ELEN90045 Electronic Manufacturing

Credit Points:	12.5
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2015, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 1 two hour lecture per week Total Time Commitment: 200 hours
Prerequisites:	Prerequisites for this subject are

Subject	Study Period Commencement:	Credit Points:
ELEN90043 Device Models	Semester 1	12.50
ELEN90048 Passive Component Design & Simulation	Semester 1	12.50

Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: http://www.services.unimelb.edu.au/disability/
Coordinator:	Prof Stan Skafidas
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Subject Overview:

AIMS

Students will be introduced to the complete front-end to back-end semiconductor processes involved in building integrated circuits. The former includes implant and diffusion of dopants, thin-film deposition, photolithography, and metallisation. Back-end processes such as packaging, testing and ESD protection which play critical roles in the design of real chipsets and systems will also be covered. This subject will enable students to appreciate the scale and variability of semiconductor processes which ultimately determine the yield of ICs. Students will also be introduced to activities by the International Technology Roadmap for Semiconductors organization which ensures advancement in the performance of IC and related products.

INDICATIVE CONTENT

Topics include:

Semiconductor processing, device mismatch, packaging and assembly, reliability and yield, electrostatic discharge protection circuitry

Learning Outcomes:

INTENDED LEARNING OUTCOMES (ILO)

Having completed this subject it is expected that the student be able to:

1 Describe the processes required to manufacture CMOS transistors

	2 Calculate thermal efficacy of packages 3 Build test structures and systems to enable production level testing of nano-electronic systems
Assessment:	One written examination (not exceeding three hours) at the end of semester, worth 70%; Continuous assessment of submitted project work (not exceeding 30 pages in total over the semester, approximately 40-45 hours of work), worth 30%. Intended Learning Outcomes (ILOs) 1-3 are assessed in the final exam and the submitted project report.
Prescribed Texts:	TBA
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	# Ability to apply knowledge of science and engineering fundamentals # Ability to undertake problem identification, formulation, and solution # Ability to utilise a systems approach to complex problems and to design andoperationalperformance # Ability to build and test real world systems that meet industry specialisation and manufacturing standards # Capacity for lifelong learning and professional development
Notes:	**LEARNING AND TEACHING METHODS** Lectures and worked examples, video presentations, guest lectures **INDICATIVE KEY LEARNING RESOURCES** Students are provided with lecture slides, worked examples and reference text list **CAREERS / INDUSTRY LINKS** Exposure to cleanroom manufacturing through visits to nearby cleanroom facilities and inviting guest lectures from cleanroom lab managers.
Related Course(s):	Master of Nanoelectronic Engineering