hands-on experience that requires the students to learn the process and to be able to apply their knowledge acquired in class to actual industrial settings. Placement at the respective agency is initiated by the students' applications. Approval of their applications is at the discretion of a faculty board. At the end of the industrial training period, the students are required to write reports regarding their own industrial training.

SMJE 3303 Integrated Design Project

Integrated Design Project (IDP) is offered in year 3 semester 2 with 3 credits. This course requires application of the 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. IDP shall involve complex problem solving and complex engineering activities which include design systems, components or processes integrating core areas. This course provides an exposure to teamwork so as to emulate a typical professional design environment, and improve communication and organizational skills. The project is stressing the importance of other influences on design such as economics, reliability, performance, health, safety, cultural, project management, environmental, ethics and social impacts.

SMJE 3813 Monozukuri Project

This course exposes students to the "Monozukuri" concepts – the Japanese way of making products through creation of innovative works. The course consists of the lectures – to provide students with specific knowledge and skills on project design and analysis which allow students to design, build and verify their project. This course requires application of the knowledge developed in prior courses, and familiarizes the students with the engineering design process such as definition, synthesis, analysis and implementation in the collaborative classroom environment that emphasizes teamwork. Students are also stressed on the importance of documenting the development progress as well as writing technical reports.

SMJE 4212 Ningen-Ryoku: Special Lecture and Industry Visit

The course provides some basic knowledge of industries which is practical and useful for engineering students. The topics cover industry talks and visit related to electronic systems engineering e.g. Automation, Communication, Bioelectronics etc.

SMJE 4113 Optical Communication

This course provides a fundamental understanding of optical communication technology. Basic properties of light, fibers and waveguides will be reviewed. Its emphasis 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 systems. Basic laser operation, idea of photon,

the spontaneous emission and the stimulated emission are explained. Characteristics of optical detectors will also be explained.

SMJE 4123 Radio Wave and Antenna

Based on Maxwell's wave equation, mathematical solutions of electromagnetic fields are derived. Important parameters expressing radio wave propagation are explained. Antennas such as reflectors, arrays, patches and small antennas used in radio wave communications are explained. Measurement methods used for antenna characteristics are explained. Finally, practical antenna characteristics are experienced through antenna fabrication and measurements.

SMJE 4133 Wireless and Mobile Communication

In this lecture, radio wave technologies of mobile communication are explained. First, historical progress from 1G to 5G is overviewed. Next, important technologies indispensable in the mobile system are explained. As for radio wave technology, radio propagation problems and counterpart technologies are explained. Moreover, some important items such as user capacity and safety regulations of radio wave exposure for the human body are explained.

SMJE 4343 Data Transmission

Data Transmission refers to the movement of data in the form of bits between two or more digital devices. More precisely, data transmission is the physical transfer of data (a digital bit stream or a digitized analog signal) over a point-to-point or point-to-multipoint communication channel. This course builds on the fundamentals of Communication Electronics (SMJE 3143) and focuses on data link layer protocols (Layer 2) of the TCIP/IP or OSI protocol suite. Students will also learn techniques of packet analysis using Wireshark sniffing software.

SMJE 4233 Industrial Hydraulics and Pneumatics

A significant proportion of automated and manual systems in manufacturing plants around the world utilize pneumatic and hydraulic actuators for fast reliable operation. This course provides the student with:

- An understanding of the fluid power systems, including hydraulic and pneumatic components.
- Safe work practices for hydraulics and pneumatics and includes information on preventive measures for safety hazards in the manufacturing workplace.
- An overview of basic and advanced pneumatic and hydraulic system components. Guidelines on how to design, operate, and troubleshoot pneumatic and hydraulic systems. This includes designing the Programmable Logic Controller (PLC) ladder diagram for effective operation of the system.

SMJE 4243 Control Systems Design

This course introduces concepts in continuous control design using frequency response, root locus and state variable methods.

SMJE 4253 Power Electronic and Drives

This course provides knowledge on semiconductor power diodes, transistors, thyristors, triacs, GTOs, MOSFETs and IGBTs - static characteristics and principles of operation; triggering circuits; phase control rectifiers; bridge converters - fully controlled and half controlled; principles of choppers and inverters; basis concepts of adjustable speed dc and ac drives.

SMJE 4263 Computer Integrated Manufacturing

This course is designed to highlight the major automation-related subjects within the scope of the manufacturing system. Special emphasis will be given to industrial robotics, computer-aided design and manufacturing (CAD/CAM), numerically controlled machine tools (CNC), computer controlled material handling (AGV), automatic storage systems (AS/RS) and sophisticated sensory systems such as computerized vision. 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 4293 Industrial Automation

This course helps the students to develop their knowledge of industrial automation by exploring various automation technologies such as SCADA, DCS, CAN and industrial buses and work with PLC's in an industrial plant, also system integration with PLCs and computers. The course is backed by extensive laboratory work using automation rigs and equipment. The course would give the students a broad understanding of modern industrial automation technology and will enable them to develop skills in designing, building, programming, debugging and maintaining industrial automated systems

SMJE 4303 Introduction to Bioengineering

The students will be taught the fundamentals of Bioengineering which has emerged at the intersection of the engineering and biological sciences. In this course, students will explore the application of engineering principles and analyses to the study of biological systems and seek to understand the potential benefits and constraints of engineered materials and devices focused in medical physiology and psychology and its applications. The course will cover principles of electrophysiology, cognitive science and neural information processing.

SMJE 4313 Image Processing

The students will be taught the fundamentals of digital image and computer vision to help them understand various concepts and algorithms in these topics. Students will gain hands-on experience in using software tools for processing digital images. Further, the students will learn application of image processing in computer vision e.g. object recognition, detection, segmentation etc.

SMJE 4333 Biomedical Imaging System

This course introduces students to the principles and design of medical imaging systems. The students will also be taught to diagnose and interpret some medical images.

SMJE 4353 Robotics

This course introduces students to the aspect of key technologies in robotic systems, types of robots available worldwide, sensor and actuators for robotics as well as Robot Operating System (ROS). Students also are exposed to overviews of robot usage, configurations, mechanisms, kinematic and position. Topics covered including the practical hands-on of both simulated and physical arm robots applications.

SMJE 4383 Advanced Programming

This course extends the introductory learning of "Programming for Engineers" (SMJE1013) to the level of developing practical, medium- to large- scale software systems. Students learn several algorithms of diverse solutions, data structures other than simple arrays to ease problem solving, as well as the principle of object orientation for large systems. Also, a systematic method of debugging, crucial for efficient development, is explained.

SMJE 4393 Real Time Systems

'Real-time' is a property featuring timely responses to sporadic external events. This course introduces students to the concept, features and application scheme of real time systems, also including the RTOSs. FreeRTOS on Arduino is used as a platform for hands-on.

SMJE 4403 Mechatronic System Design

This course consists of introduction to the synergistic integration of mechanical disciplines, controls, electronics and computers in the design of high-performance machines, devices or processes. This course overviews the principle of mechatronics design and practice to provide extensive coverage of mechanical components and assembly, sensors and actuators, signal conditioning circuits, modelling and simulation, data acquisition hardware and software, and microprocessors.

SMJE 4423 Embedded System Design

This course covers design issues of embedded systems from H/W to S/W. H/W includes sensors, ADC, microcontrollers, DAC, actuators, and their interfacing. S/W includes

scheduling, RTOS, middleware and state charts. Design methodology, verification and testability issues are also introduced.

SMJE 4513 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, and the fundamentals 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 4523 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 in designing new device structures.

