

Admission Requirements

- i. Bachelor in the field of Engineering or Engineering Technology with CGPA of 2.750 or;
- ii. Bachelor in the field of Engineering or Engineering Technology with CGPA of 2.500-2.749 with at least 3 years of working experience in relevant field or;
- iii. Bachelor in the field of Engineering or Engineering Technology with CGPA of 2.250-2.499 with at least 5 years of working experience in relevant field or;
- iv. Bachelor in any related field of Science or Technology with CGPA of 3.000 or;
- v. Bachelor in any related field of Science or Technology with CGPA of 2.750-2.999 with at least 3 years of working experience in relevant field or;
- vi. Bachelor in any related field of Science or Technology with CGPA of 2.500-2.749 with at least 5 years of working experience in relevant field.

Note: Candidates with Bachelor of Science or Technology degrees or their equivalents are admitted, prerequisite modules in Engineering must be offered to adequately prepare them for their advanced study.

Language Requirements

International candidates are required to fulfill English language requirement as follows:

- a) 550 for TOEFL Paper-based Test (Academic Version); or
- b) Band 6.0 for IELTS (Academic Training); or
- c) 79-80 for TOEFL Internet-based Test (Academic Version).

Candidate without the requisite minimum score for TOEFL or IELTS may be granted a provisional admission. Such candidate will be required to pass an English Placement Test conducted by the University.



Fees

Fees	Master without thesis	
	Malaysian Student	International Student
Basic Fees (1 st semester)	RM 1,250	RM 2,300
Basic Fees (2 nd and subsequent semester)	RM 1,000	RM 2,050
Credit Fees * subject to change	RM 370 / credit	RM 450 / credit



APPLICATION

Please apply online via:

<http://sgsportal.upm.edu.my:8080/sgsportal>
www.sgs.upm.edu.my/prospective_students-2964

For further information, please contact :

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PROGRAMME COORDINATOR

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MASTER OF ELECTRICAL POWER ENGINEERING

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INTRODUCTION

This program is designed to deepen the understanding and applications of electrical power engineering mainly in two focused areas which are power system and high voltage. The courses offered to emphasize on various levels of electrical power engineering such as smart power grid system, electrical machine design, transient protection, insulation coordination, power system and high voltage engineering. Electrical power engineering is a high impact research area that can support many applications in various fields including agriculture, communication, sensing and many others.

PROGRAMME REQUIREMENTS

Credit Requirements for Graduation

Students enrolling under this programme must fulfill 40 credits of courses to graduate. The credit distributions for compulsory courses, elective courses and project are as follows:

● Compulsory Courses	24 credits
● Elective Courses	6 credits
● Dissertation	10 credits

Compulsory Courses

Students must take all the listed compulsory courses;

EEE5100	Research Methodology	3 credits
EEE5301	Power Electronics Converters	3 credits
EEE5305	Electrical Machines Design	3 credits
EEE5306	Project Management in Power Industry	3 credits
EEE5308	Artificial Intelligence in Power System	3 credits
EEE5309	Advanced Power System Analysis	3 credits
EEE5310	High Voltage Engineering and Insulation Coordination	3 credits
EEE5315	Smart Power Grid Renewable Energy Systems	3 credits
EEE5990	Dissertation	10 credits

Note: EEE5990 - Dissertation is carried out over two semester

Elective Courses

Students must take only two elective courses (2 credits) out of the listed below;

EEE5303	Numerical Protective Relaying	3 credits
EEE5304	Power System Stability and Reliability	3 credits
EEE5307	Advanced Insulation Coordination	3 credits
EEE5311	Transient Protection Technology	3 credits
EEE5312	Electromagnetic Compatibility	3 credits
EEE5313	Power System Dynamic and Control	3 credits
EEE5314	Occupational Safety and Health in Power Industry	3 credits
EEE5316	Embedded System Design in Power System Application	3 credits
EEE5317	Smart Power Grid System	3 credits

Identification on the elective courses for the student will be made by the program coordinator.

Course Synopsis

EEE5100 | Research Methodology | 3 Credits

This course covers best practices in research such as research methodology, design and ethics as well as academic writing and oral presentations.

EEE5301 | Power Electronics Converters | 3 Credits

This course focuses on the design and analysis of electronic converters, their applications and control. It covers switching power devices, their characteristics and ratings, control of DC and AC power, 6-pulse and 12-pulse converters, design and application of converters using software packages.

