



# Philadelphia University

Faculty of Engineering - Department of Electrical Engineering

## 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)

**Support Material**

- Pre-set Tutorials in order to solve problems set
- One to one consultations if needed

**Textbook:** James Nilson and Susan Riedel, Electric Circuits, 10<sup>th</sup> edition, 2014, Pearson.

**References:**

- W. Hayt, J. Kemmerly and Durbin, Engineering Circuits Analysis, 6<sup>th</sup> edition, 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

## **Course Outlines:**

Week	Topic
1	Mathematical revision
2	Periodic Waves: Square, Triangular, and Sine Waves
3	Average and r.m.s values
4, 5	Basic Concepts of AC Theory, series-parallel AC circuits
6	Mesh Current, Nodal and Thevenin 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.	[a]
2.	Understand power calculations.	[a]
3.	Understand balanced three- phase calculations.	[a, e]
4.	Comprehend mutual inductance analysis	[a, e]
5.	Deal with resonance with AC circuits	[a, k]

## 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 two scheduled written exams, first exam and second exam during the semester. Each exam will cover materials given in lectures in the previous 3-4 weeks.

**Quizzes:** (3-5) 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:

First Exam	20%
Second Exam	20%
Homework and projects	5%
Quizzes and participation	15%
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.

May, 2018