澳門大學
UNIVERSIDADE DE MACAU
UNIVERSITY OF MACAU

Major Programme:	Bachelor of Science in Electrical and Computer Engineering		
Course Type:	☑ CM – Compulsory Major □ CPE – Community and Peer Education □ GE – General Education □ MI – Minor □RE – Required Elective □ L&S – Languages and Skills □ FE – Free Elective		

GE Area in 2017/2018 model (applicable to students admitted in academic year 2017/2018 onwards)

□ Science and Technology, FHS
□ Society and Behaviour, FSS
□ Literature and Humanities, FAH
□ Global Awareness, FSS

Equivalent to 2011/2012 GE model (applicable to students admitted in academic year 2016/2017 or before)

□ Area 1 – English Language
□ Area 2 – Chinese/Foreign Language
□ Area 3 – Communication
□ Area 4 – Mathematics/Quantitative Reasoning
□ Area 5 – Information Technology and Knowledge Society
□ Area 6 – Physical Science and the World
□ Area 7 – Life Science, Health and the Human Condition
□ Area 8 – World Histories and Cultures
□ Area 9 – Macao, China and other Societies
□ Area 10 – Values, Ethics and Meaning of life
□ Area 11 – Physical Education
□ Area 12 – Visual and Performing Arts
□ Area 13 – University Life

Course Title: (in English, Chinese and Portuguese)	Control Systems 控制系統 Sistemas de Controlo		
Course code	ECEN3000	Credit Units:	3
Duration:	☑ Semester Course □ Yearly Course	Suggested Year of Study:	Year 3
Grading System:	☑ Letter Grade □ P/NP	Pre-requisite: (if any)	None
Medium of Instruction:		English	
Text Book and Reference	R.C. Dorf and R.H. Bishop, Modern Control Systems, 13th ed., Pearson, 2017. (Textbook) G.F. Franklin, J.D. Powell and A. Emami-Naeini, Feedback Control of Dynamic Systems, 8th ed., Pearson, 2019. (Reference)		
Course Description:	This course deals with the fundamental principles for analysis and design of control systems. Topics include dynamic modeling, dynamic response, basic properties of feedback, root-locus design method, frequency-response design method, and state-space design.		
Course Content	1. Basic concepts, history and examples of control systems; 2. Modeling of physical systems, system representations; 3. Laplace transform and transfer function analysis, system responses, stability analysis of linear systems; 4. Feedback control systems, characteristics and performance of control systems; 5. Root locus method and its applications; 6. Frequency method and its applications, stability from frequency responses;		

	7. PID control and compensator design; 8. Matlab/Simulink for control system design and simulation.
Course Intended Learning Outcomes (CILO):	CILO 1: Ability to apply knowledge of mathematics, science and engineering. CILO 2: Ability to design a system, component or process to meet desired needs. CILO 3: Ability to identify, formulate and solve engineering problems. CILO 4: Ability to design and conduct experiments. CILO 5: Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

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
Assignment(s) 30%					✓			✓						
Quiz 30%								✓					✓	
Final 40%													✓	