UNIVERSITY of NICOSIA

Course Syllabus

Course Code	Course Title	ECTS Credits
ECE-213	Electronics II Lab	2
Prerequisites	**Department**	**Semester**
ECE-211	Engineering	Fall, Spring
Type of Course	**Field**	**Language of Instruction**
Required	Engineering	English
Level of Course	**Lecturer(s)**	**Year of Study**
1st Cycle	Dr Andreas Michaelides	2nd
Mode of Delivery	**Work Placement**	**Co-requisites**
Face-to-face	N/A	ECE-212

Course Objectives:

The main objectives of the course are to:

- Accompany and reinforce concepts introduced during the Electronics II lecture course.
- Provide students with hands-on experience with small-signal transistor amplifiers and operational amplifier applications.
- Relate small-signal models of bipolar transistors and JFETs 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.
- Provide the student with the experience of designing, simulating, constructing, testing and debugging a multistage amplifier circuit.
- 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:

- Demonstrate the ability to use standard laboratory instruments and equipment for building, troubleshooting and measuring the small-signal performance of electronic circuits containing transistors and operational amplifiers.
- Measure and record specific parameters to obtain accurate results containing sufficient details that enable analysis.
- Possess the ability to analyze and design standard transistor amplifiers for low, mid-band and high frequency applications.
- Apply the op-amp as a building block for a multitude of applications.
- Demonstrate critical reasoning and problem solving abilities through the use of software tools to simulate and troubleshoot the dc and small-signal operation of fundamental electronic amplifier circuits.
- Work individually on a direct coupled multistage BJT amplifier design project to employ and demonstrate acquired knowledge on setting bias points for each stage and meeting various ac specifications.
- 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
- Effective technical report writing techniques

Experiments on:

- Common Base Amplifier
- Common Emitter Amplifier
- Common Collector Amplifier
- h - Parameters
- RC Coupled Multistage Amplifier & Darlington Pair Amplifier
- Operational Amplifier/Summation, Integration and Differentiation
- Lower Cutoff Frequency
- Upper Cutoff Frequency
- JFET Amplifier
- Comparators
- Oscillators

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:

Title	Author(s)	Publisher	Year	ISBN
Experiments in Electronic Devices and Circuits	Theodor F. Bogart James W. Brown	Prentice Hall	2004	0-13111143-4
Electronic Devices and Circuits	Theodore F. Bogart Jeffrey S. Beasley Guillermo Rico	Prentice Hall	2004	0-13111142-6

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Microelectronic Circuits	A. S. Sedra, K. C. Smith	Oxford University Press	2006	0-19-511663-1