



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 checked="" 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 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)	Microelectronic Circuit Design 微電子集成 電路設計					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 course is designed to discuss fundamental principles for the analysis and design of analog circuits and the practical considerations in integrated circuit design. Students will learn to design, analyze and evaluate amplifiers as an essential integrated circuit building block. Advanced amplifiers/analog circuit layout techniques with case studies will also be introduced. By providing hands-on practice with one real advanced VLSI CMOS process using industrial EDA tools, students can deeply understand how to design practical integrated circuits and make real-world engineering tradeoffs. This course will be assessed with assignments, presentations, and projects.														
Intended Learning Outcomes (ILO):	This course enables students to have: <ul style="list-style-type: none"> • Apply the essential knowledge in analog circuit design. • Design the common analog circuit building blocks with practical considerations. • Design and simulate analog circuits using industrial simulation tools with real-world CMOS processes. 														
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	0 %														
Assignment(s)	20 %														
Test(s)	0 %														
Examination	0 %														
Others: Project	80 %														
Course Content: (topic outline)	<ul style="list-style-type: none"> - Introduction - Basic semiconductor physics - MOSFET devices - Current mirrors and voltage/current references - Noise analysis - Amplifiers - Frequency response - Two-stage amplifiers 														