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


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:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Project and Concept</th>
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<tbody>
<tr>
<td>Activity 1</td>
<td>Negative Feedback and Push-Pull Amplifier</td>
</tr>
<tr>
<td>Activity 2</td>
<td>Differential Amplifier</td>
</tr>
<tr>
<td>Activity 3</td>
<td>Multiple Stage Amplifier Project</td>
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<td>Activity 4</td>
<td>Oscillators</td>
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<tr>
<td>Activity 5</td>
<td>Infrared Transmitter and Receiver</td>
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<td>Activity 6</td>
<td>Radio Frequency Communications Project</td>
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<tr>
<td>Activity 7</td>
<td>Micro Controller Embedded Systems Project</td>
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</table>
Class/laboratory Schedule: 1 online lecture per experiment – students spend additional time to conduct experiments and carry out projects.

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<tr>
<th>Activity 8.</th>
<th>Active Filter and Pulse Width Modulation using Op Amps</th>
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<tbody>
<tr>
<td>Activity 9.</td>
<td>Electrocardiogram</td>
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**Student Outcomes**

- (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.

**Document Prepared by:** Pao-Lo Liu
**Date:** May, 2017