FACULTY OF ENGINEERING, TECHNOLOGY AND BUILT ENVIRONMENT
Welcome to UCSI University

ONE OF ASIA’S BEST PRIVATE UNIVERSITIES

UCSI University stands out as one of Asia’s best-ranked private universities in the QS World University Rankings 2024. Ranked 300, UCSI is classified in the world’s top 1%. UCSI was the only university in the world to receive the QS Recognition for Improvement Award in 2023 - an accolade that recognises universities that improve the most ranks on average.

#1 MALAYSIA’S TOP PRIVATE UNIVERSITY FOR GRADUATE EMPLOYABILITY AND OUTCOMES

Malaysia’s top private university for graduate employability

Higher Education Ministry’s Graduate Employability 2021-2022 survey

Four Forbes 30 Under 30 Asia inductees

Malaysia’s top private university for employment outcomes

QS World University Rankings 2024

Two Prestige 40 Under 40 laureates

UCSI’s SUBJECT MILESTONES

QS World University Rankings by Subject 2024

#42 Performing Arts

TOP100 Hospitality and Leisure Management

TOP100 Arts and Design

TOP160 Petroleum Engineering

TOP350 Business and Management Studies

TOP550 Social Science and Management

TOP650 Medicine

UCSI University is the first and only private university in Malaysia to receive a double recognition as Regional Centre of Expertise (RCE) by the United Nations University: RCE Kuching and RCE Greater Kuala Lumpur

100% Employability Score

for all UCSI programmes listed in the Malaysian Higher Education Ministry's Graduate Employability 2022 Survey

MORE THAN 4,600 global companies provide our students with internships

98% of our Co-Op partners would like to hire UCSI interns

Students from over 120 NATIONS

International students make up around 30% of UCSI’s student population

20 UCSI ACADEMICS are Fellows of Academy of Sciences Malaysia or ranked in the World’s Top 2% Scientists by Stanford University

>57% of UCSI’s academic staff are PhD holders and a further 22% are pursuing their doctorate

The 1st university in Malaysia’s private higher education sector to offer programmes in Aquatic Science, Biotechnology, Food Science, Music and Nutrition
UCSI University is one of Asia’s top private universities. It is classified in the world’s top 1% in the QS World University Rankings 2024, by virtue of its top 300 ranking. UCSI was the only university to receive the QS Recognition for Improvement Award - an award given to universities that improve the most ranks on average - at the 2023 QS EduData Summit in New York. And the University has steadily enhanced its global profile over the past decade.

Changemakers study here. Four UCSI alumni are Forbes 30 Under 30 Asia inductees. From social entrepreneurship to impactful visual storytelling, they raise aspirations and win the respect of the world. Two more alumni are Prestige 40 Under 40 laureates for their contributions to Malaysia’s music industry. And many more entrepreneurs, scientists, doctors, media personalities, musicians and national athletes make up UCSI’s acclaimed alumni network.

Research and scholarly pursuit are part of UCSI’s DNA. The University is equipped with state-of-the-art labs that feature the latest IR4.0 technologies in engineering, medicine, pharmacy and biotechnology. Students learn from academics who are at the forefront of their respective disciplines. UCSI’s collaboration with some of the world’s best universities also presents invaluable opportunities for students.

Since 2014, UCSI’s top students have been annually selected to advance high-impact research at Harvard University, Imperial College London, the University of Chicago, Tsinghua University, the University of Queensland and the University of British Columbia, among others. UCSI students have gone on to work with some of the world’s best minds in the fields of endocrinology, nanotechnology, pharmacology and materials science, among other critical fields.

Graduate employability is another one of UCSI’s calling cards. The University has a 100% employability score in the Malaysian Higher Education Ministry’s Graduate Employability 2022 survey. UCSI counts over 4,600 companies in its industry network. This includes many of the world’s best firms like Accenture, CIMB, Deloitte, DHL, EY, HP, HSBC, KPMG, Maybank, Nestle, Samsung, Schlumberger, P&G, Petronas and PWC, among many others. This dynamic setup facilitates internship arrangements, joint research opportunities, technology transfers and of course, job offers.

With these unique strengths and more, UCSI stands out as a university that offers an education few can, provides experiences others can’t and delivers game-changing outcomes for students around the world.
A confluence of practical studies and theoretical learning, the Faculty of Engineering, Technology and Built Environment at UCSI University has developed a range of innovative programmes that are recognised by both local and international bodies like the Malaysian Qualifications Agency (MQA), the Malaysian Engineering Accreditation Council (EAC), and the Board of Engineers Malaysia (BEM). With Malaysia as a signatory of the Washington Accord, our programmes are also recommended for recognition by member countries including Australia, Canada, Ireland, New Zealand, UK and US.

Our academics build on two vital qualities: an eagerness to share their knowledge and a desire to engage students in the Faculty’s research projects. Students will have access to industry-standard facilities and engineering software and technology.

Our top students are sent abroad annually for research attachments at some of the best universities in the world such as Imperial College London in the UK, Tsinghua University in China and the University of Queensland in Australia.

Your studies here will be insightful. But more than that, it will be meaningful. Theory will lead to cutting-edge practice. Your enthusiasm will lead you to achievements. And your work will be challenging and impactful. Engineer your future with us today.

Why study Engineering at UCSI?

A PLATFORM FOR TRANSDISCIPLINARY COLLABORATION WITH 10 DISCIPLINES

> RM28MILLION INVESTED ON INDUSTRY STANDARD FACILITIES WITH IoT AND FACE RECOGNITION TECHNOLOGIES

RESEARCH ATTACHMENT AT RENOWNED UNIVERSITIES LIKE IMPERIAL COLLEGE, TSINGHUA, AND QUEENSLAND

TWO INTERNSHIP PLACEMENTS FOR HIGHER EXTENSIVE INDUSTRIAL EXPOSURE

ACHIEVED 100% GRADUATE EMPLOYABILITY SCORE IN A MINISTRY OF HIGHER EDUCATION SURVEY (2022)

PROGRAMMES ARE RECOGNISED BY WASHINGTON ACCORD AND BEM
Learn from a team of acclaimed professors and academics who are at the forefront of their respective disciplines. Work with them, be mentored by them and benefit from their wealth of experience.