SMJE 4533 Solid State Electronics

This course is a continuation of semiconductor material engineering and electronic device courses. In this course, students will be exposed to the basic theories of hetero-structures and their applications for electronic and opto-electronic devices including memories. Specifically, students are exposed to the major types of GaAs and GaN-alloyed semiconductors, their physical properties and structures which make them suitable for electronic and opto-electronic devices. Heterojunction bipolar transistors and modulation-doped field effect transistors will be used to describe the basic characteristics needed for electronic device operation. Then, to explain the required characteristics for opto-electronic devices, semiconductor lasers will be used as an example.

SMJE 4543 Electronics Device Fabrication and Characterization

This course is an introduction to fabrication processes and characterization of semiconductor devices. The course will focus on the basic physical phenomenon and underlying technologies that are involved in each process, and the basic techniques for device characterization. Specifically, students are exposed to two major types of semiconductor growth technologies which are known as Chrosralski growth and epitaxy growth technologies. For device fabrication, students are exposed to mainly the top-down approaches which are lithography and dry etching technique applying plasma processing technologies. Electrical and optical characterization as well as physical characterization using microscopy technologies will be described.

SMJE 4912 Final Year Project 1

This course is a first stage of the Final Year Project by research at i-Kohza which involves preliminary studies and planning on how to carry out the studies that are given to the students. The aim of this system is to inculcate good Japanese ethical values to identify problems and propose appropriate solutions. It is designed to expose the students in writing a research proposal. It will emphasize on the research philosophy and research methodology. At the end of the course, students should be able to write a research proposal in a professional manner. The students should also be able to manage and plan their research according to the period given.

SMJE 4924 Final Year Project 2

This course is a second stage of the Final Year Project by research which involves performing analytical/experimental/simulation works /studies at the respective i-Kohza lab. The results of the project will be discussed with their respective supervisors, i-Kohza 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 thesis and be able to present their findings. The students should also be able to manage and plan their research according to the period given.

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

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Malaysia-Japan International Institute of Technology (MJIIT)

Bachelor of

SOFTWARE ENGINEERING

(UT6521005)

MJIIT UTM

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 MJIIT, 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.

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 Electives subjects offered by faculties other than Faculty of Computing.*

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 >= 2.0
SCSE4114	Industrial Training Report	4	92 credits CGPA >= 2.0
	TOTAL CREDIT	**12**	
	CUMULATIVE CREDITS	**112**	

YEAR 4: SEMESTER 2			
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	
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			
UHLM1012	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 60or CEFR less than B2 or MUET less than Band 4 {Malaysian student) must register for UHLB1112 course*

** Students must choose University Free Electives subjects offered by faculties other than Faculty of Computing.*

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**	

**** Students must choose University Free Electives subjects offered by faculties other than Faculty of Computing.***

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 course University Free Electives offered by other faculties	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 are 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 modeling. 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. Teambased 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. Teambased 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 his 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 datatechnology 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 is 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.

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Malaysia-Japan
International
Institute of Technology
(MJIIT)

Bachelor of

SCIENCE (INDUSTRIAL MATHEMATICS)

MJIIT UTM

ACADEMIC STAFF

DEPARTMENT OF MANAGEMENT OF TECHNOLOGY (MOT)

Ts. Dr. Aizul Nahar bin Harun
Head of Department (MoT)
Ph.D. (Built Environment)
M.Sc. (Integrated Construction Project Management)
B.Sc. (Land Administration & Development)
Phone: +603-2203 1308
Email: aizulnahar.kl@utm.my

Ts. Dr. Zulhasni bin Abdul Rahim
Ph.D. Industry (Engineering Technology Management and Innovation)
B.Eng. (Mechanical Engineering)
Phone: +603-2203 1530
Email: zulhasni@utm.my

Dr. Rahayu binti Tasnim
Ph.D. (Entrepreneurial Psychology)
M.B.A. (Technology Entrepreneurship)
B.Management (Finance)
Phone: +603-2203 1282
Email: rahayutasnim@utm.my

Dr. Syarifah Zyurina binti Nordin
Academic Manager (External Program)
Ph.D. (Mathematics & Statistics)
M.Sc. (Mathematics)
B.Sc. (Industrial Mathematics)
Phone: +603-22031288
Email: szyurina@utm.my

Dr. Halim Shah bin Hamzah
Eng. Doc. (Engineering Business Mgmt)
M.Eng. (Mechanical - Adv Mfg Tech)
B.Eng. (Mechanical - Manufacturing)
Phone: +6018-8714472
Email: shahh.kl@utm.my

Dr. Nur Ayuni binti Shamsul Bahri
Engineering Education Programs Coordinator
Ph.D. (Engineering Education)
B.Eng. (Electrical-Telecommunication)
Phone: +6018-2016445
Email: n.ayuni@utm.my

 **Dr. Tan Lit Ken** Mathematics Coordinator Ph.D. (Mathematics) B.Sc. (Industrial Mathematics) Phone: +603-22031344 Email: tlken@utm.my	 **Dr. Hafizah Farhah binti Saipan@Saipol** Ph.D. (Mathematics) B.Sc. (Industrial Mathematics) Phone: +03-22031302 Email: hafizah.farhah@utm.my	 **Ts. Dr. Nurhazimah binti Nazmi** Ph.D. (Biomedical Engineering) M.Sc. (Mathematics) B.Sc. (Mathematics) Phone: +603-2203 1298 Email: nurhazimah@utm.my
 **Dr. Shahirah binti Abu Bakar** Ph.D. (Fluid Dynamics) M.Sc. (Fluid Dynamics) B. Sc. (Mathematics with Statistics) Phone: +603-22031545 Email: shahirah.abubakar@utm.my	 **Dr. Muhammad Athif bin Mat Zin** Ph.D. (Mathematics) M.Sc. (Mathematics) B.Eng. (Mathematics) Phone: +603-22031314 Email: muhammadathif@utm.my	 **Dr. Amir Syafiq Syamin Syah bin Amir Hamzah** Ph.D. (Mathematics) M.Sc. (Mathematics) B.Sc. (Industrial Mathematics) Phone: +603-22031317 Email: syamin@utm.my

DEPARTMENT OF MANAGEMENT OF TECHNOLOGY (MOT)
BACHELOR OF SCIENCE (INDUSTRIAL MATHEMATICS) WITH HONOURS CURRICULUM

1. Awarding Institution			Universiti Teknologi Malaysia	
2. Teaching Institution			Universiti Teknologi Malaysia	
3. Program Name			Bachelor of Science (Industrial Mathematics) with Honours	
4. Final Award			Bachelor of Science (Industrial Mathematics) with Honours	
5. Program Code			UT6440002 (SSCMH)	
6. Professional or Statutory Body of Accreditation			Ministry of Higher Education	
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	10	18	20
Short	4	5	8	10

12. Classification of Courses			
Classification		**Credit**	**Percentage (%)**
Program Core		53	41%
Program Electives		33	26%
Faculty Core a. SHLJ 2252 Japanese for Communication 2 b. SHLJ 2353 Japanese for Communication 3 c. SMJG 2142 Professional Ethics, Safety & Health (Ningen-Ryoku) d. SMJG 3206 Industrial Training e. U*** Free Elective		24	18%
General / University Courses f. Management/Economics/Humanities/Ethics g. Language – English and Japanese h. Entrepreneurship i. Free Elective		8 6 2 3	15%
Total		**129**	**100%**
For science program, please fill up the following classification.			
No	**Classification**	**Credit**	**Percentage (%)**
A	**Mathematics Courses** a) Lecture b) Industrial Training c) Final Year Undergraduate Project	 95 12 6	 74% 9% 5%
	Total credit for Part A	**113**	**88%**
B	**University General Courses** a) General Courses Cluster b) Languages c) Entrepreneurship	 12 2 2	 9% 1.5% 1.5%

	Total credit for Part B	**16**	**12%**
	Total credit for Parts A and B	**129**	**100%**
13. Total credit to graduate		**129**	

