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 2.250-2.249 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: Candidate 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 (1st semester)	RM 1,425	RM 2,400
Basic Fees (2nd and subsequent semester)	RM 1,475	RM 2,225
Credit Fees * Subject to change	RM 370 / credit	RM 450 / credit

UPM
UNIVERSITI PUTRA MALAYSIA
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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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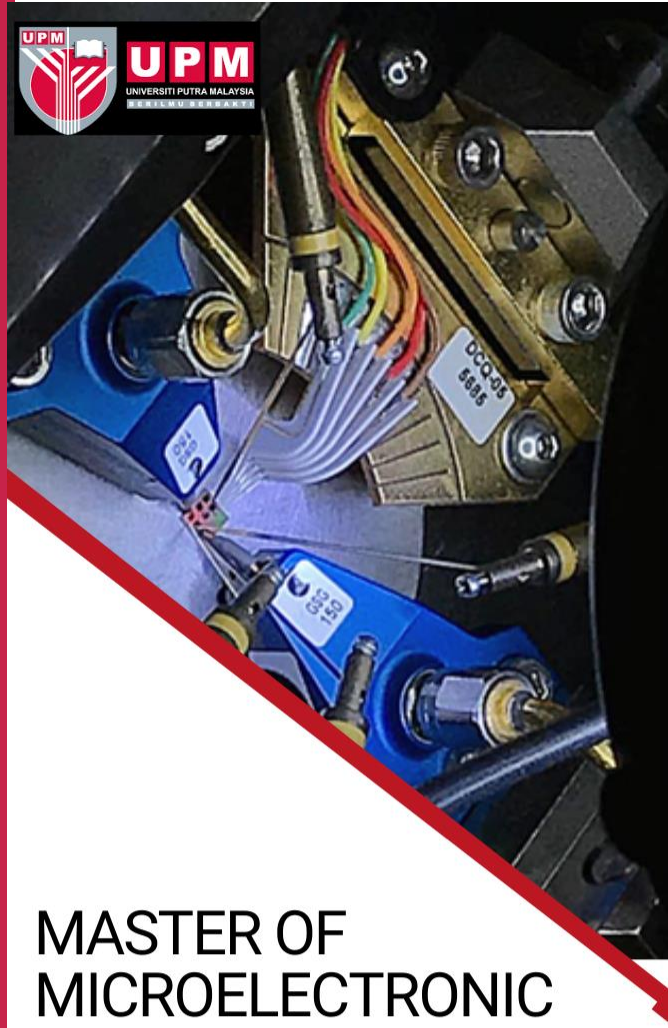

MASTER OF MICROELECTRONIC SYSTEM ENGINEERING

Department of Electrical and Electronic Engineering
Faculty of Engineering, Universiti Putra Malaysia

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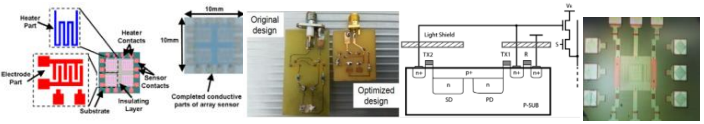
INTRODUCTION

This program is designed to deepen the understanding and applications of microelectronic system engineering mainly in two focused area which are IC design and electronic device. The course offered to emphasize on various levels of microelectronic system engineering such as advanced analog and digital design, semiconductor modelling and characterization, electronic analysis, testing and packaging, applied sensor, LOC and SOC. Microelectronic system engineering is a high impact research area that can support many applications in various fields including robotics, IoT, biomedical, sensing and many others.