**Renowned Academics**

**ASSOCIATE PROFESSOR EUR ING IR TS DR ANG CHUN KIT**
Dean
PhD in Mechanical Engineering
BEng (Hons) Mechatronic Engineering

**PROFESSOR DATO’ IR TS DR MOHD RIZON BIN MOHAMED JUHARI**
Professor
Doctor of Engineering (Computer Science and Intelligent Systems)
Master of Electrical and Electronics Engineering
Bachelor of Electrical and Electronics Engineering

**PROFESSOR DR MOHD RAZMAN BIN SALIM**
Professor
PhD in Environmental Engineering
Master of Civil Engineering (Sanitary Engineering)
B.Sc. in Civil Engineering

**ASSOCIATE PROFESSOR DR ELANGO NATARAJAN**
Associate Professor
PhD in Mechanical Engineering
Master of Engineering (CAD)
Bachelor of Engineering (Mechanical)

**ASSOCIATE PROFESSOR EUR ING IR TS DR LIM WEI HONG**
Deputy Dean
PhD in Computational Intelligence
BEng (Hons) Mechatronics Engineering

**PROFESSOR DATO’ DR AHMAD IBRAHIM, FASc**
Professor
PhD in Wastewater Engineering
Bachelor of Chemical Engineering
Fellow Academy of Sciences Malaysia

**ASSOCIATE PROFESSOR IR DR RODNEY TAN HEAN GAY**
Associate Professor
PhD in Electrical Engineering
MSc Microelectronic Engineering
BSc E&E Engineering

**ASSOCIATE PROFESSOR IR DR LEE KIAT MOON**
Associate Professor
PhD in Chemical Engineering
BEng (Hons) Chemical Engineering
As we stand at the onset of the Fourth Industrial Revolution, engineers will play a starring role in the era of smart factories, the industrial internet of things, next-generation robotics and self-learning AI.

If you want to play a role in engineering the future, you’ll need to acquire a fundamental understanding in science, technology, engineering and mathematics (STEM) which we provide at UCSI as well as a special focus on engineering design and advanced engineering technology.

At UCSI, you will learn from esteemed professors and academics who work on solutions that address global problems. You will also take part in industry visits, applying your knowledge at state-of-the-art laboratories and facilities. And as you lay the groundwork for further studies in Engineering, you will appreciate how this is more than a prep course. Join us and spring board your career.

Start Focused, Stay Ahead.
UCSI’s specialised foundation pathway helps you acquire a much stronger grasp of your chosen field of study while covering the overall reach of a standard foundation programme. Apart from helping you immensely as you progress to degree studies, UCSI’s foundation programme also provides you with an early taste of what the industry expects.

**Compulsory Courses**
- General Chemistry 1
- General Chemistry 2
- General Physics 1
- General Physics 2
- Introduction to Engineering
- Introduction to IR4.0 Technologies for Sustainable Development
- Fundamentals of Mathematics
- Introduction to Probability & Statistics
- Algebra & Trigonometry
- Introductory Calculus
- Computing Essentials

**Elective Courses (choose any 3)**
- Introduction to Pharmacy
- Introduction to Formulation Science
- Biotech & Forensics: the Science that Drives Life
- Food & Nutrition: Journey Towards Health
- Current Topics in Aquaculture
- Role of Engineers in Society
- Elementary Engineering Design
- Introduction to Medical Sciences
- Soft Skills for Healthcare Professionals

**Bachelor Degrees**
- Bachelor of Chemical Engineering with Honours
- Bachelor of Petroleum Engineering with Honours
- Bachelor of Mechanical Engineering with Honours
- Bachelor of Mechatronics Engineering with Honours
- Bachelor of Civil Engineering with Honours
- Bachelor of Electrical and Electronics Engineering with Honours
- Bachelor of Computer Engineering (Artificial Intelligence) with Honours
- Bachelor of Energy Engineering with Honours
- Other related degree programmes

**English Language Requirement for Foundation in Science**
Candidates with a minimum grade of A2 in UEC English Language, Band 2 in MUET, 30-31 in TOEFL, 4.0 in IELTS, grade C in O-Level or IGCSE or SPM English 1119, grade B1 (with at least 2 skills at B1) in CEFR, 140 in Cambridge English Qualification, 140 in Cambridge Linguaskill, and 36 in Pearson Test are exempted from SE004 Basic English and SE005 English Foundation. Other equivalent qualification can be exempted on case-by-case basis.

Candidates who scored lower than B+ in SPM English Language or than the above requirement will have to take the SE004 Basic English subject before taking the SE005 English Foundation subject in the foundation year.
Diploma In Electrical and Electronic Engineering
(R2/S23/4/0217) (12/2024) (A5631)

Students of this programme will receive a strong engineering foundation in electrical technology, telecommunication, control and instrumentation systems, as well as digital and analogue electronics. Expect plenty of hands-on training in cutting-edge laboratories as you hone your technical skills and tackle complex projects.

*This programme received a 100% graduate employability score in the Ministry of Higher Education’s Graduate Employability 2022 survey. (source: ge.mohe.gov.my/) 

Subject Listing

Year 1
• Engineering Physics I
• Engineering Mathematics I
• Computer Applications
• Electrical and Electronic Principles
• Engineering Physics II
• Circuit Analysis I
• Engineering Design
• Digital Electronics
• Engineering Mathematics II

Year 2
• Engineering Principles
• Applied Computing
• Circuit Analysis II
• Electrical Technology I
• Electrical Technology II
• Telecommunication Principles
• Industrial Studies
• Analogue Electronics
• Engineering Mathematics III
• Industrial Training I
• Project A

Year 3
• Control and Instrumentation Systems
• Microprocessor Based Systems
• Project B

Did you know?
The Electrical and Electronics Department received hardware sponsorship from Mikro MSC Berhad in May 2021.

