جامعة الإسراء
ISRA UNIVERSITY

COURSE Syllabus

Course Name: Electric Circuits Lab

Course Number: (04022131)

General Course Information:

Course title	Electric Circuits Lab
Course number	04022131
Credit hours (practical)	1 Hrs
Contact hours (practical)	3 Hrs
Education type	[Face-to-Face]
Prerequisites/corequisites	Electrical Circuits (2), Electrical Circuits (1) for renewable energy engineering students.
Academic Program	Communications and Electronics
Program code	CEE, REE
Faculty	Engineering
Department	Communications and Electronics Engineering
Level of course	2nd Year
Academic year /semester	
Awarded qualification	B.Sc.
Other department(s) involved in teaching the course	Renewable Energy Engineering
Language of instruction	English
Date of production/revision	-

Course Coordinator:

Coordinator's Name: Dr. Osama Fares
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Office Hours: By appointment
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Other Instructors:

Instructor's Name: wafaa.qaraqesh
Office No.: .: network lab
Office Phone:
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Course Description:

Volt-Ampere Characteristics for Circuits Elements; Independent and Dependent Sources; Kickoff's Laws and Circuits Equations. Source Transformation; Thevenin's and Norton's Theorems; Superposition. Transient Response of RC, RL and RLC Circuits. AC circuits, impedance concept, AC Steady State analysis.

Text Book: *Author(s), Title, Publisher, Edition, Year, Book website.*

Lab Manual

References: *Author(s), Title, Publisher, Edition, Year, Book website.*

1) Alexander, C. K. and M. N. Sadiku, Fundamentals of Electric Circuits, Latest edition, McGraw Hill.
2) Dorf, R.C. and J.A Svoboda, Introduction to Electric Circuits, 7th edition, Wiley, 2006.
3) Hayt, W. H., Kimmerly, J. E., and Durbin, S. M., Engineering Circuit Analysis, McGraw Hill, 2012.
4) Thomas, R. E. and A. J. Rosa, The Analysis and Design of Linear Circuits, Wiley, 2006.
5) Nilsson, J. W. and S. Riedel, Electric Circuits, Prentice-Hall, 2004.

Course Educational Objectives (CEOs):

1.	To experimentally apply the basic concepts, principles and techniques related to electric circuits laws and rules.
2.	To experimentally apply basic circuit theorems
3.	To understand and analyze experimentally the forced and transient responses of first order RL and RC circuits
4.	To analyze experimentally the forced and transient responses of RLC circuits

Intended Learning Outcomes (ILO's):

	Intended Learning Outcomes (ILO's)	Relationship to CEOs	Contribution to PLOs	Bloom Taxonomy Levels*	Descriptors**
A	**Knowledge and Understanding:**				
A1		1	1, 5, 6	1	K
B	**Intellectual skills:**				
B1	To be able to apply the basic concepts, principles and techniques related to electric circuits laws and rules.	1	1, 5, 6	2	S
B2	To be able to experimentally analyze the forced and transient responses of first order RL and RC circuits	3	1, 5, 6	2	S
B3	To analyze experimentally the forced and transient responses of RLC circuits	4	1, 5, 6	2	S
C	**Subject-specific skills:**				
C1	To be able to experimentally apply basic circuit theorems	2	1, 5, 6	3	S

D	Transferable skills:		
D1			

Bloom Taxonomy Levels

Level #	1	2	3	4	5	6
Level Name	Knowledge	Comprehension	Application	Analysis	Evaluation	Synthesis

**** Descriptor (National Qualification Framework Descriptors): K: Knowledge, S: Skill, C: Competency.**

Program Learning Outcome (PLOs):

Program Learning Outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviors that students acquire as they progress through the program. A graduate of the (_____) program will demonstrate:		Descriptors**		
		K	S	C
1.	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	√		
2.	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.		√	
3.	An ability to communicate effectively with a range of audiences.		√	
4.	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.		√	
5.	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.		√	
6.	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.		√	
7.	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.		√	

**** Descriptors according to the national qualifications framework (K: knowledge, S: skill, C: Competency)**

Weekly Schedule *(please choose the type of teaching)*

√ Face to Face

□ **Hybrid** *(**2 Lectures** Face – To - Face **+1 Lecture** Asynchronous)*

□ **Hybrid (*1 Lectures* Face – To - Face *+1 Lecture* Asynchronous)**

□ **Online** *(**2 Lectures** Synchronous **+1 lecture Asynchronous**)*

Topic Outline and Schedule:

Topic	Weeks	Achieved ILOs	Ach. PLOs	Descriptors**
1.	Introduction to lab. Equipment and components.	A1	1	K

2. .	Introduction to lab. Equipment and components.	A1	1	K
3.	Basic laws and aspects of DC circuits	B1	5, 6	K, S
4.	Network theorems of DC circuits	B1	5, 6	K, S
5.	Network theorems of DC circuits	B1	5, 6	K, S
6.	RC circuits with DC source	B2	5, 6	K, S
7.	Free lab.	----		
8.	Mid. Exam.	-----		
9.	Basic laws and aspects of AC circuits	B2	5, 6	K, S
10.	Voltage-current relationship in R, L and C	B3	5, 6	K, S
11.	Voltage-current relationship in R, L and C	B3	5, 6	K, S
12.	Steady- state response of RL and RC circuits	B3	5, 6	K, S
13.	Steady- state response and resonance of series and parallel circuits	B3	5, 6	K, S
14.	Free lab.	-----		
15.	**Final exam**	----		

* **K: Knowledge, S: Skills, C: Competency**

Teaching Methods and Assignments:

The development of ILOs is promoted through the following teaching and learning methods:

- Interactive videos
- Practice Labs
- Discussion Forums
- Quizzes
- Other Interactive online activities
- Reports

Course Policies:

A- Attendance policies:

The maximum allowed absences are 15% of the lectures.

B- Absences from exams and handing in assignments on time:

The first and second exams can be retaken based on approval of the excuse by the instructor's discretion.

Not handing in assignments on time will incur penalties.

C- Academic Health and safety procedures

D- Honesty policy regarding cheating, plagiarism, and misbehavior:

Cheating, plagiarism, and misbehavior result in zero grades grade and further disciplinary actions may be taken.

E- Grading policy:

- All homework is to be posted online through the e-learning system.
- Exams will be marked within 72 hours and the marked exam papers will be handed to the students.

F- Available university services that support achievement in the course: **Labs, Library.**

Required equipment:

Class room, Data show

Assessment Tools implemented in the course:

- ☐ Midterm Written Exam. 30%
- ☐ Final Written Exam. 50 %
- ☐ Lab Reports. 15%
- ☐ Participation in Lab. 5%

Responsible Persons and their Signatures:

Course Coordinator		**Completed Date**	/ /
		Signature	

Received by (Department Head)		**Received Date**	/ /
		Signature	