澳門大學
UNIVERSIDADE DE MACAU
UNIVERSITY OF MACAU

Major Programme:	Master of Science in Microelectronics & Master of Philosophy in Microelectronics		
Course Type:	☑ CM – Compulsory Major ☐ L&S – Languages and Skills ☐ * GE – General Education ☐ MI – Minor ☐ RE – Required Elective ☐ CPE – Community and Peer Education ☐ 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:	☑ Semester Course ☐ Yearly Course	Credit Units:	3
Grading System:	☑ Letter Grade ☐ P/NP	Pre-requisite: (if any)	None
Medium of Instruction:	English		
Course Description:	This course is designed to discuss on fundamental principles for analysis and design of analog circuits and the practical considerations in integrated circuit design. Students will learn how 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 have a deep understanding on 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: · To introduce the essential knowledge in analog circuits design. · To introduce common analog circuit building blocks with practical considerations. · To teach students with hands on experience on designing and simulating analog circuits using industrial simulation tools with real world CMOS process.		

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)	- Introduction - Basic semiconductor physics - MOSFET devices - Current mirrors and voltage/current references - Noise analysis - Amplifiers - Frequency response - Two-stage amplifiers