EEE5305 | Electrical Machines Design | 3 Credits

This course focuses on technical design of electrical machines. The choice of materials, design of heating and cooling for electric motor are also discussed. Computer aided design (CAD) will be used in designing various types of electric machines.

EEE5306 | Project Management in Power Industry | 3 Credits

This course covers the understanding of project management in power industry with a special emphasis as a guide to the functions, duties and responsibilities of Electrical Power Engineers regarding the design, supervision and administration of electrical engineering projects. Execution of project management tasks in accordance with the Malaysian professional association/authority and international guidelines and with such supplementary instructions issued by the client.

EEE5308 | Artificial Intelligence in Power System | 3 Credits

This course focuses on artificial intelligence (AI) techniques or methods to solve problems in power systems. The methods discussed in the course are the methods that have become dominant for problem solving that arise in the planning, operation, diagnosis and design of power systems.

EEE5309 | Advanced Power System Analysis | 3 Credits

This course focuses to instill confidence and understanding of those concepts of power system analysis. Proper planning, operation and control of such large-scale systems require advanced computer-based techniques are explained by means of numerical example throughout this course.

EEE5310 | High Voltage Engineering and Insulation Coordination | 3 Credits

This course covers the concept of electrical breakdown in various materials and types of over-voltage. In order to protect electrical damage and excess voltage, condition monitoring and equipment management are also discussed.

EEE5315 | Smart Power Grid Renewable Energy Systems | 3 Credits

This course covers the concept of renewable energy technology in smart grid power systems which include renewable energy sources such as solar, wind, hydro, biomass and others. This course also includes the integration of renewable energy in smart grid

EEE5990 | Dissertation | 2 Credits

This course involves a research or study by a student on a specific topic. It is carried out in two semesters and covers literature review, methodology, data collection and analysis. The scope of research or study will be determined by the supervisor in consultation with the student. At the end of the first semester, the student needs to submit a preliminary report and at the end of the second semester, the student needs to submit a final report. The student is also required to present the findings of the research or study to a panel of assessors.

EEE5303 | Numerical Protective Relaying | 3 Credits

This course focuses in topics on relaying practices, mathematical basis for protective relaying algorithms, hardware organization in integrated systems, relaying and control system. This course also covers the latest developments in technology and applications such as adaptive relaying, wide area measurements, signal processing, new GPS-based measurement techniques and the application of artificial intelligence to digital relays.

EEE5304 | Power System Stability and Reliability | 3 Credits

This course covers power system stability problems. The course explains the swing equation and equal area criterion for system stability in multi-machine connected to infinite bus. Basic reliability concepts, static generating capacity and transmission system reliability are also discussed.

EEE5307 | Advanced Insulation Coordination | 3 Credits

This course covers the principle of insulation coordination for transmission lines and substations. In addition, the protection schemes of the high voltage system are discussed.

EEE5311 | Transient Protection Technology | 3 Credits

This course covers the understanding of the concept of transient and the protection of the human, property and system from the transient. The risk estimation, design criteria, installation and the system's maintenance based on national and international requirements are explained by the actual system and computer simulation throughout this course.

EEE5312 | Electromagnetic Compatibility | 3 Credits

This course covers an understanding of the source of electromagnetic interference and transient behavior in the time domain and frequency. This course also discusses standards and laws related to electromagnetic compatibility.

EEE5313 | Power System Dynamic and Control | 3 Credits

This course covers understanding, modeling and analysis of stability problems of dynamic power systems and controls. It also discusses methods for improving stability in the planning, design, control and operation of modern power systems.

EEE5314 | Occupational Safety and Health in Power Industry | 3 Credits

This course focuses on life-security electricity issues in low voltage systems. It also includes understanding and design solutions, subject to IEC (or MS IEC) and IEEE standards and engineering professional practices.

EEE5316 | Embedded System Design in Power System Application | 3 Credits

This course focuses on identifying components of embedded system, design and analysis of embedded system for power system applications. It covers basic components of embedded system, embedded platform and processor architectures, operating system, embedded graphics and multimedia acceleration, network connectivity, platform and content security, and special applications of embedded system in power system.

EEE5317 | Smart Power Grid System | 3 Credits

This course focuses on the understanding of the smart grid concept and its use to decarbonise electricity supply and achieve energy efficiency. Latest information and communication technology (ICT) to control next generation power systems reliably and efficiently is also emphasized.