Career Opportunities
Design engineer | Project engineer | R&D engineer | System design engineer | Analog design engineer |
Test engineer | PCB design engineer | Electrical engineer | Digital design engineer
Diploma of Engineering Technology (Industrial Design)

(N/0741/A/0001) (11/2027) (PA 15255)

Unleash your creativity and design expertise with this cutting-edge Diploma of Engineering Technology (Industrial Design). This dynamic and innovative programme is specifically designed to equip you with the technical knowledge, design skills and industry insights needed to thrive in the fast-paced world of industrial design.

At the core of this programme are skills-based courses that allow you to operate computer-aided design systems, interact with computing technology, and explore the fourth industrial revolution. You’ll learn how to ideate, prototype and refine designs using the latest technologies, including computer-aided design (CAD) and 3D printing. With a focus on practical, hands-on learning, you’ll be immersed in a range of design projects that reflect real-world scenarios and challenges.

This programme offers a selection of exciting electives with coherent fundamentals to suit your interests and ensure you’re ready for employment. Whether you’re interested in product design, process engineering design, environmental process design, or electrical and electronics system design, you’ll have the freedom to tailor your studies to your individual goals.

Subject Listing

Year 1
- Introduction to Engineering
- Engineering Mathematics 1
- Engineering Drawing & CAD
- Structure and Properties of Materials
- Computer Applications
- Engineering Mathematics 2
- Engineering Fundamental 1
- Engineering Statics
- Workshop and Technology Practice 1
- Engineering Mathematics 3
- Fundamental of Project Management
- Engineering Fundamental 2

Year 2
- Programming for Engineers
- Engineering Dynamics
- Workshop and Technology Practice 2
- Safety, Health and Environment
- Design Project
- Design Methodology
- Engineering Automation and Technology
- Statistics
- Final Year Project

Year 3
- Industrial Training

Elective Courses (Select 1 Stream Only)

**Stream 1: Industrial Manufacturing Technology**
- Manufacturing Processes
- Machining and Welding Practice
- Product Design & Manufacture

**Stream 2: Electrical & Electronics Technology**
- Electrical & Electronics Principles
- Electrical Power
- Electrical & Electronics System Design

**Stream 3: Process Engineering**
- Process Engineering Principle
- Process Instrumentation
- Process Safety and Commissioning

**Stream 4: Environmental Process Design**
- Soil Properties
- Engineering Hydrology
- Water and Wastewater Management

Career Opportunities
- CAD draftperson
- CAD designer
- Industrial designer
- Assistant product development engineer
- Assistant process engineer
- Assistant electrical engineer
- Assistant environmental engineer
Bachelor of Chemical Engineering with Honours

This four-year programme combines the three basic physical sciences – chemistry, physics and biology – with mathematics, which makes it one of today's most versatile engineering fields. This allows room for specialisation in a very broad spectrum of fields, including bioprocess, petroleum refining, waste management and etc. At UCSI, students are exposed to a myriad of new technologies that are rapidly reshaping the society we live in.

*This programme received a 100% graduate employability score in the Ministry of Higher Education’s Graduate Employability 2022 survey. (source: ge.mohe.gov.my/)

Did you know?
The faculty has made it to the Top 400 in the subject area of Chemical Engineering for QS World Rankings by Subject 2022.
Under a well-balanced curriculum that aims to provide both breadth and depth across petroleum engineering specialisations, students will build a solid foundation in oil and gas exploration, production and development as they master core topics in petroleum geology, petroleum economy and well completion.

At the Faculty, students will have access to well-equipped laboratories and sophisticated computers equipped with licensed engineering software such as NEXUS, COMPASS, t-navigator and other commercial reservoir simulation software. Industrial-based projects will also open the way for insights from industry experts. By the end of this four-year programme, they will have learnt to address pressing issues and design innovative solutions that benefit society and organisations.

*This programme received a 100% graduate employability score in the Ministry of Higher Education’s Graduate Employability 2022 survey. (source: ge.mohe.gov.my/)

Did you know?

The faculty has made it to the Top 150 in the subject area of Petroleum Engineering for QS World Rankings by Subject 2021 and 2022.

Subject Listing

Year 1
- Statistics
- Technical Communication
- Mathematical Methods for Engineers I
- Mathematical Methods for Engineers II
- Engineering Design and Drawing
- Engineering Physics
- Organic Chemistry
- Physical Chemistry
- Material Engineering
- Material Engineering Laboratory

Year 2
- Safety, Health and Environment
- Programming for Engineers
- Fluid Mechanics
- Numerical Analysis
- Physical Geology
- Elements of Reservoir Rock and Fluid Properties
- Thermodynamics
- Thermofluid Laboratory
- Numerical Analysis Laboratory
- Petrophysics Laboratory
- Internship I

Year 3
- Engineer in Society
- Engineering Management and Economics
- Reservoir Engineering I
- Reservoir Engineering II
- Oil and Gas Production Operations
- Well Completion
- Drilling Engineering
- Petroleum Geology
- Petroleum Geology Laboratory
- Drilling Engineering Laboratory
- Fieldwork
- Internship II

Year 4
- Final Year Project A
- Enhanced Oil Recovery
- Natural Gas Engineering
- Formation Evaluation
- Reservoir Simulation
- Petroleum Economy
- Well Diagnosis and Treatment
- Final Year Project B
- Field Development Project I
- Field Development Project II

Elective Courses (Select 1 Stream Only)

Stream 1: Advanced Oil Field Operation
- Advanced Reservoir Simulation
- Advanced Drilling Engineering
- Production System Planning

Stream 2: Advanced Management in Energy Engineering
- Energy Management and Conservation
- Energy and Carbon Auditing
- Economics of Energy Systems

Stream 3: Interdisciplinary (Select 3 courses only)
- Renewable Energy
- IoT and Data Analytics
- Machine Learning
- Technopreneurship
- Nanotechnology

Career Opportunities

Drilling engineer | Production engineer | Field engineer | Reservoir engineer | Operation engineer |
Project development engineer | Mud engineer | Well completion engineer | Cost engineer | Workover engineer |
Process engineer | Subsea engineer | Offshore engineer | Simulation engineer | Health and safety engineer
Bachelor of Mechanical Engineering with Honours

This programme offers a comprehensive range of core engineering science courses and practical projects to ensure it is highly integrated and industry-relevant. As they progress, students will be well-equipped to not only design mechanical components and systems but also solve engineering problems by applying different techniques and strong analytical skills. They will be exposed to the latest advances in engineering technologies and with the emphasis on experimental work, students will gain the skills needed to take on the challenge of designing products and process that are faster, more versatile and environmentally friendly.