PROGRAMME REQUIREMENTS

Credit Requirement for Graduation

Students enrolling under this programme must fulfill 40 credits of course 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
EEE5200	Microchip Project Management	3 credits
EEE5201	Advanced Digital Systems Design	3 credits
EEE5206	Advanced Analog Integrated Circuit Design	3 credits
EEE5209	Semiconductor Characterization	3 credits
EEE5205	Electronic Packaging	3 credits
EEE5207	Electronic Testing and Failure Analysis	3 credits
EEE5211	System-on-a-chip (SoC) Physical Design	3 credits
EEE5990	Dissertation	10 credits

Note: EEE5990 – Dissertation is carried out over two semester

Elective Courses

EEE5202	Mixed Signal Circuit Design	3 credits
EEE5203	Memory Design	3 credits
EEE5210	Semiconductor Device Characterisation	3 credits
EEE5212	CMOS Image Sensor	3 credits
EEE5213	Lab-on-a-chip (LoC)	3 credits
EEE5214	Applied Sensor Technology	3 credits
EEE5215	Radio Frequency Integrated Circuit	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

EEE5200 | Microchip Project Management | 3 Credits
This course covers topics related to microchip project management. Related industries and project management principles are introduced. Emphasis is given to procedure to initiate projects, planning and scheduling methods, tools in project planning, and also methods in implementing and controlling projects to ensure project objectives and completion time can be realized. This course also covers aspects on intellectual property and ethics.

EEE5201 | Advanced Digital Systems Design | 3 Credits
This course covers design, simulation, synthesis and post synthesis technique for synchronise and asynchronies digital circuit based on Hardware Description Language (HDL).

EEE5202 | Mixed-Signal Circuit Design | 3 Credits
This course covers on analysis and design of mixed-signal circuit using BJT and CMOS technology. Analog and digital circuits are applied in mixed-signal circuit design such as ADC and DAC circuits. This course also covers layout and interconnects for mixed-signal circuit

EEE5203 | Memory Design | 3 Credits
This course covers review of MOSFET structure, CMOS processing, inverter design, SRAM and DRAM cell design, non-volatile memory cell design, and memory testing

EEE5205 | Electronic Packaging | 3 Credits
This course covers the fundamental principles of electronic packaging which will address a broad range of key thermal, mechanical, electrical, reliability problems and solve such problems in given packaging situations including MEMS and flexible devices .

EEE5206 | Advanced Analog Integrated Circuit Design | 3 Credits
This course covers on advanced analog integrated circuit design. It covers the advanced knowledge of analog integrated circuit design and analysis.

EEE5207 | Electronic Testing and Failure Analysis | 3 Credits
This course covers reliability and testing issues of interconnects with component up to system level. The methodology of reliability concept is addressed and followed by general failure mechanisms including specific failure modes in solder and conductive adhesives.

EEE5209 | Semiconductor Characterization | 3 Credits
This course covers characterization of semiconductor materials and semiconductor devices. Characterization techniques and methods used include electrical and optical characterizations.

EEE5210 | Semiconductor Device Modelling | 3 Credits
This course covers industry standard compact models for Computer Aided Design (CAD), compact modelling concepts for Metal Oxide Semiconductor (MOSFETs) and the current modelling challenges in advanced technologies.

EEE5211 | SoC Physical Design | 3 Credits
This course covers design strategies and verification for system-on-a-chip physical design. This includes the design steps using Electronic Design Automation (EDA) tool and case study in physical designing IP core for SoC application.

EEE5212 | CMOS Image Sensors | 3 Credits
This course briefly discusses the principles of human vision and how it is mimicked electronically by complementary metal oxide semiconductor (CMOS) image sensor technology. Methods on designing circuits for CMOS image sensor are also discussed.

EEE5213 | Lab-on-a-Chip | 3 Credits
This course covers an introduction to lab-on-a-chip and state of the art micro Total Analysis Systems (uTAS). Lab-on-a-chip with device design principles for microscale sample preparation, flow transport, biomolecular manipulation, separation, detection, and the technologies for integrating these devices into microsystems.

EEE5214 | Applied Sensor Technology | 3 Credits
This course covers many types of sensors. It includes sensor classification, sensor design, signal conditioning for sensor system and sensor fabrication process.

EEE5215 | Radio Frequency Integrated Circuit | 3 Credits
This course covers from basic concept, architecture and up to design level of radio frequency, RF integrated circuit with some latest design