



INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
COURSE OUTLINE

Kulliyah / Institute	Engineering					
Department	Electrical and Computer Engineering					
Programme	B. Eng. Electrical and Electronic Engineering					
Name of Course / Mode	Electrical Engineering Lab-2					
Course Code	EECE 2103/ EECE 2101					
Name (s) of Academic staff / Instructor(s)						
Rationale for the inclusion of the course / module in the programme	Required course for Electronics-Computer and Information Engineering Programme Required course for Electronics-Communication Engineering Programmes. EECE 2103 Consists of Two Parts: 1. Electrical circuit analysis 2. Electronic circuits analysis					
Semester and Year Offered	Every Semester					
Status	Core					
Level	2					
Proposed Start Date	Semester 1, 2019/2020					
Batch of Student to be Affected	Semester 1, 2020/2021					
Total Student Learning Time (SLT)	Face to Face			Assess_m ents	Independent Learning	Total Student Learning Time
	Discussion	Practical	Report Presentation	Final Test		
	5	17	4	2		
Credit Value / Hours	1/42					
MQF Level	6					
Pre-requisites (if any)	EECE 1101 Electrical and Electronic Lab-1					
Co-requisites (if any)	EECE 2312 Circuit Analysis EECE2113 Electronic Circuits					

Course Objectives	<p>The objectives of this course are to:</p> <ol style="list-style-type: none"> 1. How to construct passive and active circuits on bread board and construct experiment 2. How to analysis experimental data and write a report How to use PSpice software to simulate circuits 																			
Learning Outcomes	<p>Upon completion of this course, students should be able to:</p> <ol style="list-style-type: none"> 1. How to construct passive and active circuits on bread board and construct experiment 2. How to analysis experimental data and write a report 3. How to use PSpice software to simulate circuits 																			
Transferable Skills:	<p><i>Skills and how they are developed and assessed, project and practical experience and internship</i></p> <table border="1"> <thead> <tr> <th>Skills</th> <th>Development</th> <th>Assessment</th> </tr> </thead> <tbody> <tr> <td>Technical</td> <td>Lectures</td> <td>Written Assessment</td> </tr> <tr> <td>Analytical</td> <td>Projects (Experiments)</td> <td>Report</td> </tr> </tbody> </table>			Skills	Development	Assessment	Technical	Lectures	Written Assessment	Analytical	Projects (Experiments)	Report								
Skills	Development	Assessment																		
Technical	Lectures	Written Assessment																		
Analytical	Projects (Experiments)	Report																		
Teaching-Learning and Assessment Strategy	<p>Instructions, Experiment report, Test and Viva-voce</p>																			
Course Synopsis	<p>Application of equations and theories into practical examples of electric and electronic circuits. Transient response of RC and RL networks. Self and mutual inductance. Frequency response of amplifiers. Circuit analysis and design of multistage amplifiers, passive and active filters, oscillators.</p>																			
Mode of Delivery	<p><i>Lecture, Tutorial, Demonstration, Hands-on</i></p>																			
Assessment Methods and Type/Course Assessment State weightage of each type of assessment.	<table border="1"> <thead> <tr> <th>LO</th> <th>Method</th> <th>%</th> </tr> </thead> <tbody> <tr> <td>1, 2, 3</td> <td>Lab Report and PSpice result</td> <td>40</td> </tr> <tr> <td>1, 2, 3</td> <td>Continues Assessment/Soldering</td> <td>10</td> </tr> <tr> <td rowspan="2">1, 2, 3</td> <td>Final Test</td> <td>50</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">Total</td> <td>100</td> </tr> </tbody> </table>			LO	Method	%	1, 2, 3	Lab Report and PSpice result	40	1, 2, 3	Continues Assessment/Soldering	10	1, 2, 3	Final Test	50				Total	100
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Mapping of course / module to the Programme Learning Outcomes						
Learning Outcome of the course		Bloom's Taxonomy			Soft Skills (KI)	Programme Outcome
		C	A	P		
1.	How to construct passive and active circuits on bread board and construct experiment	C1			CS8 CT2 TS1	PO4
2.	How to analysis experimental data and write a report	C4			CS8 CT2 TS1	PO4
3.	How to use PSpice to simulate circuits	C4		P5	CS8 CT2 TS1	PO5

Content outline of the course / module and the SLT per topic				
Week	Topics	Learning Hours		Task/Reading
		F2F/Online	Self	
1	Introduction to about the Lab	2:15	0:30	Referances
2	Study the Transient Behavior of RC and RL Circuits	2:15	1:30	Referances
3	Study of Self and Mutual Inductances	2:15	1:30	Referances
4	Study of Series and Parallel Resonant Circuits. Design of a RC LP and HP Filters	2:15	1:30	Referances
5	Design and Study of Active LP and HP Filters	2:15	1:30	Referances
6	Study of small signal CE amplifier and its frequency response with and without bypass capacitor	2:15	1:30	Referances
7	Study of an RC Coupled Two Stage CE Amplifier	2:15	1:30	Referances
8	Design and Study of Feedback RC Coupled Two Stage CE Amplifier Circuit	2:15	1:30	Referances
9	Design and Study Study of a RC Phase shift Oscillator	2:15	1:30	Referances
10	Design and Study of Wien Bridge Oscillator	2:15	1:30	
11-12	Final Lab Test and Viva-voice	5:30		
		28:00	14:00	

Required references supporting the course

The reference lists shall be presented in accordance with APA bibliographic practices and in alphabetical order.