*This programme received a 100% graduate employability score in the Ministry of Higher Education’s Graduate Employability 2022 survey. (source: ge.mohe.gov.my/)

Did you know?

Our Mechanical Engineering Design Project is community-driven, and it involves the modelling of plant watering irrigation system integrated with rainwater harvesting for the Friends of Sungai Klang Mid Valley River Three project; with the mission of transforming the Klang River to River Three Park.

Subject Listing

**Year 1**
- Mathematical Methods for Engineers I
- Engineering Design and Drawing
- Circuit Theory 1
- Engineering Statics
- Material Science
- Material Science Lab
- Mathematical Methods for Engineers II
- Computer Programming and Database
- Statistics
- Manufacturing Processes
- Technical Communication

**Year 2**
- Engineering Dynamics
- Thermodynamics I
- Fluid Mechanics I
- Solid Mechanics
- Solid Mechanics Lab
- Microcontroller System
- Numerical Analysis
- Safety, Health and Environment
- Electrical Power and Machine
- Thermofluid Lab
- Mechanical Design and Prototyping
- Internship I

**Year 3**
- Engineers in Society
- Engineering Management and Economics
- Instrumentation and Measurement
- Thermodynamics II
- Fluid Mechanics II
- Mechanics of Machine
- Mechanical Engineering Design
- Heat Transfer
- Electro-Mechanical System
- System Dynamics and Control
- Internship II

**Year 4**
- Final Year Project A
- Final Year Project B
- Mechanical Vibrations
- Production Planning and Control
- Computer Aided Engineering
- Integrated Design Project A
- Integrated Design Project B

**Elective Courses (Select 1 Stream Only)**

**Stream 1: Advanced Energy Engineering**
- Renewable Energy
- Sustainable Heating, Ventilation and Air-Conditioning
- Energy Management and Conversion

**Stream 2: Intelligent Manufacturing**
- Industrial Automation
- Computer Integrated Manufacturing
- Artificial Intelligence and Application

**Stream 3: Interdisciplinary (Select 3 courses only)**
- IoT and Data Analytics
- Machine Learning
- Technopreneurship
- Cybersecurity
- Nanotechnology

International Degree Pathways

<table>
<thead>
<tr>
<th>University of Queensland Australia (2+2/2+2.5)</th>
<th>University of Birmingham, UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Engineering (Hons) Mechanical</td>
<td>BEng Mechanical Engineering (1+2)*</td>
</tr>
<tr>
<td></td>
<td>MEng Mechanical Engineering (1+3)</td>
</tr>
</tbody>
</table>

Career Opportunities

- Mechanical engineer
- Production engineer
- Mechanical design engineer
- Manufacturing engineer
- Maintenance engineer
- Structural engineer
- Quality and service engineer
- Material engineer
- HVAC engineer
- Project engineer
- Research engineer
Bachelor of Mechatronics Engineering with Honours

Integrating three major engineering disciplines, this programme places its main emphasis on the domains of mechanical engineering, electrical and electronic engineering and software engineering. Students will constantly analyse and design complex systems to meet challenges posed by emerging technologies. They will also learn a combination of mechanical, electronic and computer science techniques that will help them design, fabricate, assemble and maintain automation and modern manufacturing systems.

Expect to develop a solid understanding of the social, cultural, global and environmental responsibilities of the professional engineer while gaining high-level technical skills essential in managing modern engineering tasks.

*This programme received a 100% graduate employability score in the Ministry of Higher Education’s Graduate Employability 2022 survey. (source: ge.mohe.gov.my/)

Did you know?

A team of Mechatronics Engineering students received 2nd Place Award in the 2021 RFS Drone Competition.

Subject Listing

Year 1
- Mathematical Methods for Engineers I
- Engineering Design and Drawing
- Circuit Theory I
- Engineering Statics
- Material Science
- Material Science Lab
- Mathematical Methods for Engineers II
- Computer Programming and Database
- Statistics
- Manufacturing Processes
- Digital Electronics 1
- Analogue Electronic

Year 2
- Engineering Dynamics
- Thermodynamics I
- Fluid Mechanics I
- Numerical Analysis
- Circuit Theory II
- Digital Electronics II
- Safety, Health and Environment
- Electrical Power and Machine
- Mechanical Design and Prototyping
- Technical Communication
- Internship I

Year 3
- Engineers in Society
- Engineering Management and Economics
- Instrumentation and Measurement
- System Dynamics and Control
- Microcontroller and Embedded System
- Fluid Power and Drives
- Power Electronics
- Introduction to Artificial Intelligence
- Power and Drives Lab
- Internship II

Year 4
- Final Year Project A
- Final Year Project B
- Integrated Design Project A
- Integrated Design Project B
- Robotic Systems
- Industrial Automation
- Signal and System
- Mechatronics System Lab

Elective Courses (Select 1 Stream Only)
Stream 1: Advanced Control and Acquisition System
- Vision and Imaging Technology
- Advanced Control System
- Real Time Location System

Stream 2: Advanced Robotics Manufacturing
- IoT and Data Analytics
- Autonomous Robotic System
- Computer Integrated Manufacturing

Stream 3: Interdisciplinary (Select 3 courses only)
- Machine Learning
- Technopreneurship
- Cybersecurity
- Human Computer Interaction
- Nanotechnology

International Degree Pathway
- University Queensland (2+2.5)
  - Bachelor of Engineering (Hons) Mechatronic

Career Opportunities
- Mechatronics engineer
- Robotics engineer
- Software engineer
- Industrial designer
- Mechanical systems engineer
- Mechanical engineer
- Mechanical design engineer
- Project engineer
- Electro-mechanical engineer
Bachelor of Civil Engineering with Honours

In this programme, students will learn how to design, construct and maintain structures in the ‘built environment’. They will apply what they learn to real-life projects where financial and ethical issues are taken into account. By the end of the programme, students will be well prepared to devise high impact solutions and change lives for the better.

