

# Master of Microelectronic Engineering

SCHOOL OF ENGINEERING & MATHEMATICAL SCIENCES

## Introduction

The microelectronics engineer today is faced with many challenges brought about by the rapid advances in computer, multimedia and telecommunication technology. The Master of Microelectronic Engineering program addresses all aspects of this Technology, from high level specification of microelectronic systems, through implementation alternatives, to realisation of integrated circuits. The course aims to produce engineers with the necessary skills and practical experiences to satisfy the requirements of the growing microelectronics industry. An important feature of the course is the opportunity it provides for students to be involved in hands on microelectronics design using sophisticated design tools.

## Career Opportunities

Microelectronics is the key enabling technology driving next generation applications across a diverse range of industries, such as, automotive, biotechnology and biomedical equipment, computer and information technology, consumer electronics and home entertainment, defense and security, telecommunications and wireless systems. The microelectronics engineer, with their specialist knowledge and skills in the design and application of integrated circuits and systems, is at the forefront of bringing next generation devices and products to realisation.

## Course Structure

In the Master of Microelectronic Engineering, students complete 240 credit points over two years, or part time equivalent. There are 150 credit points of core subjects, of which 60 credit points are 4th year fundamentals subjects. In the final year of study students undertake a major (60 credit point) or minor (30 credit point) microelectronics design project. The remaining credit points are made up of electives consisting of further studies in microelectronics or allied disciplines, which includes the pool of 4th and 5th year subjects offered by the Department of Electronic Engineering. Subject to approval by the course co-ordinator, students may enrol in up to three relevant subjects to the value of 45 credit points from other areas of the University or other universities offering specialised microelectronic

engineering subjects (maximum of 30 credit points in any one semester). Students should seek advice from a course advisor before enrolling.

Students with an appropriate background that includes the material covered by the fundamentals subjects may be granted a one semester advanced entry credit, shortening the program to three semesters (full-time). Alternatively, individual fundamentals subjects can be replaced with further electives where a student has demonstrated knowledge of the material covered. The program chosen must consist of a minimum of 120 credit points of 5th year level subjects.

Note: not all subjects listed below are available in both semesters.

### Core subjects: (150 credit points)

ELE51/52PRA	Engineering Practice	15
ELE41EMT	Applied Management for Engineers	15
ELE41FEM	Embedded Processors	15
ELE51DSD	Digital Systems Design	15
ELE51ICD	Integrated Circuit Design	15
ELE51SDP	Semiconductor Materials and Devices	15
ELE51TAV	Test and Verification	15
ELE42FDE	Design for Production	15
ELE42FED	Electronic Design Automation	15
ELE52TDM	EDA Tools and Design Methodology	15

### Project subjects: (30 or 60 credit points)

ELE51/52MIP	Minor Project in Microelectronics <sup>1</sup>	30
or		
ELE51/52MAP	Major Project in Microelectronics <sup>1,2</sup>	60

### Elective subjects: (60 or 30 credit points)

ELE42FSP	Digital Signal Processing	15
ELE52ETD	Emerging Topics in Microelectronics	15
ELE51/52SEL	Special Elective in Microelectronic Engineering <sup>2</sup>	15

and/or approved 4th and 5th year subjects offered by the Department of Electronic Engineering, or areas of the University<sup>2</sup> (such as, Computer Science and Computer Engineering, Mathematics, Physics or Statistics) or other universities<sup>2,3</sup> offering specialised microelectronic engineering subjects.

#### Notes:

- Students complete one of these two subjects
- Enrolment subject to approval from the course co-ordinator
- Maximum of 45 credit points total and 30 credit points in any one semester

## Admission Requirements

Applicants should have a four-year Bachelor of Engineering degree in Electronic Engineering or Computer Engineering or Communication/ Telecommunication Engineering or a four-year Bachelor of Science (Honours) degree in an appropriate field, or an equivalent qualification. Candidates who do not strictly meet the above requirements may be considered for admission following successful completion of the Postgraduate Diploma in Electronic Engineering.

Full-fee paying international students are required to have qualifications equivalent to those above and, in addition, they must provide evidence of proficiency in the English Language as follows.

IELTS - a minimum overall band score of 6.5 for postgraduate entry with no sub-set score less than 6.0.

Test of English as a Foreign Language 575 including computer based 213 plus a TWE of not less than 5.

## Exemption for Previous Study

Exemption may be available for previous graduate studies. Students applying for exemption must provide details of the curriculum from course handbooks together with a copy of their academic transcript.

## Duration of the Course

The Master of Microelectronic Engineering course is two-years full-time or part-time equivalent. International students are not eligible for part-time studies.

## Fees

Australians and Australian residents pay the tuition fee set by the University. The fee for International students is AUD\$17,000 per annum.

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