Electric Circuits Laboratory Manual

Electronics Laboratory Manual

Boylestad, R. and Nashelsky, L., (1999), *Electronic Devices and Circuit Theory*, Prentice Hall.

Neamen D.A., (2007), *Microelectronics Circuit Analysis and Design*, McGraw Hill.

Recommended references supporting the course

Recommended

Neamen, D. A., (2001), *Electronic Circuit Analysis and Design*, McGraw Hill.

Hambley, A.R., (2000), *Electronics*, Prentice-Hall

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ANNEX

I. Course Instructor Details

Semester: 1 Academic Year: 2020/2021

No.	Name	Email	Department

II. Programme Learning Outcomes

Kulliyah Programme Outcomes and the relation between KOE PO with outcomes from EAC, MQF domain, MOHE domain and Soft Skills.

At the end of the programme, students are able to:

KOE PO		EAC	MQF Domain	MOHE Domain	Soft Skills
1	Engineering Knowledge (T) - Apply knowledge of mathematics, sciences, engineering fundamentals and specialization to solve complex engineering problems.	1	1 & 6	1	-
2	Problem Analysis (T) – Identify, formulate, perform relevant literature review and analyze complex engineering problems, and reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.	2	1 & 6	1	1
3	Design/Development of Solutions (A) – Design solutions whilst exhibiting innovativeness, for complex engineering problems and design systems, components or processes that meet specified needs; with appropriate consideration of cost, sustainability issues, environmental impact, public health and safety, engineering ethics as well as cultural and social needs.	3	2, 3 & 6	2	1
4	Investigation (D) - Conduct investigation on complex problems whilst displaying creativity, by using research-based knowledge and method, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.	4	2 & 6	2, 3	1
5	Modern Tool Usage (A & D) - Create and apply appropriate techniques, resources and modern engineering/IT tools, which includes making prediction and modelling of the complex engineering activities with understanding of limitations.	5	6 & 7	7	
6	The Engineer and Society (ESSE) - Apply reasoning based on contextual knowledge to assess societal, health, safety, legal, cultural, contemporary issues, and the consequent responsibilities relevant to professional engineering practices.	6	3 & 4	5	4
7	Environment and Sustainability (ESSE) - Understand the impact of professional engineering solutions in societal, global, and environmental contexts and demonstrate knowledge of and need for sustainable development.	7	3 & 4	5	4
8	Ethics (ESSE) –Apply professional ethics with Islamic values and commit to responsibilities and norms of professional engineering code of practices.	8	3 & 4	6	4

9	Communication (S) - Communicate effectively within the engineering community and with the society at large, which include but not limited to writing effective reports and documentation, delivering effective presentation as well as giving and receiving clear instructions.	9	5 & 7	4, 7	2
10	Individual and Team Work (S) - Able to function effectively both as an individual or member of a team, or a leader in a diversified multi-disciplinary team settings.	10	5 & 8	5, 8	3
11	Life Long Learning (S) -Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.	11	7	7	5
12	Project Management and Finance (S) - Demonstrate and apply engineering management and financial principles into one's work which include being an effective member/leader in projects with multidisciplinary settings and identify opportunities of entrepreneurship .	12	8	5, 8, 9	6, 7

The program learning outcomes (PO) are grouped into 5 general areas to identify the nature of the skills and capability involved. These groups are:

1. Technical (T) – essential capabilities related to traditional scientific and engineering knowledge
2. Analysis (A) – creatively working with available data and engineering tools and fundamental knowledge to correctly solve basic problem
3. Design (D) – being able to perceive the best solution for both small scale and large scale project by involving all required basic problems
4. Ethics, Safety, Society and Environment (ESSE) - giving appropriate consideration to matters pertaining to professionalism and ethics, safety, local and global society and the environment
5. Work skills (S) – being an effective communicator and effective member of a team and to appreciate the need to continuously acquire skills and abilities.

MQF learning outcomes domains:	MOHE Domain Learning Outcomes	
<ol style="list-style-type: none"> 1. knowledge 2. practical skills 3. social skills and responsibilities 4. values, attitudes and professionalism 5. communication, leadership and team skills, 6. problems solving and scientific skills 7. information management and lifelong learning skills; and 8. managerial and entrepreneurial skills 	MOHE learning outcomes domains: <ol style="list-style-type: none"> 1. Knowledge in Specific Area-Content 2. Practical Skills 3. Critical Thinking and Scientific Skills 4. Communication Skills 5. Social Skills, Teamwork and Responsibilities 6. Values, Ethics, Moral and Professionalism 7. Information Management and Life Long Learning 8. Management and Entrepreneurship 9. Leadership Skills 	Soft Skills Learning Outcomes : <ol style="list-style-type: none"> 1. Critical Thinking and Problem-solving Skills 2. Communication Skills 3. Teamwork Skills 4. Ethics & Moral Professionalism 5. Life-long Learning and Information Management 6. Entrepreneurial Skills 7. Leadership Skills