Philadelphia University

Faculty of Engineering – Department of Communications and Electronics Engineering

Course Information

Title:	Electronics II (650342)
Prerequisite:	Electronics I (650242)
Credit Hours:	3 credit hours (16 weeks per semester, approximately 48 contact hours)
Textbook:	"Electronic Devices and Circuit Theory", 8th edition, R. Boylestad, 2010
References:	"Microelectronics: Circuit Analysis and Design", Donald A. Neamen, 2010
Catalog Description:	The course aims to provide students with capabilities to understand and deal with different types of amplifiers as well as their frequency response, feedback, and stability. The course will cover the efficiency of power and operational amplifiers and their applications as well as the analysis and design of waveform signal generators and oscillators.

Course Topics

Week	Topic
1	Course Introduction, review of Transistor Amplifier Circuits
2 – 4	Multistage Amplifiers Analysis and Applications
5, 6	Compound Configurations of Transistors and Amplifiers
7	IC Biasing, Current Mirror, Wilson Current Source, Widlar Current Source
8, 9	Differential Amplifiers
10	Real Operational Amplifiers and their Applications
11 – 13	Power Amplifier and their Classes
14, 15	Amplifier Frequency Response Characteristics and Applications
16	Feedback and Stability of Amplifiers

Course Learning Outcomes and Relation to ABET Student Outcomes:

Upon successful completion of this course, students should be able to:

1.	Design transistor amplifiers, power amplifiers, and oscillators to required specifications.	[a, c, e]
2.	Use operation amplifiers in different electronic applications and apply worst case analysis.	[a, c, e]
3.	Understand the different types of feedback in an amplifier and their uses in gain stabilization, noise reduction, input/output impedance control, and bandwidth extension.	[a]
4.	Evaluate the effects of coupling and bypass capacitors and parasitic capacitances that limit the cutoff frequencies for transistor amplifiers.	[a]
5.	Model and simulate amplifier circuits using CAD tools.	[c, e, k]

Assessment Instruments:

Evaluation of students' performance (final grade) will be based on the following categories:

Exams: Two in class written midterm exams will be given. Each will cover about 5-weeks of lectures.

Quizzes: At least 3 ten minute quizzes will be given to the students during the semester. These quizzes will cover material discussed during the previous lectures.

Homework: Weekly problem sets will be given to students with the exception of weeks that include an exam or quiz. Homeworks should be solved individually and submitted in class on their due dates.

Projects: Two design projects will be given to students. The first project is due the week after the first midterm exam and the second project is due the week after the second midterm exam. Students are required to work in small groups to design an amplifier circuit and use simulation CAD tools to verify their results, such as SPICE.

Final Exam: The final exam is comprehensive and will cover all the class material.

Grading policy:

First Exam	20%
Second Exam	20%
Homework and Quizzes	20%
Projects	10%
Final Exam	30%
Total:	100%

Attendance policy:

Absence from classes and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse, acceptable to and approved by the Dean of the relevant college/faculty, shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

February, 2017