PROGRAMME STRUCTURE FOR OCTOBER INTAKE

Year 1 **Semester 1**

Code	Course	Credits
SSCM 1523	Linear Algebra	3
SSCM 1023	Mathematical Methods I	3
SSCM 1103	Statistics	3
SSCM 1303	Computer Literacy	3
SSCP 1143 / SSCC 1003	Mechanics/Principles of Chemistry	3
ULRS 1182	Appreciation of Ethics and Civilization*	2
UHLM 1012	Malay Language for Communication 2 (International Students)	2
	Total Credits	17

Year 1 **Semester 2**

Code	Course	Credits
SSCM 1033	Mathematical Methods II	3
SSCM 1313	Computer Programming	3
SSCM 1533	Logic and Set Theory	3
SSCM 1703	Differential Equations I	3
ULRS 1012	Value and Identity	2
XXXX XXX3	Free Elective	3
	Total Credits	17

Year 2 **Semester 3**

Code	Course	Credits
SSCM 2833	Linear Programming (WBL)	3
SSCM 2423	Numerical Methods I	3
SSCM 2773	Differential Equations II	3
SSCM 2793	Vector Calculus	3
ULRS 1022	Philosophy and Current Issues*	2
UHLB 2122	Professional Communication Skills 1	2
	Total Credits	16

Year 2 **Semester 4**

Code	Course	Credits
SSCM 2713	Partial Differential Equations	3
SSCM 2613	Advanced Calculus	3
SSCM 2863	Mathematical Modelling (WBL)	3
SSCM 2853	Inventory Control and Queuing Theory (WBL)	3
SSCM 2103	Mathematical Statistics	3
ULRF 2XX2	Service Learning & Community Engagement Courses	2
ULRF 2**2	SERVICE LEARNING & COMMUNITY ENGAGEMENT COURSES	2
	Total Credits	17

Year 3 **Semester 5**

Code	Course	Credits
SSCM 3123	Multivariate Analysis (WBL)	3
SSCU 3622	Research Methodology and Information Retrieval (HW)	2
ULRS 1032	Entrepreneurship & Innovation	2
Electives (Choose 9 Credits)		
SSCM 3503	Complex Variables	3
SSCM 3883	Multi-Objective Decision Making	3
SSCM 3133	Statistical Quality Control	3
SSCM 3153	Inferential Statistics	3
SSCM 3843	Optimization Methods	3
SBSD 1043	Organizational Behavior	3
	Total Credits	16

Year 3 **Semester 6**

Code	Course	Credits
SSCM 1523	Linear Algebra	3
SSCM 1023	Mathematical Methods I	3
SSCM 1103	Statistics	3
SSCM 1303	Computer Literacy	3
SSCP 1143 / SSCC 1003	Mechanics/Principles of Chemistry	3
ULRS 1182	Appreciation of Ethics and Civilization*	2
UHLM 1012	Malay Language for Communication 2 (International Students)	2

	Total Credits	17

Year 1 **Semester 2**

Code	Course	Credits
SSCM 1033	Mathematical Methods II	3
SSCM 1313	Computer Programming	3
SSCM 1533	Logic and Set Theory	3
SSCM 1703	Differential Equations I	3
ULRS 1012	Value and Identity	2
XXXX XXX3	Free Elective	3
	Total Credits	17

Year 2 **Semester 3**

Code	Course	Credits
SSCM 2833	Linear Programming (WBL)	3
SSCM 2423	Numerical Methods I	3
SSCM 2773	Differential Equations II	3
SSCM 2793	Vector Calculus	3
ULRS 1022	Philosophy and Current Issues*	2
UHLB 2122	Professional Communication Skills 1	2
	Total Credits	16

Year 2 **Semester 4**

Code	Course	Credits
SSCM 2713	Partial Differential Equations	3
SSCM 2613	Advanced Calculus	3
SSCM 2863	Mathematical Modelling (WBL)	3
SSCM 2853	Inventory Control and Queuing Theory (WBL)	3

Code	Course	Credits
SSCM 2103	Mathematical Statistics	3
ULRF 2XX2	Service Learning & Community Engagement Courses	2
ULRF 2**2	SERVICE LEARNING & COMMUNITY ENGAGEMENT COURSES	2
	Total Credits	17

Year 3 **Semester 5**

Code	Course	Credits
SSCM 3123	Multivariate Analysis (WBL)	3
SSCU 3622	Research Methodology and Information Retrieval (HW)	2
ULRS 1032	Entrepreneurship & Innovation	2
Electives (Choose 9 Credits)		
SSCM 3503	Complex Variables	3
SSCM 3883	Multi-Objective Decision Making	3
SSCM 3133	Statistical Quality Control	3
SSCM 3153	Inferential Statistics	3
SSCM 3843	Optimization Methods	3
SBSD 1043	Organizational Behavior	3
	Total Credits	16

Year 3 **Semester 6**

Code	Course	Credits
SSCU 3902	Undergraduate Project I	2
UHLB 3132	Professional Communication Skills 2	2
UHLX 1XX2	Foreign Language for Communication	2
Electives (Choose 9 Credits)		

SSCM 3363	Scientific Computing using Structured Programming	3
SSCM 3753	Fluid Mechanics	3
SSCM 3423	Numerical Methods II	3
SSCM 3103	Design of Experiments	3
SSCM 3823	Scheduling	3
SSCM 3113	Time Series	3
SBSF 1013	Principles of Marketing	3
	Total Credits	18

Year 4 **Semester 7**

Code	Course	Credits
SSCU 4904	Undergraduate Project II	4
Electives (Choose 12 Credits)		
SSCM 4763	Computational Fluid Dynamics	3
SSCM 4263	Introduction to Stochastic Models	3
SSCM 4863	Financial Mathematics	3
SSCM 4243	Sampling Techniques	3
SSCM 4253	Introduction to Regression Modelling	3
SBSD 1033	Principles of Management	3
Elective – PRISMS (MSCM)		
SSCM 5053	Advanced Mathematical Method I	3
SSCM 5373	Computational Mathematics	3
SSCM 5693	Mathematical Analysis	3
Elective – PRISMS (MSCJ)		
SSCM 5713	Methods of Engineering Mathematics	3
SSCM 5423	Numerical Methods in Engineering	3
SSCM 5703	Advanced Partial Differential Equation	3
	Total Credits	16

Year 4 **Semester 8**

Code	Course	Credits
SSCU 4914	Industrial Training Report	4
SSCU 4918	Industrial Training (HW)	8
	Total Credits	12

ELECTIVE COURSES
CHOOSE FOUR (4) ONLY

Code	Course	Credit
SSCM 3503	Complex Variables	3
SSCM 3883	Multi-Objective Decision Making	3
SSCM 3133	Statistical Quality Control	3
SSCM 3153	Inferential Statistics	3
SSCM 3843	Optimization Methods	3
SSCM 3363	Scientific Computing using Structured Programming	3
SSCM 3753	Fluid Mechanics	3
SSCM 3423	Numerical Methods II	3
SSCM 3103	Design of Experiments	3
SSCM 3823	Scheduling	3
SSCM 3113	Time Series	3
SSCM 4763	Computational Fluid Dynamics	3
SSCM 4263	Introduction to Stochastic Models	3
SSCM 4863	Financial Mathematics	3
SSCM 4813	Optimal Control	3
SSCM 4243	Sampling Techniques	3

SSCM 4253	Introduction to Regression Modelling	3
SSCM 5053	Advanced Mathematical Methods I	3
SSCM 5373	Computational Mathematics	
SSCM 5693	Mathematical Analysis	3
SSCM 5713	Methods of Engineering Mathematics	3
SSCM 5423	Numerical Methods in Engineering	3
SSCM 5703	Advanced Partial Differential Equation	3

Programme Uniqueness

- This special program is designed to produce excellent young and talented industrial mathematicians.
- Established links with the international centre for industrial mathematics for possible overseas industrial training.
- The only Bachelor Science in Industrial Mathematics program in the country which offers a 20 weeks industrial training either locally or overseas.
- This program allows the transfer of credits of equivalent courses offered by participating local or overseas institutions.
- Prepares students to be able to apply their mathematical knowledge and skills in the planning, decision-making, analysis and supervision of work related to industries and public or private sectors.