*This programme received a 100% graduate employability score in the Ministry of Higher Education’s Graduate Employability 2022 survey. (source: ge.mohe.gov.my/)

Did you know?

Three (3) students from the Institute of Civil Engineering (ICE) UCSI Student Chapter Club has joined an international competition organised by the Civil and Environmental Engineering (CEE) Club of Nanyang Technological University, Singapore. A software, known as Bridge Designer 2016 was used in this competition to design a bridge that can be applied in a real-world scenario by connecting two pieces of land separated by a river. Our Civil Engineering students have successfully designed the bridges with a good cost-efficiency ratio.

Subject Listing

Year 1
- Statistics
- Geometrics
- Geometrics Field Work
- Safety, Health and Environment
- Technical Communication
- Civil Engineering Drawing
- Mathematical Methods For Engineers 1
- Mathematical Methods For Engineers 2
- Engineering Statics
- Mechanical and Electrical Systems
- Materials In Civil Engineering

Year 2
- Fluid Mechanics 1
- Theory Of Structure
- Light Structure Lab
- Solid Mechanics
- Environmental Sustainability
- Soil Mechanics
- Civil Engineering Materials Lab
- Numerical Analysis
- Construction Technology
- Hydraulics
- Internship I

Year 3
- Geotechnical Materials and Analysis
- Water and Waste-Water Engineering
- Capstone Design Project A
- Geotechnical Design
- Engineers In Society
- Reinforced Concrete Design
- Structural Steel And Timber Design
- Highway and Transportation Lab
- Highway Engineering
- Transportation Engineering
- Internship II

Year 4
- Final Year Project A
- Project Construction and Management
- Contract and Estimation
- Capstone Design Project B
- Final Year Project B
- Environmental Engineering Analysis and Design
- Engineering Hydrology
- Construction Integrated Environment

Elective Courses (Select 1 Stream Only)

Stream 1: Sustainable Development
- Disaster Mitigation & Control
- Groundwater Hydrology
- Energy Efficiency and Conservation

Stream 2: Structural Analysis and Design
- Advanced Reinforced Concrete Design
- Bridge Design
- Finite Element Analysis

Stream 3: Interdisciplinary (Select 3 courses only)
- IoT and Data Analytics
- Technopreneurship
- Nanotechnology
- Artificial Intelligence and Application

International Degree Pathways

University of Queensland (2+2/2+2.5)
- Bachelor of Engineering (Hons) Civil

Career Opportunities

- Building control surveyor
- Consulting civil engineer
- Contracting civil engineer
- Site engineer
- Structural engineer
- Water engineer
- Environmental engineer
- Geotechnical engineer
- Materials engineer
- Transportation engineer
Bachelor of Computer Engineering (Artificial Intelligence) with Honours

(N/523/6/0310) (05/2026) (MQA/PA 11675)

This programme is curated specially to address the need for jobs that demand skills in the area of Artificial Intelligence (AI). It encompasses the learning of AI, Computer and Engineering. By espousing these areas, students can expect to grasp a keen understanding of the technology, its history, functionality and challenges in the application of AI. This programme covers the core theoretical foundations and provides advanced algorithmic, statistical and computer engineering knowledge. As students develop the adroitness in this field, gain new insights and smarter correlations, they will appreciate their transformation in the higher-order professional the industry needs.

Did you know?

Electrical & Electronic Engineering Department received hardware sponsorship from TMS Lite on Machine Vision Test Station. This hardware sponsorship is useful for the students’ Final Year Project and beneficial to other relevant courses offered under the Electrical & Electronics, Computer Engineering (Artificial Intelligence) and Mechatronics Engineering programmes.

Subject Listing

Year 1
- Mathematical Methods for Engineers I
- Circuit Theory I
- Electromagnetic Theory
- Engineering Graphics and Design
- Computing for Engineers
- Mathematical Methods for Engineers II
- Analogue Electronics I
- Digital Electronics I
- Statistics
- Electrical and Electronic Lab 1
- Computer Architecture
- Technical Communication

Year 2
- Circuit Theory II
- Instrumentation and Measurement
- Electrical Power
- Algorithm Design and Analysis
- Object Oriented Programming
- Safety, Health and Environment
- Introduction to Artificial Intelligence
- Software Engineering
- Java Programming
- Electrical & Electronic Lab 2
- Computer Engineering and AI Lab
- Industrial Training I

Year 3
- Digital Signal Processing
- Engineering Management and Economics
- Microprocessor Systems
- Data Communication and Networks
- Embedded System Design
- Control Systems
- Engineers in Society
- Communication Theory
- Machine Learning
- Human Computer Interaction
- Instrumentation & Control Lab
- Industrial Training II

Year 4
- Integrated Design Project 1
- Operating Systems
- Cybersecurity
- Integrated Design Project 2
- Final Year Project A
- Final Year Project B

Elective Courses (Select 1 Stream Only)

Stream 1: Business Analytics
- Data Mining
- Database Systems
- Big Data

Stream 2: Computational Intelligence
- Big Data
- Machine Vision
- Blockchain

Stream 3: Control and Intelligent System
- Parallel Computing
- Mobile Application Development
- Advanced Instrumentation and Control

Career Opportunities
- System engineer
- Software engineer
- R&D engineer
- Data scientist
- Programmer
- Machine learning engineer
Bachelor of Electrical and Electronics Engineering with Honours

Electrical and Electronic Engineering is one of the broadest engineering disciplines and this programme will cover multiple subject areas like analogue electronics, microelectronic chip design, digital signal processing, power generation, protection and distribution, C++ programming, instrumentation and measurements control, renewable energy systems, and more. Students will also have the chance to learn MATLAB, PSPICE and LABVIEW which are used to run simulations in projects and research.

