EEO 353: Electronics Laboratory II

Spring 2017

2016-2017 Catalog Description:

Electronics Laboratory II builds upon Electronics Laboratory I and covers optoelectronic devices such as, IR LED and photo-transistor. Advanced circuit concepts such as, negative feedback and differential amplifier and oscillator circuits. There are three design projects: the multi-stage amplifier project, the radio frequency project, and the micro controller project. Students also practice how to communicate effectively through writing reports.

Credit Hours: 3

Course Designation: Required Course

Text Books: Laboratory Manual, available on blackboard.

Prerequisites: EEO352

Coordinator: Pao-Lo Liu

Goals: After successfully completing the course, students will be ready to: 1) design application circuits meeting specific design goals, 2) ready to conduct design projects and deliver project presentations.

Course Learning Outcomes: Upon completion of the course, students have gained

- ability to apply knowledge of mathematics, science and engineering;
- ability to conduct experiments and analyze data
- ability to design circuits to meet specific goals
- awareness of professional society and ethical responsibility
- communication skills

Topics Covered:

Activity 1.	Negative Feedback and Push-Pull Amplifier
Activity 2.	Differential Amplifier
Activity 3.	Multiple Stage Amplifier Project
Activity 4.	Oscillators
Activity 5.	Infrared Transmitter and Receiver
Activity 6.	Radio Frequency Communications Project
Activity 7.	Micro Controller Embedded Systems Project

Activity 8.	Active Filter and Pulse Width Modulation using Op Amps
Activity 9.	Electrocardiogram

Class/laboratory Schedule: 1 online lecture per experiment – students spend additional time to conduct experiments and carry out projects.

Student Outcomes	**% contribution***
❑ (a) an ability to apply knowledge of mathematics, science and engineering	
❑x (b1) an ability to design and conduct experiments	35
❑x (b2) an ability to analyze and interpret data	5
❑x (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	35
❑ (d) an ability to function on multi-disciplinary teams	
❑ (e) an ability to identify, formulate, and solve engineering problems	
❑x (f) an understanding of professional and ethical responsibility	5
❑x (g) an ability to communicate effectively	20
❑ (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
❑ (i) a recognition of the need for, and an ability to engage in life-long learning	
❑ (j) a knowledge of contemporary issues	
❑ (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	
❑ Any other outcomes and assessments?	

* Assume that the total contribution of any course will be 100%. Use the right hand column to indicate the approximate percent that the left hand columns contribute to the overall course.

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