Career Prospects and Career Path

Graduates of this programme can work as

- Data analyst, data scientist, programmer
- Quality assurance manager, production control engineer and planning officer in industries such as manufacturing, telecommunications and oil & gas.
- Statisticians, operations research analysts, sales and marketing executives in service industries.
- Financial executives in financial institutions.
- Administrative officers in public and private sectors.
- Academicians and researchers in academic and research institutions.

Cross Campus Program

Students are given the opportunity to enrol certain courses at participating institutions either locally or abroad. The grades and credits of up to 1/3 of the total credits of the curriculum are transferable.

UTM Professional Skills Certificate

UTM has designed its own UTM Professional Skills Certificate (UTM PSC) to enhance the knowledge and skills of its students. It provides students with value-added courses so that they will have a competitive edge when they enter the employment market.
(More information can be obtained from https://ugs.utm.my/utm-professional-skills-certificateutm-psc/)

Facilities Available

List of rooms with IT facilities

1. Computer Laboratories
2. Smart Classrooms
3. Resource Centre
4. Lecture Halls

Support for Students and Their Learning

(a) Support Personnel

- Academic Advisor
- Counsellor
- Students Association (PESAT)

(b) Infrastructure support

- Internet access (Wireless)
- e-learning
- Digital library
- Cafeterias
- Health care centre
- Sports and recreational areas
- Smart classroom
- Students' activity room
- Reading Stations

(c) Financial support

- Perbadanan Tabung Pendidikan Tinggi Negara (PTPTN)
- MARA
- JPA and etc

Methods for Evaluating and Improving the Quality and Standards of Teaching and Learning Mechanisms for Review and Evaluation of Teaching, Learning, Assessment, the Curriculum and Outcome Standards

a) Students performance in terms of:

- Kedudukan Bersyarat (KS)/ Kedudukan Baik (KB)
- Cumulative Grade Point Average (CGPA)
- Grade Point Average (GPA)
- Graduate on time (GOT)
- Completion rate

b) Employability

- Alumni survey
- Market survey

c) Lecturer's performance

- Online Teaching Evaluation and Student Experience (e-PPPK)
- Annual staff appraisal (e-LPPT)

d) Curriculum review

- Faculty academic committee
- Industrial training survey
- Continuous Quality Improvement (CQI) report
- External examiner reports
- Graduate employability report
- Exit Survey

e) Delivery system

- Academic Quality Assurance Committee
- Audit report
- MQA standard

SYNOPSIS OF CORE COURSES

SSCM 1023 Mathematical Methods I

The course revises and extends Matriculation and STPM topics such as differentiation and integration towards hyperbolic and trigonometric inverses. Applications in computing arc length and area of surfaces of revolution are also included. Other topics covered are improper integrals, parametric equations, polar coordinates, sequence, and series. This later topic serves as an introduction to three dimensional calculus which students will learn in Mathematical Methods II. It is hoped that upon completion of the course, students should have acquired some firm basic tools to pursue further mathematics.

SSCM 1103 Statistics

The course is an introduction to statistics, reviewing some descriptive statistics which include probability distributions and random variables. Next, the topics of sampling distributions and inferential statistics covering estimation procedures and hypothesis testing are discussed. The later using the method of analysis of variance when more than two means involved are also covered. Finally, simple linear regression, goodness-of-fit tests and contingency tables are introduced. Students will be trained in the use of computer software such as Data Analysis using Microsoft Excel to carry out a practical data exploration and analysis.

SSCM 1303 Computer Literacy

This course presents efficient internet search strategies and relevant use of spreadsheets and software packages for prospective mathematics majors. These spreadsheets and software packages are introduced for data analysis and computational mathematics purposes. In addition, IR4.0 and 21st century learning will be implemented through the use of these spreadsheet and software packages, as well as other online learning tools. Students will carry out an experiential assignment that involves the community by employing the materials learnt in the course.

SSCM 1523 Linear Algebra

This course begins with the study of matrices, starting with simple matrix operations, elementary row operations and inverses, and determinants of matrices. Solving linear systems using Inverses of matrices, Crammer's rule, Gauss and Gauss-Jordan elimination methods, are next in line. Next, the focus is on the vector spaces, subspaces, linear independence, spanning sets, bases, coordinate vector and change of basis, orthogonal bases, and the Gram-Schmidt process. A discussion of linear transformation and matrices, as well as the kernel and range is also studied. Finally, the discussion will be on eigenvalues and eigenvectors together with their usage in diagonalization problems.

SSCM 1033 Mathematical Methods II

This course is a continuation of SSCM 1023 - Mathematical Methods I. Three main topics are covered, namely multivariable functions, partial derivatives and its applications, and multiple integrals and its applications. Students will learn how to express functions of two and three variables using graphical representations, find partial derivatives and evaluate double and triple integrals. The use of polar, cylindrical and spherical coordinates systems is also highlighted. Applications include finding area, volume, mass, centre of gravity and moments of inertia of a solid.

SSCM 1313 Computer Programming

This course will provide the basic programming skill in Computer C++ Programming. Topics include flowcharts, algorithms, basic syntax in C++, procession of compiling, preprocessing components, operators, loops, branches, data/variable types, strings, arrays, functions, pointer and structure. Students will learn to write efficient and maintainable programs using Microsoft Visual C++ software. The lectures are supplemented with the non-trivial lab exercises. IR4.0 and 21st century learning will be implemented through the online learning tools and programming software.

SSCM 1703 Differential Equations I

This is an introductory course on differential equations. It provides students with basic concepts and theories as well as analytical tools for solving ordinary differential equations (ODEs). Topics include first order ODEs, linear ODEs with constant coefficients, Laplace transforms and Fourier series.

SSCM 1533 Logic and Set Theory

This course introduces axiomatic set theory and elementary logic. Since set theory and logic form the foundation of mathematics and are greatly intertwined, informal approaches to sets are first reviewed to gather vocabulary for a study of logic. The logic parts include propositional algebra and predicate calculus, arguments and methods of proof. Set theory includes the basic axioms and definitions. Basic laws are derived rigorously using methods of logic. Further topics for introducing modern advanced mathematics include properties of numbers, sets and relations, equivalence relations, functions and cardinality.

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

UTM
UNIVERSITI TEKNOLOGI MALAYSIA
Malaysia-Japan International Institute of Technology (MJIIT)

MJIIT GENERAL COURSES

MATHEMATICS COURSES

SMJM 1013 Engineering Mathematics I

This course provides basic knowledge in the concept of Engineering Mathematics including matrices, vectors, complex numbers, parametric equations, polar coordinates and power series. It introduces further transcendental functions namely hyperbolic and inverses of hyperbolic and trigonometric functions. Differentiation and integration of these functions are also discussed including the improper integral.

SMJM 1023 Engineering Mathematics II

This is an introductory course on differential equations. Topics include first order ordinary differential equations (ODEs), linear second order ODEs with constant coefficients up to fourth order, the Laplace transform and its inverse, Fourier series, and partial differential equations (PDEs). Students will learn how to classify and solve first order ODEs, use the techniques of undetermined coefficients, variation of parameters and the Laplace transform to solve ODEs with specified initial and boundary conditions, and use the technique of separation of variables to solve linear second order PDEs and the method of d'Alembert to solve wave equation.