*This programme received a 100% graduate employability score in the Ministry of Higher Education’s Graduate Employability 2022 survey. (source: ge.mohe.gov.my/)

Did you know?

TEONG KAI LUN (Bachelor of Electrical & Electronics Engineering with Honours) was awarded MERIT AWARD in 2020 IEEE Malaysia Best Final Year Project Competition.

International Degree Pathways

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<tr>
<th>University of Queensland (2+2.5)</th>
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<tr>
<td>• Bachelor of Engineering (Hons) Electrical</td>
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<tr>
<td></td>
<td>• MEng Electronic and Electrical Engineering (1+3)</td>
</tr>
</tbody>
</table>

Career Opportunities

Design engineer | Project engineer | R&D engineer | System design engineer | Analog design engineer | Test engineer | PCB design engineer | Electrical engineer | Digital design engineer | Quality control engineer/Specialist | Research engineer | Software engineer | Sales engineer | Product engineer

Subject Listing

Year 1

• Statistics
• Technical Communication
• Mathematical Methods for Engineers I
• Mathematical Methods for Engineers II
• Engineering Design and Drawing
• Circuit Theory I
• Digital Electronics I
• Analogue Electronics I
• Electromagnetic Theory I
• Engineering Programming and Software
• Circuit Design Lab I

Year 2

• Circuit Theory II
• Electrical Power
• Analogue Electronics II
• Digital Electronics II
• Numerical Analysis
• Microcontroller and Embedded System
• Safety, Health and Environment
• Internship I
• Circuit Design Lab II
• Introduction to Artificial Intelligence
• Instrumentation and Control System
• Instrumentation and Control System Lab

Year 3

• Signal and Systems
• Data Communication and Networks
• Electrical Machines
• Power System and Machine Lab
• Engineering Management and Economics
• Engineers in Society
• Digital System and HDLs
• Power Electronics
• Power Systems
• Internship II
• Electrical Drives

Year 4

• Digital Signal Processing
• Energy Conversion and High Voltage Power Transmission
• Power System Protection
• Final Year Project A
• Final Year Project B
• Integrated Design Project A
• Integrated Design Project B

Elective Courses (Select 1 Stream Only)

Stream 1: Smart Energy Management
Electrical Power Quality • Renewable Energy • Energy Management and Conservation

Stream 2: Advanced Integrated Circuit Technologies
VLSI System • IC Reliability and Failure Analysis • Integrated Circuit Technology

Stream 3: Enabling Technologies of Telecommunication Industry
Microwave System Design • Antenna System Design • Mobile and Satellite Communication

Stream 4: Interdisciplinary (Select 3 courses only)
IoT and Data Analytics • Machine Learning • Technopreneurship • Nanotechnology • Cybersecurity
Bachelor of Energy Engineering with Honours

This programme offers specialised courses in both conventional energy resources and renewable energy resources to give a wider perspective of the subject. This energy engineering degree programme meets national and international goals, and its purpose is to support these global goals by developing more capable energy engineers. The course structure is specially curated to follow the sequence from the fundamentals of energy, generation of energy and storage of energy, up to the integration of energy in different aspects of the industry. The main highlight of this programme would be the in-depth study on conventional sources of energy such as natural gas, coal, and crude oil and sustainable sources of energy such as biogas, biomass, wind, solar, hydro and other emerging sources.

Subject Listing

Year 1
- Technical Communication
- Mathematical Methods for Engineers I
- Mathematical Methods for Engineers II
- Statistics
- Engineering Physics
- Engineering Design and Drawing
- Material Engineering
- Material Engineering Laboratory
- Circuit Theory I
- Electrical Power
- Energy and Environmental Policy

Year 2
- Safety, Health and Environment
- Fluid Mechanics I
- Thermodynamics I
- Numerical Analysis
- Thermofluid Laboratory
- Numerical Analysis Laboratory
- Programming for Engineers
- Heat Transfer
- Thermodynamics II
- Solar Energy
- Wind and Hydro-Energy
- Industrial Training 1

Year 3
- Engineers in Society
- Power Plant Engineering
- Natural Gas Energy
- Fuels and Combustion
- Bioenergy
- Emerging Energy
- Environmental Engineering
- Energy Storage Technology
- Energy Engineering Laboratory
- Heat Transfer and Environmental Laboratory
- Industrial Training 2

Year 4
- Engineering Management and Economics
- Power Transmission and Distribution
- Sustainable Engineering Systems: Modelling and Analysis
- Urban Energy and Energy Efficiency
- Capstone I
- Capstone II
- Final Year Project A
- Final Year Project B

Elective Courses (Select 1 Stream Only)
Stream 1: Advanced Power Transmission
- Power System
- Advanced Circuit Theory & Transmission Lines
- Energy Conversion & High Voltage Power Transmission

Stream 2: Advanced Materials for Energy Storage
- Supercapacitor for Energy Storage
- Bioinspired Materials for Energy Storage
- Nanomaterials in Energy Conversion and Storage

Stream 3: Advanced Management in Energy Engineering
- Energy Management and Conservation
- Energy and Carbon Auditing
- Economics of Energy Systems

Career Opportunities
- Green building engineer
- Energy system engineer
- Project engineer
- Design engineer
- Material engineer
- Quality specialist engineer
- Economic analyser
- Energy auditor
- Carbon auditor
- Research and development (R&D) engineer
- New product development (NPD) engineer
Notable Student Projects

Following are some notable student projects recognised for their creativity, innovativeness and practicality. All of them employ the latest in technology and engineering practices.

This bio-inspired drone can both fly and walk and is a new solution to explore new environments with challenging landscapes. It can combine legged mobility and fast aerial mobility for autonomous exploration.

