

BACHELOR OF ELECTRICAL AND ELECTRONIC ENGINEERING WITH HONOURS

Background

The Faculty of Engineering has been providing education and training in the field of electronics since 1985. In 1996, the Department of Electrical and Electronic Engineering was established and now offers both undergraduate and postgraduate programs in Electrical and Electronic Engineering.

Program

The Bachelor of Electrical and Electronic Engineering with Honours is a 4-year program developed in response to the national demand for electrical and electronic engineers. The department focuses on producing electrical and electronic engineers equipped with a strong foundation in engineering, specializing in Microelectronics, Power, or Control.

This program is fully accredited by the Engineering Accreditation Council (EAC) of Malaysia. As part of the accreditation process, the program undergoes a review every 5 years by the EAC to ensure ongoing relevance and alignment with national and industry needs. Renowned professors from abroad are appointed as external examiners and evaluators to ensure that the program meets international standards. Academic links are maintained with other local and international academic institutions to share information and experiences related to teaching, research, and other activities. Close relationships are also maintained with the industry through industrial training and collaborative research, ensuring that both faculty and students are aware of current industry developments. Furthermore, Outcome-Based Education (OBE) has been adopted as the primary approach in teaching and learning within the department.

Educational Objectives

The objectives of the Bachelor of Electrical and Electronic Engineering with Honours program are to produce engineers who:

- a) are knowledgeable and competent in the field of Electrical and Electronic Engineering, with skills that meet industry and market needs.
- b) are creative and innovative, as well as socially responsible and attentive to dynamic community, cultural, and environmental contexts.
- c) are able to adapt to the global work environment, pursue lifelong learning, and engage in research and development in the field of Electrical and Electronic Engineering.
- d) possess the knowledge and ability to solve engineering problems, including advanced design and development in one of the fields of Power, Control, or Microelectronics.

Curriculum

The Bachelor of Electrical and Electronic Engineering with Honours program provides a comprehensive approach to electrical and electronic courses aimed at producing high-quality, skilled, and versatile graduates capable of meeting future technological advancements. Therefore, the program places significant emphasis on cognitive, affective, and psychomotor elements in the teaching and learning process.

In the first year, students will study foundational courses in mathematics, electrical and electronic circuits and devices, and computer programming. Intermediate courses will be introduced in the second and third years, where students are required to take all subjects related to the three areas of specialization: Microelectronics, Power, and Control. Students will learn about microelectronics principles and microprocessor technology; power systems, power electronics, and electric machines; and control systems and industrial control electronics. Elective courses are offered in the fourth year, allowing students to choose courses that further expose their specialization.

During the semester break before starting the fourth year, students will undergo a 10-week industrial training program. In the first semester of the fourth year, students will also undertake an Electrical and Electronic System Design Project, focusing on group-oriented capstone design projects across various disciplines of electrical and electronic engineering. Additionally, each student is required to conduct a Final Year Project related to their area of specialization. A total of 137 credit hours is required for graduation.

Microelectronics Engineering

Microelectronics Engineering is a field concerned with the physical implementation of electronic systems based on miniaturization approaches. This includes the study of device materials, device fabrication, integrated circuits (IC), and design and testing of very-large-scale integration (VLSI), manufacturing processes, circuit reliability, and its applications. With this specialization, graduates are not only prepared for work pressure but also equipped with the knowledge to lead the microelectronics industry both domestically and internationally.

Power Engineering

Power Engineering focuses on power generation and distribution systems, high-voltage systems, electric machines, power electronics applications, and industrial drives. Graduates specializing in power engineering can serve in power utilities and industries, particularly in sectors involved in high-power applications.

Control Engineering

Control Engineering focuses on control algorithms, design, development, and implementation in various systems. This program emphasizes control fundamentals, artificial intelligence, model-based design, signal processing and data adaptation, microcontroller technology, and industrial control electronics. The applications of this specialization extend beyond electrical and electronic engineering to fields such as biomedical, chemical and biological engineering, manufacturing and industrial processing, energy and green technology, agriculture, and transportation.