SMJM 2033 Engineering Mathematics III

This course will develop students' understanding of two mathematical concepts which are indispensable to the engineering and technology fields, namely, differentiation and integration of multivariable real functions and vector-valued functions. The basic theory of partial derivatives and multiple integrals of real functions with their applications are discussed. The theory is extended to vector valued functions to describe motion in space, directional derivatives, gradient, divergence and curl, line integrals, surface integrals. Related theorems, namely Green's Theorem, Stokes' Theorem and Gauss or Divergence Theorem and their applications are discussed.

SMJM2043 Engineering Statistics

This course introduces and discusses the theories, concepts and practical aspects of probability and statistics. It begins with the discussion on the basic statistics, elementary probability theory, properties of probability distributions, sampling distribution, point and interval estimation of parameters and hypothesis testing. Simple linear regression and one-way analysis of variance are also taught in this course. Statistical tools and software for solving engineering statistics problems will also be incorporated in this course.

SMJM3053 Numerical Methods

This course discusses techniques of solving problems using numerical methods that involve non-linear equations, systems of linear equation, interpolation and curve fitting, numerical differentiation and numerical integration, eigenvalue problems, ordinary differential equations and partial differential equations. Mathematical tools and software are also incorporated in this course.

MJIIT NINGEN-RYOKU COURSE

SMJG 2142 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, seminars, etc.

PROGRAM COMMON COURSES

SMJG 3206 Industrial Training

The industrial training provides students with work-based learning in an 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 a real working environment. Students may realize their ambition and ascertain their career path from the experience gained during training. 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.

SMJP4102/SMJE4912/SMJC4813 Final Year Project I

Final Year Project is conducted within two semesters as Final Year Project I and Final Year Project II. Final Year Project I is the first stage of the Final Year Project by research at i-Kohza which involves preliminary study and planning on a project. The aim of this course is to inculcate good Japanese ethical values in problem identification and proposing appropriate solutions. It is designed to expose students to writing a research proposal that emphasizes research philosophy and methodology. At the end of the course, students should be able to write a research proposal in a professional manner. The students should also be able to manage and plan their research according to the given period.

SMJP4204/SMJE4924/SMJC4823 Final Year Project II

Final Year Project II is the second stage of the Final Year Project by research, involving analytical, experimental, or simulation work and studies at the respective i-Kohza lab. The project results will be discussed with their supervisors, i-Kohza members, and department

members. By the end of the course, students should be able to work independently, produce a project report, and present their findings. They should also be able to manage and plan their research according to the given timeline.

JAPANESE LANGUAGE COURSES

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

Japanese Language Courses		Total Credit
(a)	Japanese for Communication I	**2**
(b)	Japanese for Communication II	**2**
(c)	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.

SHLJ 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.

SHLJ 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.

UTM
UNIVERSITI TEKNOLOGI MALAYSIA
Malaysia-Japan International Institute of Technology (MJIIT)

UNIVERSITY GENERAL COURSES

GENERAL COURSES

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

Cluster	University General Courses	Total Credit
1	Malaysia Core Value (ULRS 1022 & ULRS 1182 – Local) (ULRS 1022 & UHLM 1012 – International)	4
2	Integrity and Anti-Corruption (ULRS 1032)	2
3	Global Citizen (ULRF 2XX2)	2
4	Communication Skills – English Language (UHLB 1112*, UHLB 2122, UHLB 3132)	6
5	Enterprising Skills (ULRS 3032)	2
TOTAL		**16**

*Credit exemption for MUET above band 4

STRUCTURE FOR UNIVERSITY GENERAL COURSES

Malaysia Core Values	Value and Identity	Global Citizen	Communication Skills	Enterprising Skills
4 CREDITS	**2 CREDITS**	**2 CREDITS**	**6 CREDITS**	**2 CREDITS**
Local Student • ULRS1022 Philosophy and Current Issue • ULRS1182 Appreciation of Ethics and Civilizations **International Student** • ULRS1022 Philosophy and Current Issue ***And*** • UHLM1012 Malay Language for Communication 2	ULRS1032 Integrity and Anti Corruption	ULRF2XX2 Service Learning & Community Engagement Courses	• UHLB2122 Professional Communication Skills 1 ***And*** • UHLB3132 Professional Communication Skills 2 ***And*** • UHLX 1122 Foreign Language for Communication (Elective)	ULRS3032 Entrepreneurship & Innovation

CLUSTER 1: MALAYSIA CORE VALUE (4 CREDIT)

For local students

- **ULRS 1022 Philosophy and Current Issue**
  This course encapsulates philosophical relation to National Education Philosophy and the Rukun Negara. The use of philosophy as a tool to purify the culture of thought in life through the arts and methods of thinking and human concepts. The main topics in philosophy, namely epistemology, metaphysics and ethics, are discussed in the context of current issues. Emphasis is given to philosophy as a basis for intercultural dialogue and to foster universal values. At the end of the course, students should be able to view the disciplines of knowledge as a whole and interdependent body of knowledge.

- **ULRS 1182 Appreciation of Ethics and Civilizations**
  This course explains the ethical concepts from the perspective of different civilizations. The course also aims to identify the system, the level of development, advancement and culture in strengthening social cohesion. Besides, discussion on the contemporary issues in the aspects of economy, politics, social, culture and environment from an ethical and civilization perspective can produce students who are moral and professional.

For International students

- **ULRS 1022 Philosophy and Current Issue**
  This course encapsulates philosophical relation to National Education Philosophy and the Rukun Negara. The use of philosophy as a tool to purify the culture of thought in life through the arts and methods of thinking and human concepts. The main topics in philosophy, namely epistemology, metaphysics and ethics, are discussed in the context of current issues. Emphasis is given to philosophy as a basis for intercultural dialogue and to foster universal values. At the end of the course, students should be able to view the disciplines of knowledge as a whole and interdependent body of knowledge.

- **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.

CLUSTER 2: VALUE & IDENTITY (2 CREDIT)

- **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 3: GLOBAL CITIZEN (2 CREDIT)

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 are encouraged to register during the pre-registration period to ensure a place in the course of their choice.
3) Credit transfer (credit exemption)

(i) UTM graduates are not eligible for credit transfer for all co-curricular courses they have taken in previous programs.

CLUSTER 4: COMMUNICATION SKILLS (6 CREDIT)

Students must accumulate six (6) credits of English Language courses and additional two (2) credits of Foreign Language courses during their study. Each course is taught for four hours per week and the focus is on developing basic skills in reading, writing, listening and speaking using 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-centered 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.

- **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.

- **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.

- **SHLJ 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 module/textbook, exercise book 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.

- **SHLJ 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.

CLUSTER 5: ENTERPRISING SKILLS (2 CREDIT)

- **ULRS 3032 Entrepreneurship & Innovation**

This course introduces the fundamental concepts and principles of entrepreneurship and the process of starting a business venture. A three-stage approach is used to achieve the course learning outcome: (a) understanding the individual characteristics of an entrepreneur, (b) analyzing business opportunities and forming an entrepreneurial venture, and (c) developing a business model for the new venture idea.

UTM
UNIVERSITI TEKNOLOGI MALAYSIA
Malaysia-Japan International Institute of Technology (MJIIT)

SEMESTER SYSTEMS & GUIDELINES

Academic Advisory System

Students will be divided into several groups and an academic staff will be appointed as academic advisor for each group. Senior lecturers will normally be assigned to the new students 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 problems such as workload, selection of courses and to explain the aim and purpose of the courses.
(iii) To identify and provide counseling 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 MJIIT

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 application of graduation award.

MJIIT Students Labeling / Group Identification

Each batch will be identified by their program and their enrollment 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**
2nd Year	Bachelor	MJIIT	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.

