

University of Macau
Faculty of Science and Technology
Department of Electrical and Electronics Engineering

Part A: Course Outline

Course Title:	Project		
Course Code:	ELEC402	Year of Study:	4
Compulsory/Elective:	Compulsory		
Course Prerequisites:			
Prerequisite Knowledge			
Class/Laboratory Schedule:	Practice: 37 hours per week		
Duration	One semester	Credit Units	18.5
Text Books and References:			
Course Description:	<p>Project comprises analytical, experimental, computational and case study type of project in the area of Electrical and Electronics Engineering. Students are admitted to the course after defining an acceptable topic and gaining a proposal mentor from among the faculty. Students are asked to design, analyze, simulate and/or implement some circuits or small systems according to some certain functional requirements and some given information. Reports oral presentations and posters need to be provided at the end of the course.</p>		
Topics Covered	<p>There are four main disciplines under the program</p> <ul style="list-style-type: none"> i. Biomedical Engineering ii. Microelectronics iii. Electric Power Engineering and its Automation iv. Wireless <p>Student could choose the direction of his final project in one of the discipline or any other direction related to the Electrical and Electronics Engineering.</p>		
Course Objectives:	<ol style="list-style-type: none"> 1. To develop the ability to search for technical information resources on software and hardware, such as the library, research and technical literature, electronic database and the World Wide Web. [d, f, h, i, j, k] 2. To train students to design, synthesis, analysis and implement small systems to meet desired needs. [a, b, c, d, e, k] 3. To train students to work in a team environment to complete a system, to do experiment. [c, e, k, g] 4. To train the student the ability to write scientific report and present their research work. [a, f, g, i, j] 		

Course Assessment:	Project Work and Report : 70% Oral Presentation: 25% Poster: 5%																	
Relationship to Program Objectives and Outcomes	<p>This course primarily contributes to EEE program outcomes that develop students abilities to:</p> <ol style="list-style-type: none"> a. Ability to apply knowledge of mathematics, science and engineering. b. Ability to design and conduct experiments. c. Ability to design a system, component or process to meet desired needs. d. Ability to function on multidisciplinary teams. e. Ability to identify, formulate and solve engineering problems. g. Ability to communicate effectively k. Ability to use the techniques, skills and modern engineering tools necessary for engineering practice. <p>This course secondarily contributes to EEE program outcomes that develop students abilities to:</p> <ol style="list-style-type: none"> f. Understanding of professional and ethical responsibility. h. Broad education necessary to understand the impact of engineering solutions in global and societal context. i. Recognition of the need for and an ability to engage in life-long learning. l. Ability to use the computer/IT tools relevant to the discipline along with an understanding of their processes and limitations 																	
Course Contents and Relationship to Program Criteria:	<table border="1" data-bbox="469 1285 1485 1532"> <thead> <tr> <th data-bbox="469 1285 564 1361">Week no.</th> <th data-bbox="564 1285 1326 1361"></th> <th data-bbox="1326 1285 1485 1361">Program Criteria</th> </tr> </thead> <tbody> <tr> <td data-bbox="469 1361 564 1406">6</td> <td data-bbox="564 1361 1326 1406">Project Progress and Analysis</td> <td data-bbox="1326 1361 1485 1406">*</td> </tr> <tr> <td data-bbox="469 1406 564 1451">5</td> <td data-bbox="564 1406 1326 1451">Project Progress and System Implementation</td> <td data-bbox="1326 1406 1485 1451">*</td> </tr> <tr> <td data-bbox="469 1451 564 1496">3</td> <td data-bbox="564 1451 1326 1496">Final Report Preparation</td> <td data-bbox="1326 1451 1485 1496">*</td> </tr> <tr> <td data-bbox="469 1496 564 1532">1</td> <td data-bbox="564 1496 1326 1532">Oral Presentation</td> <td data-bbox="1326 1496 1485 1532">*</td> </tr> </tbody> </table>	Week no.		Program Criteria	6	Project Progress and Analysis	*	5	Project Progress and System Implementation	*	3	Final Report Preparation	*	1	Oral Presentation	*		
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6	Project Progress and Analysis	*																
5	Project Progress and System Implementation	*																
3	Final Report Preparation	*																
1	Oral Presentation	*																
Contribution of Course to meet the professional component:	This course contributes to provide students the personal experience of the approach, practice and evaluation of research in engineering topics. It trains the student ability to define and solve an engineering problem. It also trains the student to write scientific report and to present their research work.																	
Course Instructor(s):																		
Prepared by:																		