Career Opportunities

Electrical and electronic engineers have wide career prospects, whether in government agencies or private companies. Given that the field of electrical and electronic engineering is in demand everywhere, graduates from this program can find employment in various sectors, such as (but not limited to) electrical supply industries, electronic design, telecommunications, manufacturing, transportation, chemicals, food, and petroleum. They can also work in any area that requires electrical and/or electronic maintenance. To date, our graduates have been employed by well-known national and multinational organizations such as National Instruments, Tenaga Nasional Berhad, Huawei Technology Malaysia Sdn. Bhd., Medivest Sdn. Bhd., Texas Instruments Malaysia Sdn. Bhd., Silterra Malaysia Sdn. Bhd., Agrofish Enterprise, SEE Energy Sdn. Bhd., Honda Malaysia Sdn. Bhd., Sony EMCS Malaysia, Xilinx Asia Pacific, MKS Medic Sdn. Bhd., the Department of Statistics Malaysia, Accenture Malaysia, Appsmiths USA, Fingertech, Mekaletrik Konsult Sdn. Bhd., USains Infotech Sdn. Bhd., MS Elevators Engineering Sdn. Bhd., EWC Engineers Singapore, Intel Technology Sdn. Bhd., Edgenta Propel Berhad, and many others. There are also graduates who have become entrepreneurs by establishing companies and engaging in engineering design supply, fabrication, and engineering tools.

Admission Requirements

Bachelor of Electrical and Electronic Engineering (UP6523001) 8 Semester

Minimum Qualification STPM	Minimum Qualification for Matriculation/ Foundation	Minimum Qualification for Diploma/ Equivalent
<p>Meet General University Requirements and PROGRAM SPECIFIC REQUIREMENT</p> <p>Achieve at least a CGPA of 2.80; and</p>	<p>Meet General University Requirements and PROGRAM SPECIFIC REQUIREMENT</p> <p>Achieve at least a CGPA of 2.80; and</p>	<p>Meet General University Requirements and PROGRAM SPECIFIC REQUIREMENT</p> <p>Hold a Diploma in a relevant field with at least a CGPA of 3.00 or another qualification</p>

Minimum Qualification STPM	Minimum Qualification for Matriculation/ Foundation	Minimum Qualification for Diploma/ Equivalent
<p>Achieve at least a Grade B at the STPM level in the following subjects:</p> <ul style="list-style-type: none"> • Additional Mathematics; <li style="text-align: center;">and • Physics; <li style="text-align: center;">and <p>Achieve at least BAND 3.0 in the Malaysian University English Test (MUET) for examinations starting from Session 1 of 2021 or BAND 3 for examinations up to the year 2020;</p> <p style="text-align: center;">or</p> <p>Achieve at least BAND 2.0 in the Malaysian University English Test (MUET) for examinations starting from Session 1 of 2021 or BAND 2 for examinations up to the year 2020, and at least a Grade C in the English subject at the SPM level;</p> <p style="text-align: center;">and</p> <p>No physical disability that hinders practical work</p>	<p>Achieve at least a Grade B at the Matriculation/ Foundation level in the following subjects:</p> <ul style="list-style-type: none"> • Mathematics; and • Physics / Basic Engineering; <li style="text-align: center;">and <p>Achieve at least BAND 3.0 in the Malaysian University English Test (MUET) for examinations starting from Session 1 of 2021 or BAND 3 for examinations up to the year 2020;</p> <p style="text-align: center;">or</p> <p>Achieve at least BAND 2.0 in the Malaysian University English Test (MUET) for examinations starting from Session 1 of 2021 or BAND 2 for examinations up to the year 2020, and at least a Grade C in the English subject at the SPM level;</p> <p style="text-align: center;">and</p> <p>No physical disability that hinders practical work.</p>	<p>recognized by the UPM Senate;</p> <p style="text-align: center;">and</p> <p>Achieve at least BAND 3.0 in the Malaysian University English Test (MUET) for examinations starting from Session 1 of 2021 or BAND 3 for examinations up to the year 2020;</p> <p style="text-align: center;">or</p> <p>Achieve at least BAND 2.0 in the Malaysian University English Test (MUET) for examinations starting from Session 1 of 2021 or BAND 2 for examinations up to the year 2020, and at least a Grade C in the English subject at the SPM level;</p> <p style="text-align: center;">and</p> <p>No physical disability that hinders practical work.</p>

Curriculum (2021 – 2025)

The courses offered are divided into three categories: General Courses, Core Courses, and Elective Courses:

Curriculum Components	EAC Requirements (minimum credit hours)	Curriculum Bachelor of Electrical and Electronic Engineering with Honours	Percentage (%)
General Courses	No min set value	20	14.8 %
Core Courses	90	102	75.6 %
Elective Courses		13	9.6 %
Total	135	135	100%

Total Credit Hours for Graduation : 135

Duration of Study : 8 semesters (4 years)

Tuition Fees

Code	Programme	Average Cost Per Student Per Year	Tuition Fees Paid by Students Per Year	Government Subsidy to Students Per Year
67-2	Bachelor of Electrical and Electronic Engineering with Honours	RM26,315.00	RM4,489.00	RM21,826.00

* Subject to change from time to time.

Contact Officer

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