SEMESTER I				
Lectures	14 weeks			
Mid Semester Break	1 week			
Study Break	1 week			
Final Examinations	3 weeks			
Total (A)	**19 weeks**			
End of Semester Break (B)	**4 weeks**			
SEMESTER II				
Lectures	14 weeks			
Mid Semester Break	1 week			
Study Break	1 week			
Final Examinations	3 weeks			
Total (C)	**19 weeks**			
End of Semester Break (D)**	**10 weeks**	**OR**	End of Semester Break	1 week

		SHORT SEMESTER	
		Lectures & Examinations	8 weeks
		End of Semester Break	1 week
		Total (E)	**10 weeks**
TOTAL OF WEEKS (ACADEMIC SESSION) (A) + (B) + (C) + [(D) or (E)]	**=**	**52 WEEKS**	

* Subject to amendment.

** The study break is not allocated for students who will follow industrial training in a short semester.

Registration of Programme

(i) New students are required to register for the programme offered on the date determined by the University.

(ii) New students who fail to register on time without any acceptable reason will have their admission automatically withdrawn.

(iii) The registration for senior students is done automatically by the University based on the previous examination results.

(iv) Senior students, who have discontinued their study because of deferment or being suspended, need to re-register for the programme.

Registration of Courses

(i) Students must register for all courses taken in each semester.

(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 MJIIT.

(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, no student is allowed to take more than 20 credits per 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 enroll 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

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

(xii) 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

(xiii) 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.

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

(xv) 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.

(xvi) 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, everytime 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)	CGPA $\geq$ 2.00
Conditional(KS)	1.70 $\leq$ CGPA < 2.00
Fail (KG) (Dismissal)	CGPA < 1.70

With approval from the Senate, a student who obtains a GPA < 1.00, but maintains a 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 no. 16, Part 6 (29-35).

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 $= \frac{59.34+61.67}{16+16} = 3.78$

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 MJIIT 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.

UNDERGRADUATE (UG) ACADEMIC GUIDELINES **2025/2026**

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Malaysia-Japan
International
Institute of Technology
(MJIIT)

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 9908 / isckl@utm.my or walk-in to UTMKL Services Counter at Level 2 Menara Razak UTMKL for inquiry / further information.

2) MJIIT LIBRARY

Operation Hours
Monday to Friday (8.00am - 5.00pm)
Closed on Saturday, Sunday and Public Holidays

Location
Level 2, MJIIT building

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

3) UTM KL LIBRARY (PERPUSTAKAAN SULTANAH ZANARIAH)

Operation Hours
Monday to Friday (8.00am - 10.00pm)
Saturday to Sunday (8.00am- 5.00pm)
Closed on Public Holidays

SERVICES

Catalog

- UTM Library OCEAN (WebOPAC) is a computerized online catalog of the materials held in the library. OCEAN consists of an index of the bibliographic data cataloged 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 library.utm.my
- View the handbook at https://online.fliphtml5.com/rljlh/upuu/#p=18
- Assistance Service Desk in each library : telephone 03-2615 4301 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 email to aishah.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. Information can be found at www.residensiutmkl.com. For reservation, please contact 013-939 6821 / 03-2202 8992, or email to hospitality.residensiutmkl@gmail.com.

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 Kediaman 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 Kediaman Siswa Jaya). In case of emergency, please contact the following numbers:
Office: 03-2615 4457/4905 **Emergency**: 03-2615 4309

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	03-2615 4281/4273
UTM KL Health Centre	03-2615 4309/4457/4905
UTM KL OSHE	03 -2615 4927/4661/4667
Police/Ambulance/Fire & Rescue/Civil Defense	999
To call from any handphone	999/112

UTM
UNIVERSITI TEKNOLOGI MALAYSIA
Malaysia-Japan International Institute of Technology (MJIIT)

STUDENTS DRESS CODE

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.


UTM
UNIVERSITI TEKNOLOGI MALAYSIA
TATACARA BERPAKAIAN PELAJAR UTM
STUDENT DRESS CODE
PAKAIAN MENGHADIRI MAJLIS RASMI DI UNIVERSITI
DRESS CODE DURING ANY FORMAL EVENT IN THE CAMPUS
Kad Prihatin 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. Prihatin 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 / Bercapal
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 earings 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
SCAN ME
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 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
Versi Mac 2024


UTM
UNIVERSITI TEKNOLOGI MALAYSIA
Jabatan Timbalan Naib 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)
SCAN ME
MAKLUMAT LENGKAP BOLEH DIRUJUK DALAM BUKU PERATURAN MAHASISWA UTM
MORE INFORMATION CAN BE FOUND IN THE STUDENT REGULATIONS BOOK
Kad Prihatin 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. Prihatin 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 / Bercapal
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 earings 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
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
Versi Mac 2024


UTM
UNIVERSITI TEKNOLOGI MALAYSIA
Jabatan Tembalan Naib Canselor (Hal Ehwal Pelajar dan Alumni)
TATACARA BERPAKAIAN PELAJAR UTM
STUDENT DRESS CODE
PAKAIAN KE TEMPAT UMUM
DRESS CODE FOR PUBLIC PLACES
SCAN ME
MAKLUMAT LENGKAP BOLEH DIRUJUK DALAM BUKU PERATURAN MAHASISWA UTM
MORE INFORMATION CAN BE FOUND IN THE STUDENT REGULATIONS BOOK
LARANGAN
PROHIBITIONS
Rambut berwarna
Coloured hair
Rambut panjang / Berekor
Long / Rat tail hairstyle
Bertatu
Tattoo
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 earings 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
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
Versi Mac 2024


UTM
UNIVERSITI TEKNOLOGI MALAYSIA
Jabatan Timbalan Naib Canselor (Hal Ehwal Pelajar dan Alumni)
TATACARA BERPAKAIAN PELAJAR UTM
STUDENT DRESS CODE
PAKAIAN SUKAN / RIADAH
SPORTS DRESS CODE
SCAN ME
MAKLUMAT LENGKAP BOLEH DIRUJUK DALAM BUKU PERATURAN MAHASISWA UTM
MORE INFORMATION CAN BE FOUND IN THE STUDENT REGULATIONS BOOK
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.
LARANGAN
PROHIBITIONS
Pakaian ketat / jarang / singkat
Tight / transparent / short attire
Berseluar pendek atas paras lutut
Shorts above knee level
Baju tanpa lengan
Sleeveless shirt
Rambut berwarna
Coloured hair
Rambut panjang / Berekor
Long / Rat tail hairstyle
Bertatu
Tattoo
Bertindik hidung / Bersubang di telinga lebih daripada satu
Nose piercing / Multiple earings in one ear
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
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
Versi Mac 2024

UTM
UNIVERSITI TEKNOLOGI MALAYSIA
Malaysia-Japan International Institute of Technology (MJIIT)

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 • Global Mobility Program (GMP) • Global Outreach program (GOP) • Industrial visit • MJIIT Sport Day • Japan Day	• Uniform Bodies (Civil Defense) • Volunteerism • Sport, Recreation and Cultures • Service Learning (SL)	• UTM Professional Skills Certificate (UTM PSC) • Become student member - Institution of Engineers Malaysia (IEM) - Institution of Chemical Engineers (IChemE) - Institute of Electrical and Electronics Engineers (IEEE)

• Summer School Programme • Social and Community Engagement • MJIIT entrepreneurship • Open Day • Chem-E-Car Competition • Roboccon		- Institution of Engineering and Technology (IET) - Institution of Mechanical Engineers (IMechE) • Autodesk training • CIDB (Green Card)

UTM
UNIVERSITI TEKNOLOGI MALAYSIA
Malaysia-Japan International Institute of Technology (MJIIT)

GENERAL INFORMATION ABOUT MALAYSIA

GENERAL INFORMATION FOR MALAYSIA

Kuala Lumpur is the capital and the largest city in Malaysia in terms of population. The city proper, making up an area of 243 km^2 (94 sq mi), has a population of 2.1 million as of 2025. Greater Kuala Lumpur, also known as the Klang Valley, is an urban agglomeration of 8.8 million. It is the fastest growing metropolitan region in the country, in terms of population and economy.