The energy efficient glass cutter robot is developed as a friendly gardener to offer automatic solutions of grass trimming in small households. It is constructed using 3D printing technology and powered by solar energy.

This cellulose-reinforced biocomposite film is a more sustainable bioplastic in replacing the non-biodegradable petroleum-based plastics. It also exhibits better mechanical strength, moisture barrier and UV-ray protection, thus an excellent packaging material in preserving the product quality.

This 3D printer is affordable and has good performance exposing the latest additive manufacturing technology. While it is constructed using recycled materials, it is able to print prototypes in delicate manner.

The miniature solar powered UV index indicator is developed to alert and remind users of need to carryout protective measure such as applying sun screen, protective cloth, UV sun glasses, etc. It also helps people to avoid extensive exposure to UV.

The flexible conductive paper is made from drop-casting conductive nanomaterials onto a piece of the flexible substrate. This flexible conductive material is lightweight and useful in designing foldable and stretchable devices.
Facilities

The state-of-the-art facilities and laboratories that our students work and study in have played a significant role in preparing them for the real world. Here are some of them.

The Advance Chemical Technology Lab promotes a holistic teaching and learning process; encouraging multiple cross-disciplinary research activities.

The Engineering Software Solution and AI Research lab is suitable for training, workshops and programming. All computers configured for high performance.

Thermofluid-lab allows students to conduct research in thermodynamics, fluid mechanics, and heat transfer.

The welding and mechanical workshop enables hands-on cutting, forming, casting, machining and practical welding.

The Advance Industrial Robotic and Cyber Physical Laboratory has handling robots, mobile robots and task robots; the platform demonstrates the intelligent and adaptable control of production.

This design studio has a complete set of E&E testing equipment such as DC power supply, oscilloscopes, and digital multi meter.
Facilities

In the concrete soil and highway lab, students can test the quality of concrete, aggregate, soil, pavement and other cementitious materials.

The power, machine and drive lab allows students to do experiments related to electrical power systems, conveyor belts, etc.

This research lab allows students to conduct R&D and prototyping on Solar PV research, Power Electronic Converter, etc.

This instrumentation lab includes Atomic Absorption Spectroscopy, Fourier Transform Infrared Spectroscopy, UV-VIS spectroscopy, etc.

In the material science and petrology soil mechanics lab, students can learn about material structure, properties, performance and its processes.

The petrochemical lab includes a viscometer bath, flashpoint tester, seta oil test centrifuge, rotary evaporator, etc.
Hall Of Fame

CHANG ZHEN HONG
Alumnus
Bachelor of Chemical Engineering with Honours
In 2019, Chang undertook the UCSI Global Elite Research Programme at Imperial College London as a research student. He conducted a fundamental study on peptides crystallisation, specifically on peptides solubility and polymorphism, for the enhancement of the product’s stability and purity in the pharmaceutical industry.

THI SHIKI
Alumna
Bachelor of Chemical Engineering with Honours
Advanced research in DNA nanotechnology with the aim of innovating protein crystallisation, a process which produces the crystals needed to study the molecular structure of protein for various pharmaceutical and biotechnological applications.

LING POH CHOO, WONG YOONG SEONG
Alumni
Bachelor of Civil Engineering with Honours
First Runner Up Pertandingan Inovasi Perlindungan Cerun 2018.

BRYAN MA YUONG KAI
Alumnus
Bachelor of Chemical Engineering with Honours
Selected for research attachment at Imperial College London in 2019. His focused on the advancement of protein crystallisation by establishing the soft templates as a novel technique to improve the uncontrollability of nucleation and facilitating the interaction between the protein molecules.

KHOO HON SERN (RIGHT)
Alumnus
Bachelor of Mechatronics Engineering with Honours

HOON JIAN WEN (LEFT)
Alumnus
Bachelor of Electrical and Electronics Engineering with Honours
Both Khoo Hon Sem and Hoon Jian Wen were selected by University of Queensland in 2019 for a one month research attachment.
Hall Of Fame

Interdisciplinary project of Mechatronics, Electrical & Electronics Engineering and Mechanical students received **Gold Award** in IET Automation and Control Enhancing Innovation Competition, (ACEiC 2020).

Interdisciplinary project of Mechatronics, Electrical & Electronics Engineering and Mechanical students received **Silver Award** in IET Automation and Control Enhancing Innovation Competition, (ACEiC 2020).

(I to r) **CHONG YING HAI**
Bachelor of Mechatronics Engineering with Honours

**KOH JIA SHUN**
Bachelor of Electrical and Electronics Engineering with Honours

**NG WENG MUN**
Bachelor of Mechatronics Engineering with Honours

**LIM KEL VIN**
Bachelor of Mechatronics Engineering with Honours

**NGO KAH LOCK**
Bachelor of Mechatronics Engineering with Honours

All these are alumni selected to go to National Taipei University of Technology, Taiwan through the Start Trek programme in 2018 and 2019.
## Academic Requirements

