



University of Nicosia, Cyprus

<b>Course Code</b> ECE-103	<b>Course Title</b> Electric Circuits II Lab	<b>ECTS Credits</b> 2
<b>Department</b> Engineering	<b>Semester</b> Fall, Spring	<b>Prerequisites</b> ECE-101
<b>Type of Course</b> Required	<b>Field</b> Engineering	<b>Language of Instruction</b> English
<b>Level of Course</b> 1 <sup>st</sup> Cycle	<b>Year of Study</b> 1 <sup>st</sup>	<b>Lecturer(s)</b> Andreas Serghiou
<b>Mode of Delivery</b> Face-to-face	<b>Work Placement</b> N/A	<b>Co-requisites</b> ECE-102

**Objectives of the Course:**

The main objectives of the course are to:

- Introduce the student to the analysis, design and experimentation with ac electric circuits.
- Bridge the gap between the idealized situations presented in the class and the real world of the laboratory.
- Further elaborate on electronic measurement techniques and instrumentation.
- Help the students to enhance their understanding of test equipment while stressing its use, application, maintenance and calibration.
- Provide the student with the basic knowledge of how computer simulation and methods are used for the analysis of the experimental data.
- Improve the student's ability to present experimental results and findings in a proper format of scientific report.
- Teach the students how to integrate accumulated knowledge and practical skills in an assigned project.

**Learning Outcomes:**

After completion of the course students are expected to be able to:

- Design, set up, analyze and troubleshoot simple ac circuits.
- Integrate accumulated knowledge and practical skills in an assigned project.
- Use computer simulation and apply computer techniques to the analysis of experimental data.
- Validate models, laws and theorems through laboratory experimentation.
- Analyze experimental results.
- Demonstrate the ability to safely work with electricity and effectively use and calibrate laboratory equipment and instruments.
- Demonstrate the ability to work in teams and effectively communicate with others.

**Course Contents:**

1. Digital electronic meters.
2. The digital oscilloscope.
3. Experiments on:
  - Operational Amplifiers
  - R-C Response to a Square-Wave input
  - Frequency Response of R, L and C Components
  - The Oscilloscope and Phase Measurements
  - Thevenin's Theorem and Maximum Power Transfer (ac)
  - Series Resonant Circuits
  - Filters
  - The Transformer
  - Currents and Voltages in Balanced Three-Phase Systems
  - Power Measurements in Three-Phase Systems
4. Project

**Learning Activities and Teaching Methods:**

The student is given a direct contact with the instructor, and thus the advantages of close direction and personal discussion of ideas, experimental methods and techniques.

**Assessment Methods:**

Methodology and conduct during execution of the experiment, Lab reports, Project, Final exam.

**Required Textbooks/Reading:**

<b>Authors</b>	<b>Title</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Boylestad and Kousourou	Experiments in Circuit Analysis to Accompany Introductory Circuit Analysis	Prentice Hall	2007	0132196158

**Recommended Textbooks/Reading:**

<b>Authors</b>	<b>Title</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Robert L. Boylestad	Introductory Circuit Analysis	Prentice Hall	2007	0131988263