ARRIVING AT KUALA LUMPUR INTERNATIONAL AIRPORT (KLIA)

The **Kuala Lumpur International Airport (KLIA) – Terminal 1** and **Kuala Lumpur International Airport (KLIA2) – Terminal 2** receives both domestic and International flights, situated in the Sepang district approximately 50km from Kuala Lumpur. Upon arrival at the airport, you may continue your journey to KL City Center / UTM via ERL (Express Rail Link), Taxi or Bus.

A non-stop rail service is available from 5am-12 midnight at the KL City Air Terminal (KL CAT) **from KLIA to KL Sentral Station** daily, including public holidays. It takes 28 minutes to get to KL Sentral with a frequency of every 15 minutes during peak hours and 20 minutes during non-peak hours. For more details, please browse through ERL.

Information and rates for public transport services can be accessed at KLIA (Terminal 1), or KLIA2 (Terminal 2).

CURRENCY

The unit of currency is the Malaysian Ringgit indicated as RM, which is equivalent to 100 sen. The current exchange rate is USD 1.00 = RM 4.25*, or Yen 100 = RM 2.86*.
* 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 has only two distinct weather patterns, hot and wet. The weather is generally hot and humid with mid-day temperatures at 34°C and night temperature at 24°C. More rain is expected during this time of the year due to the North East Monsoon season and the weather will be a bit cooler.

VISA

Citizens of many countries enjoy visa-free stays of 90 days in Malaysia. For those who are not sure of whether they require a visa into Malaysia can check from the Immigration Department website at http://www.imi.gov.my

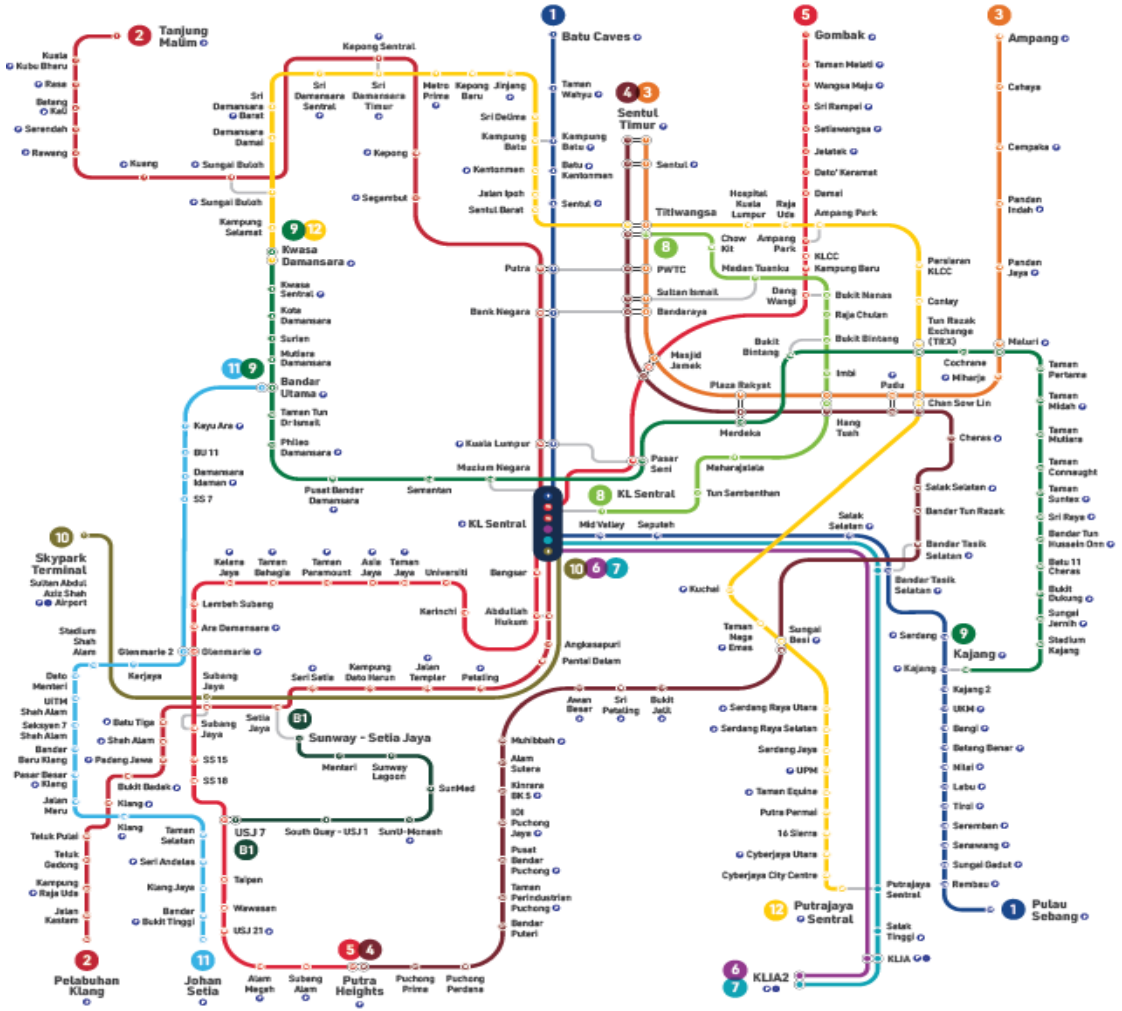
SHOPPING HOURS

Shops normally open at 10.00 AM and close at 10.00 PM. Restaurants normally close at 12.00 midnight.

TELEPHONES

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

THE KLANG VALLEY INTEGRATED TRANSIT MAP



MyRaPID PULSE

UTM
UNIVERSITI TEKNOLOGI MALAYSIA
Malaysia-Japan International Institute of Technology (MJIIT)

ADMINISTRATIVE AND TECHNICAL STAFF

 **Mrs. Khairani binti Ibrahim** Deputy Registrar (N13) Phone: +603-2203 1205 Email: khairani@utm.my	 **Mr. Muhammad Fadzly bin Jamaludin** Senior Assistant Registrar (N10) (HR & Admin) Phone: 03 - 4819 9485 Email: fadzlyj.kl@utm.my	 **Mrs. Norfazliana binti Jaafar** Assistant Registrar (N9) (Academic) Phone: +603-2203 1212 Email: norfazliana@utm.my
 **Mrs. Akmalaini binti Ahmad** Finance Officer (W10) Phone: +603-2203 1539 Email: akmalaini@utm.my	 **Mrs. Ariffi Suraya binti Rahmani** Research Officer (Q10) Phone: - Email: surayarahmani@utm.my	 **Mr. Aifaa Nazmi bin Ali** Assistant Registrar (N9) Phone: +603-2203 1206/1535 Email: a.nazmi@utm.my

 **Mrs. Nurain binti Abd Jalil** Science Officer (C9) Phone: +603-2203 1618 Email: nurainj@utm.my	 **Mrs. Shahirah binti Shamsulbahrin** Science Officer (C9) Phone: +603-2203 1618 Email: shahirah.s@utm.my	 **Mr. Mohd Ariff bin Mohd Ikhsan** Assistant Registrar (N9) (Marketing & Corporate) Phone: - Email: mohdariff.mi@utm.my
 **Mr. Hairul Lail bin Ismail** Assistant Vocational Trainer Officer (DV7) Phone: +603-2203 1248 Email: hairulail.kl@utm.my	 **Mr. Radhir Sham bin Mohamad** Assistant Vocational Trainer Officer (DV7) Phone: +603-2203 1490 Email: radhir.kl@utm.my	 **Mrs. Supiyati binti Tamrin** Personal Assistant (Dean) N5 Phone: +603-2203 1202 Email: supiyati@utm.my

