澳門大學
UNIVERSIDADE DE MACAU
UNIVERSITY OF MACAU

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| Major Programme: | Master of Science in Microelectronics & Master of Philosophy in Microelectronics | | |
| Course Type: | ☐ CM – Compulsory Major ☑ RE – Required Elective ☐ L&S – Languages and Skills ☐ CPE – Community and Peer Education ☐ * GE – General Education ☐ MI – Minor ☐ FE – Free Elective | | |
| Course Title: (in Chinese and English) | Data Converter Integrated Circuits 數據轉換器集成電路設計 | 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 will provide an introduction to the various type of Data Conversion System. The performance characterization of Data Converters will be presented, and various type of data converters (including Analog-to-Digital and Digital-to-Analog) will be discussed. This course can be served as the beginning course in the field of Data Conversion and Signal Processing in the area of Analog IC Design. | | |
| Intended Learning Outcomes (ILO): | This course enables students to have:<br>・An ability to understand and analyze the definitions of performance parameters for data converters, in datasheet and research papers.<br>・An ability to design the digital-to-analog converters.<br>・An ability to design the analog-to-digital converters.<br>・An ability to design the delta-sigma modulators.<br>・To implement the systems above using EDA tools widely adopted in IC industries. | | |

| 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) |
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| Class Participation / Discussion 0 % | | | | | | | | | | | | | | | |
| Assignment(s) 0 % | | | | | | | | | | | | | | | |
| Test(s) 0 % | | | | | | | | | | | | | | | |
| Examination 0 % | | | | | | | | | | | | | | | |
| Others: Project 100 % | | | | √ | √ | | | | | | | | | | |

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| Course Content: (topic outline) | - Introduction<br>- Data Converter Specifications<br>- Nyquist Rate Digital-to-Analog Converters<br>- Nyquist Rate Analog-to-Digital Converters<br>- Oversampling Converters |