



## Course Syllabus

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
ECE-211	Electronics I Lab	2
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
ECE-101	Engineering	Fall, Spring
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Required	Engineering	English
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
1 <sup>st</sup> Cycle	Prof. Anastasis Polycarpou	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face-to-Face	N/A	ECE-210

### Course Objectives:

The main objectives of the course are to:

- Accompany and reinforce concepts introduced during the Electronics I lecture course;
- Provide students with hands-on experience with simple electronic devices and circuits;
- Relate large and small-signal models of diodes, bipolar transistors and JFETs/MOSFETs to their actual behavior in practical electronic circuits;
- Develop the necessary practical skills required for constructing electronic circuits and making measurements using various lab instruments;
- Introduce students to common safety and professional practices in electronic engineering;
- Assist students develop written communications skills by writing formal laboratory reports focusing on technical content, organization, completeness, clarity, presentation, accuracy, and promptness.

### Learning Outcomes:

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

- Demonstrate the ability to use standard laboratory instruments and equipment for building, troubleshooting and measuring the performance of electronic circuits containing semiconductor diodes and transistors;
- Measure and record specific device parameters that allow accurate results and sufficient detail suitable for further circuit analysis;
- Demonstrate critical reasoning and problem solving abilities through the use of software tools to simulate and troubleshoot the dc operation of fundamental electronic circuits;

- Communicate their experimental work and findings effectively in written form through a scientific laboratory report;
- Exchange and interact effectively with other students in small teams in ways that contribute to developing working relationships and the achievement of common goals;
- Demonstrate laboratory safety;
- Manage efficiently the use of time and other resources to complete experiments.

**Course Content:**

- Laboratory safety guidelines and procedures
- Effective technical report writing techniques
- Overview and demonstration of circuit analysis software

Experiments on:

- Diode characteristics
- Zener diodes
- Large-signal diode circuits
- Small-signal diode circuits
- Clipping and clamping circuits
- Half-wave and full-wave rectifiers
- Common base characteristics
- Common emitter/common collector characteristics
- DC biasing for the BJT
- Biasing cascaded transistors
- JFET/MOSFET biasing

**Learning Activities and Teaching Methods:**

Briefing on the theoretical and technical contents of the experiments, presentation of supplemental information, student discussions, direct instruction and supervision of laboratory work.

**Assessment Methods:**

Lab reports, lab performance and methodology, final examination.

**Required Textbooks / Readings:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Experiments in Electronic Devices and Circuits	Theodore F. Bogart James W. Brown	Prentice Hall	2004	978-0130173898
Instructor's notes				

**Recommended Textbooks / Readings:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Electronic Devices and Circuits	Theodore F. Bogart, Jeffrey S. Beasley, Guillermo Rico	Pearson Education	2003	978-0131111424
Microelectronic Circuits	A. S. Sedra, K. C. Smith	Oxford University Press	2014	978-0199339136