



澳門大學
UNIVERSIDADE DE MACAU
UNIVERSITY OF MACAU

Major Programme:	Master of Science in Microelectronics & Master of Philosophy in Microelectronics														
Course Type:	<input type="checkbox"/> CM – Compulsory Major <input type="checkbox"/> L&S – Languages and Skills <input type="checkbox"/> * GE – General Education <input type="checkbox"/> MI – Minor <input checked="" type="checkbox"/> RE – Required Elective <input type="checkbox"/> CPE – Community and Peer Education <input type="checkbox"/> FE – Free Elective														
Course Title: (in Chinese and English)	Integrated Circuits Research Methodology and Applications 集成電路研究方法和應用				Suggested Year of Study:		Year 1								
Duration:	<input checked="" type="checkbox"/> Semester Course <input type="checkbox"/> Yearly Course				Credit Units:		3								
Grading System:	<input checked="" type="checkbox"/> Letter Grade <input type="checkbox"/> P/NP				Pre-requisite: (if any)		None								
Medium of Instruction:	English														
Course Description:	This is an introductory course on integrated circuits research methodology and applications. It aims to aid the students in building up an internationally competitive research goal by understanding the state-of-the-art trends in applications and technologies and systematically formulating a feasible schedule with available resources, to approach the research goals. Preparation of related academic publications and system-level case studies of advanced integrated circuits and systems will be organized for the students to digest and present them. The course aims to provide the students with a set of essential engineering skills for research in the area of the integrated circuit.														
Intended Learning Outcomes (ILO):	This course enables students to have: <ul style="list-style-type: none"> • Apply the essential knowledge on starting integrated circuits research. • Identify the trends of integrated circuits for practical applications. • Recognize the impact of integrated circuit solutions in a global and societal context. 														
Major Assessment Methods:	Case Study	Role Playing	Student Presentation	Individual project / paper	Group project / paper	Group discussions	Writing Assignment	Exercises & problems	Service learning	Internship	Field study	Company visits	Reading & Writing Assessments / tests	Listening & Oral Assessments / tests	Others (please specify)
Class Participation / Discussion _____%															
Assignment(s) <u>50</u> %	√														
Test(s) _____%															
Examination _____%															
Others: Project <u>50</u> %			√		√										
Course Content: (topic outline)	<ul style="list-style-type: none"> - Introduction: brief history of integrated circuit (IC), state-of-the-art trend and industrial examples - Preliminaries: essential reading, drawing and writing skills in the IC area, including problem definition, research scheduling, resource planning, performance comparison, etc. - Overview of major IC areas: analog, biomedical, sensor, digital, mixed-signal, wireless, radio frequency, power management, memory, non-silicon emerging technologies, etc. - System-level case studies: integrated transceiver, sensor system-on-chip, mixed-signal system, etc. 														