Part B: General Course Information and Policies

Instructor:

Office:

Office Hour: Phone:

e-mail:

Program Criteria Policy:

Course VS Program Criteria

Scale: 1 (Highest) to 4 (Lowest)

Course	PS	DIC	BS	CS	ES	DE	LA	CV	DM
Project	*	*	*	*	*	*	*	*	*

Terms:

Probability and Statistics (PS), Differential and Integral Calculus (DIC), Basic Science (BS), Computer Science (CS), Engineering Science (ES), Differential Equation (DE), Linear Algebra (LA), Complex Variables (CV), Discrete Mathematics (DM)

* The relationship with program criteria varies according to different topics the students select.

Program Outcome Policy:

Course VS Course Outcomes

(H= Highly Related, S = Supportive, N = None)

Course	a	b	c	d	e	f	g	h	i	j	k	l
Project	H	H	H	H	H	S	H	S	S	N	H	S

The electrical and electronics engineering program outcomes are:

- a. Ability to apply knowledge of mathematics, science and engineering.
- b. Ability to design and conduct experiments.
- c. Ability to design a system, component or process to meet desired needs.
- d. Ability to function on multidisciplinary teams.
- e. Ability to identify, formulate and solve engineering problems.
- f. Understanding of professional and ethical responsibility.
- g. Ability to communicate effectively.
- h. Broad education necessary to understand the impact of engineering solutions in global and societal context.
- i. Recognition of the need for and an ability to engage in life-long learning.
- j. Knowledge of contemporary issues.

- k. Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.
- l. Ability to use the computer/IT tools relevant to the discipline along with an understanding of their processes and limitations

Course Assessment Policy:

- In case of a team project, significant contribution is required from each member and students are assessed individually.
- The following policies are adopted in assessment of final project grading.

	Project Work And Report	Oral Presentation	Poster
By Supervisor(s)	80%	25%	25%
By Examiners	20%	75%	75%
Total	70%	25%	5%

The final mark will be given to each student according to the following equation,

$$\begin{aligned}
 \text{Final Mark} = & \left(\frac{\sum_{n=1}^{k1} S_{n_Report}}{k1} \times 0.8 + \frac{\sum_{n=1}^{f1} E_{n_Report}}{f1} \times 0.2 \right) \times 0.7 \\
 & + \left(\frac{\sum_{n=1}^{k2} S_{n_Oral}}{k2} \times 0.25 + \frac{\sum_{n=1}^{f2} E_{n_Oral}}{f2} \times 0.75 \right) \times 0.25 \\
 & + \left(\frac{\sum_{n=1}^{k3} S_{n_Poster}}{k3} \times 0.25 + \frac{\sum_{n=1}^{f3} E_{n_Poster}}{f3} \times 0.75 \right) \times 0.05
 \end{aligned}$$

where

S_{n_Report} = Mark given by Supervisor(s) for the Report

E_{n_Report} = Mark given by Examiners for the Report

S_{n_Oral} = Mark given by Supervisor(s) for the Oral Presentation

E_{n_Oral} = Mark given by Examiners for the Oral Presentation

S_{n_Poster} = Mark given by Supervisor(s) for the Poster

E_{n_Poster} = Mark given by Examiners for the Poster

$k1$ = Number of Supervisor(s) who grade that student's Report

$f1$ = Number of Examiners who grade that student's Report

$k2$ = Number of Supervisor(s) who grade that student's Oral Presentation

$f2$ = Number of Examiners who grade that student's Oral Presentation

$k3$ = Number of Supervisor(s) who grade that student's Poster

$f3$ = Number of Examiners who grade that student's Poster