Mrs. Sharidah binti Ibrahim
Assistant Information Technology Officer (F5)
Phone: -
Email: sharidah.kl@utm.my

Mrs. Nor Fadhillah binti Mohd Radzi
Assistant Admin Officer (F5)
Phone: +603-2203 1259
Email: norfadhillah.kl@utm.my

Mrs. Norfarehan Izyani binti Abdul Latif
Assistant Admin Officer (F5)
Phone: -
Email: norfarehan@utm.my

Mrs. Norhafizah binti Kamarudin
Assistant Vocational Training Officer (DV5)
Phone: +603-2203 1218
Email: hafizahkamarudin.kl@utm.my

Mrs. Noor Mirwani binti Mohd Sufian
Assistant Vocational Training Officer (DV5)
Phone: +603-2203 1276
Email: mirwani@utm.my

Tc. Muhammad Farhan bin Ahmad Fauzi
Assistant Vocational Training Officer (DV5)
Phone: +603-2203 1381
Email: -muhammadfarhan.af@utm.my

Mr. Mohd Sizal bin Sidek
Assistant Engineer (J5)
Phone: -
Email: sizal.kl@utm.my

Mr. Muhammad Islah bin Sulaiman
Assistant Engineer (J5)
Phone: +603-2203 1587
Email: m.islah@utm.my

Mr. Muhammad Hazrul Azhar bin Abd. Rahman
Assistant Engineer (J5)
Phone: +603-2203 1301
Email: mhazrulazhar@utm.my

Mr. Mohammad Naqiuddin bin Nadzri
Assistant Engineer (J5)
Phone: +603-2203 1517
Email: m.naqiuddin@utm.my

Mr. Amirul 'Aizad bin Salehuddin
Assistant Engineer (J5)
Phone: -
Email: aizad@utm.my

Mr. Syed Mohd Azlan bin Syed Othman
Assistant Engineer (J5)
Phone: -
Email: syedazlan.kl@utm.my

 **Mr. Ahmad Hazwan bin Azhari** Assistant Science Officer (C5) Phone: - Email: ahmadhazwan@utm.my	 **Mr. Mohd Shaiful bin Zainal** Senior Administrative Assistant (N4) Phone: +603-2203 1515 Email: mshaiful.kl@utm.my	 **Mrs. Nur Suriati binti Zikri** Senior Administrative Assistant (N2) Phone: +603-2203 1515 Email: nursuriati.kl@utm.my
 **Mr. Shazuli Azroel Bin Sapingi** Senior Administrative Assistant (N2) Phone: +603-2203 1551 Email: shazuli.kl@utm.my	 **Mrs. Rozlinda binti Mohd Ruslan** Administrative Assistant (N1) Phone: +603-2203 1258 Email: rozlinda.kl@utm.my	 **Mrs. Siti Nor Yusma Binti Mohd Yusof** Administrative Assistant (N1) Phone: +603-2203 1258 Email: sitinoryusma@utm.my

Mr. Muhammad Khairul Izzuan bin Abdull Karim
Administrative Assistant (N1)
Phone: +603-2203 1515
Email: khairulizzuan@utm.my

Mrs. Rini Emellina binti Mohd Bachuri
Administrative Assistant (N1)
Phone: +603-2203 1261
Email: emellina@utm.my

Mrs. Farah Dalilah binti Mohamad
Administrative Assistant (N1)
Phone: -
Email: farahdalilah@utm.my

Ms. Farhanah binti Hashim
Administrative Assistant (N1)
Phone: +603-2203 1513
Email: farhanah.kl@utm.my

Ms. Syaza Amalia binti Syed Hamzah
Administrative Assistant (N1)
Phone: +603-2203 1247
Email: syaza.kl@utm.my

Mrs. Nur Azilah binti Zaini
Administrative Assistant (N1)
Phone: +603-2203 1569
Email: nurazilahzaini@utm.my

Mr. Mohd Danial bin Mohd Taufik
Administrative Assistant (N1)
Phone: +603-2203 1213
Email:mohd.danial@utm.my

Mrs. Mahsuri binti Khalid
Assistant Office Secretary (N1)
Phone: -
Email: mahsuri.khalid@utm.my

Mrs. Noor Akma binti Abdul hamid
Assistant Office Secretary (N1)
Phone: -
Email: noorakma.kl@utm.my

Mrs. Puteri Zakirah binti Shaffiei
Administrative Assistant (N1)
Phone: -
Email: puterizakirah@utm.my

Mr. Mohammad Hashemi bin Mohd Radzi
Administrative Assistant (N1)
Phone: -
Email: mohammadhashemi@utm.my

Mr. Muhammad Syafiq bin Yazid
Designer (B1)
Phone: -
Email: syafiq.yazid@utm.my

Nur Aqilah binti Nasir
Administrative Assistant (Finance) W1
Phone: -
Email: nuraqilah.n@utm.my

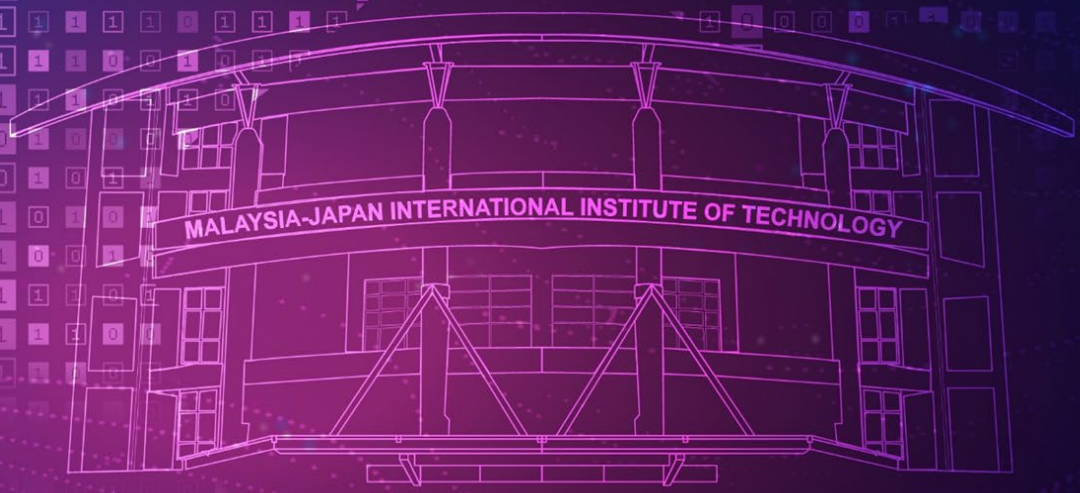
Ms. Siti Juliana binti Mohd Imam
JICA Project Assistant
Phone: +603-2203 1471
Email: juliana@ic.utm.my

Mr. Saiful Rahman bin Abdul Razak
Operation Assistant (N1)
Phone: -
Email: srahman.kl@utm.my

Mr. Muhammad Faiz bin Mohd Rasid
Operation Assistant (N1)
Phone: +603-2203 1260
Email: faizrasid@utm.my

MJIIT UTM

UTM UNIVERSITI TEKNOLOGI MALAYSIA | Malaysia-Japan International Institute of Technology (MJIIT)



UNDERGRADUATE (UG)

ACADEMIC GUIDELINES

2025/2026

https://mjiit.utm.my/