### INTAKES: JANUARY, MAY AND SEPTEMBER

<table>
<thead>
<tr>
<th>QUALIFICATIONS</th>
<th>FOUNDATION IN SCIENCE</th>
<th>DIPLOMA OF ENGINEERING TECHNOLOGY (INDUSTRIAL DESIGN)</th>
<th>DIRECT ENTRY INTO BACHELOR’S DEGREE (ALL ENGINEERING MAJORS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPM/O-Level</strong></td>
<td>5 credits inclusive of Mathematics and 1 Science subject</td>
<td>Minimum 3 credits including Mathematics and one relevant science/technical/vocational subject and a pass in English</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>STPM</strong></td>
<td>Pass in Mathematics, English and one relevant science/technical/vocational subject at the SPM level</td>
<td>Minimum 2Cs including Mathematics and one relevant Physical Science subject</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>A-Level</strong></td>
<td>Pass in Mathematics, English and one relevant science/technical/vocational subject at the SPM level</td>
<td>Minimum 2Ds including Mathematics and one relevant Physical Science subject</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>UEC</strong></td>
<td>3 credits inclusive of Mathematics and 1 Science subject</td>
<td>Minimum B in 3 subjects including Mathematics and Science/Technical/Vocational subject. Pass is required for English</td>
<td>Minimum 5Bs including Mathematics and one relevant Physical Science subject</td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>Minimum average of 60% in 6 subjects, inclusive of a minimum score of 60% in Mathematics and one relevant Physical Science subject</td>
</tr>
<tr>
<td><strong>Local Matriculation</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>Minimum CGPA 2.0</td>
</tr>
<tr>
<td><strong>Foundation from other University/College</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>Minimum CGPA 2.0</td>
</tr>
<tr>
<td><strong>WAEC/NECO</strong></td>
<td>Minimum 3 C's; inclusive of Mathematics and Science</td>
<td>A maximum aggregate of 15 points out of best 5 subjects, inclusive of minimum B in Mathematics and one relevant Physical Science subject</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Diploma/Advance Diploma/Degree/equivalent</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>Minimum CGPA 2.0</td>
</tr>
<tr>
<td><strong>Other qualifications deemed equivalent to SPM/O-Level by Malaysian Qualifications Agency</strong></td>
<td>Overall average of 60% inclusive of Mathematics and 1 Science subject</td>
<td>Minimum 3 credits including Mathematics and one relevant science/technical/vocational subject and a pass in English</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Other qualifications deemed equivalent to STPM/A-Level by Malaysian Qualifications Agency</strong></td>
<td>Overall average of 50% inclusive of Mathematics and 1 Science subject</td>
<td>Pass in Mathematics, English and one relevant science/technical/vocational subject at the SPM level</td>
<td>Minimum overall average of 60%, inclusive of minimum 60% in Mathematics and one relevant Physical Science subject</td>
</tr>
<tr>
<td><strong>International Baccalaureate</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>Minimum 26/42 points from 6 subjects (inclusive Mathematics and one relevant Physical Science subject)</td>
</tr>
<tr>
<td><strong>SAM</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>Minimum average of 60% in 5 subjects, inclusive of minimum scores of 60% in Mathematics and one relevant Physical Science subject</td>
</tr>
<tr>
<td><strong>SACE/AUSMAT/TEE/SAM</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>Minimum ATAR score of 60% and minimum score of 60% in Mathematics and one relevant Physical Science subject OR Minimum overall average of 60% in 5 subjects and minimum score of 60% in Mathematics and one relevant Physical Science subject</td>
</tr>
<tr>
<td><strong>WACE/NTEC</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>Minimum overall average of 60%, inclusive of minimum 60% in Mathematics and one relevant Physical Science subject</td>
</tr>
<tr>
<td><strong>Recognised Related Technical/Vocational/ Skills Certificate or equivalent</strong></td>
<td>N/A</td>
<td>Minimum CGPA of 2.00 with ONE (1) year relevant working experience or a minimum of ONE (1) semester of a bridging programme apply</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Upon successful completion of the diploma programme, students will gain up to 30% of credit transfer of the total credits, depending on the chosen degree programme.
## English Language Requirements

### Qualifications

<table>
<thead>
<tr>
<th>Qualifications</th>
<th>Diploma</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPM English Language</td>
<td>Minimum grade of B+</td>
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<tr>
<td>English Language 1119/O-Level English/IGCSE</td>
<td>Minimum grade of C</td>
<td></td>
</tr>
<tr>
<td>UEC English</td>
<td>Minimum grade of A2</td>
<td></td>
</tr>
<tr>
<td>MUET</td>
<td>Minimum of Band 3.5</td>
<td></td>
</tr>
<tr>
<td>CEFR</td>
<td>B1 (High B1)</td>
<td></td>
</tr>
<tr>
<td>IELTS</td>
<td>Minimum score of 5.0</td>
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<tr>
<td>TOEFL IBT</td>
<td>Minimum score of 40</td>
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</tr>
<tr>
<td>TOEFL Essentials (Online)</td>
<td>Minimum score of 7.5</td>
<td></td>
</tr>
<tr>
<td>Pearson Test of English</td>
<td>Minimum score of 47</td>
<td></td>
</tr>
<tr>
<td>Cambridge English Qualification and Tests</td>
<td>Minimum score of 154</td>
<td></td>
</tr>
<tr>
<td>Cambridge LinguaSkill</td>
<td>Minimum score of 154</td>
<td></td>
</tr>
</tbody>
</table>

*Note: In the event that the English language requirements are not met, local applicants will be required to take the Basic English and English Foundation for in-sessional academic enhancement concurrently with the programme.*

*For Local Students*

- Must possess English competency as per Malaysian undergraduate requirement, whereby the medium of instruction is in English.

*International applicants who do not meet the respective academic programme's English Language Requirement will need to improve their proficiency by enrolling into the English for Tertiary Education programme (R/KJP/00920-00929) which helps them prepare for attaining a required band score. Placement into the various levels of the English for Tertiary Education programme depends on the English Language qualification students have at the point of admission and/or the outcome of the English Placement Test.*

*The applicants who have met the respective academic programme's English Language Requirement may be advised by Faculty to improve their proficiency by undertaking the additional English proficiency courses.*

### General Courses (MPU)

**Compulsory for all students**

### Degree Programmes

#### Malay Students

- Appreciation of Ethics and Civilisations
- Philosophy and Contemporary Issues

#### International Students

- Communication in Bahasa Melayu 3
- Philosophy and Contemporary Issues

### Diploma Programmes

#### Malay Students

- Appreciation of Ethics and Civilisations

#### International Students

- Communication in Bahasa Melayu 2

### All Students

- U3 – Kursus Integriti dan Anti-Rasuah (KIAR)
- U4 – Extra-curricular Learning Experience 1 to 3

### All Students

- U2 – University Life
- U3 – Kursus Integriti dan Anti-Rasuah (KIAR)
- U4 – Extra-curricular Learning Experience 1 to 2

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*While the above information is accurate at the time of printing, please note that entry requirements are subject to change. Please visit the university website for the most updated information.*