



Philadelphia University

Faculty of Engineering - Electrical Engineering Department

First Semester 2022-2023

Course Details:

Title: Electric Circuits II (610212)
Prerequisite: Electric Circuits I (610211)
Credit Hours: 3 credit hours (16 weeks per semester, approximately 45 contact hours)

Textbook: James Nilson and Susan Riedel, Electric Circuits, 10th edition, 2014, Pearson.
 W. Hayt, J. Kemmerly and Durbin, Engineering Circuits Analysis, 6th edition,

References: Boston Mcgraw-Hill Higher Education, 2006.

Course Description:

The main goals of this course is to introduce concepts of electric circuits by studying the following main topics; electric circuit elements, techniques of circuit analysis, Transient conditions, and the steady states analysis. At the completion of this course the student should be able to:

- Understand the principle of electric circuit design and application.
- Comprehend the principles of DC and AC.
- Understand the techniques to analyze different circuit configuration.

Instructor: Eng. Ahlam Damati
 Email: adamati@philadelphia.edu.com

Course Outlines:

Week	Topic
1	Mathematical revision
2	Periodic Waves: Square, Triangular, and Sine Waves
3	Average and RMS values
4, 5	Basic Concepts of AC Theory, series-parallel AC circuits
6	Mesh Current, Nodal and Thevenin's Analysis
7	Phasor (vector) diagram
8, 9	Power, Power Triangle, and Power factor
10	Power factor improvement and maximum power transfer
11	Star -to- Delta Connections
12	Resonance in AC Circuits
13, 14	Balanced Three Phase Circuits, Line and Phase Currents and Voltages
15, 16	Mutual Inductance, Dot Notation

Course Learning Outcomes with reference to ABET Student Outcomes:

Upon successful completion of this course, student should:

1.	Understand periodic waves and sinusoidal current and voltage.	1
2.	Understand power calculations.	1
3.	Understand balanced three- phase calculations.	1
4.	Comprehend mutual inductance analysis	1
5.	Deal with resonance with AC circuits	1

Assessment Guidance:

Evaluation of the student performance during the semester (total final mark) will be conducted according to the following activities:

Sub-Exams:	The students will be subjected to a midterm scheduled written exam during the semester.
Quizzes:	Quizzes of (10-15) minutes will be conducted during the semester. The materials of the quizzes are set by the lecturer.
Homework and projects:	Tutorials sheets will be handed out to the students and homework should be solved individually and submitted before or on a set agreed date. Student may be assigned to present project(s). Cheating by copying homework from others is strictly forbidden and punishable by awarding the work with zero mark.
Collective Participation:	Brain storming and collective discussions will be carried out during any lecture. Individual student will be assessed accordingly.
Final Exam:	The students will undergo a scheduled final exam at the end of the semester covering the whole materials taught in the course.

Grading policy:

Midterm Exam	30%
Semester Work (Quizzes, Homework, Projects...)	30%
Final Exam	40%
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Total:	100%

Attendance Regulation:

The semester has in total 45 credit hours. Total absence hours from classes and tutorials must not exceed 15% of the total credit hours. Exceeding this limit without a medical or emergency excuse approved by the deanship will prohibit the student from sitting the final exam and a zero mark will be recorded for the course. If the excuse is approved by the deanship the student will be considered withdrawn from the course.

September 2022