



澳門大學
 UNIVERSIDADE DE MACAU
 UNIVERSITY OF MACAU

Major Programme:	All Undergraduate Programmes			
Course Type:	<input type="checkbox"/> CM – Compulsory Major <input type="checkbox"/> RE – Required Elective	<input type="checkbox"/> CPE – Community and Peer Education <input type="checkbox"/> L&S – Languages and Skills	<input checked="" type="checkbox"/> GE – General Education <input type="checkbox"/> FE – Free Elective	<input type="checkbox"/> MI – Minor
<p><u>GE Area in 2017/2018 model (applicable to students admitted in academic year 2017/2018 onwards)</u></p> <input checked="" type="checkbox"/> Science and Technology, FHS <input type="checkbox"/> Literature and Humanities, FAH <input type="checkbox"/> Society and Behaviour, FSS <input type="checkbox"/> Global Awareness, FSS				
<p><u>Equivalent to 2011/2012 GE model (applicable to students admitted in academic year 2016/2017 or before)</u></p> <input type="checkbox"/> Area 1 – English Language <input type="checkbox"/> Area 2 – Chinese/Foreign Language <input type="checkbox"/> Area 3 – Communication <input type="checkbox"/> Area 4 – Mathematics/Quantitative Reasoning <input type="checkbox"/> Area 5 – Information Technology and Knowledge Society <input type="checkbox"/> Area 6 – Physical Science and the World <input type="checkbox"/> Area 7 – Life Science, Health and the Human Condition <input type="checkbox"/> Area 8 – World Histories and Cultures <input type="checkbox"/> Area 9 – Macao, China and other Societies <input type="checkbox"/> Area 10 – Values, Ethics and Meaning of Life <input type="checkbox"/> Area 11 – Physical Education <input type="checkbox"/> Area 12 – Visual and Performing Arts <input type="checkbox"/> Area 13 – University Life				
Course Title: (in English, Chinese and Portuguese)	Microelectronic Chip Technology in Daily Life 生活中的微電子芯片技術 Tecnologia de Chips Microelectrónicos no Quotidiano			
Course Prefix:	GEST	Credit Units:	3	
Duration:	<input checked="" type="checkbox"/> Semester Course <input type="checkbox"/> Yearly Course	Suggested Year of Study:	Year 1 to Year 4	
Weekly Teaching Hours:	Lecture Hours:3	Lab Hours:0	Tutorial Hours:0	
Grading System:	<input checked="" type="checkbox"/> Letter Grade <input type="checkbox"/> P/NP	Pre-requisite: (if any)	Nil	
Medium of Instruction:	English			
Course Description:	As enabled by powerful technology, microelectronics have become essential in our daily lives. They are also used in a wide range of fields such as healthcare, environmental monitoring, robotics or entertainment etc. This introductory course in microelectronics is tailored for non-engineering students and teaches how to use microelectronic chip components interacting with the environment through sensors and communicate wirelessly with other devices. It covers topics from evaluation and implementation of sensor interface, data conversion, signal processing and device communications. This customized course is bottom-up based, which starts from introducing basic components in information systems, such as 5G communication. Then, followed by system and architectural interface considerations. Finally, the students have a chance to complete a case study on one for Artificial Intelligence and Internet of Things (AIoTs) related system.			



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Course Content: (topic outline)	<ol style="list-style-type: none"> 1. The history of Microelectronic Chip 2. Microelectronic Chip design and manufacturing process 3. Integrated circuits development at Macao/Mainland/Abroad 4. Microelectronic Chips in the 5G communication 5. Microelectronic Chips in the advanced driver assistance systems 6. Artificial Intelligence (AI) chips 7. Microelectronic Chips for the healthcare 8. Basic components in information systems – Sensor 9. Basic components in information systems – Data Acquisition 10. Basic components in information systems – Processor 11. Basic components in information systems – Data Transfer 12. Future Microelectronic Chip Technologies – I 13. Future Microelectronic Chip Technologies– II 14. Case study presentation – I 15. Case study presentation – II 															
Intended Learning Outcomes (ILO):	<p>By the end of this course, non-engineering students will have ability to:</p> <ul style="list-style-type: none"> • Acquire science and technology knowledge with an emphasis on basic microelectronic chip related topics. • Identify the specifications on basic microelectronic chip components. • Apply basic microelectronic chip technologies to their corresponding major subject. • Identify engineering hardware problems of microelectronic chips. • Recognize the importance of microelectronic chip technologies through understanding its basic knowledge and general applications in everyday life. • Integrate the microelectronic engineering professional and ethical responsibility. 															
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	Assessments / tests	Listening & Oral Assessments	Others (please specify)
Class Participation / Discussion 30 %			✓			✓										
Assignment(s) 50 %	✓				✓											
Test(s) %																
Examination 20 %													✓			
Others (please specify) %																