EEC 312: Electric Circuits Laboratory

Catalog Description: EEC 312 Electric Circuits Laboratory (0-3-2).
Pre-requisite: EEC 310.
Co- or pre-requisite: EEC 311.
Selected laboratory experiments in electric circuits.


Coordinator: Dr. Murad Hizlan, Associate Professor
Department of Electrical Engineering and Computer Science

Course Objectives: Introduce students to test & measurement equipment and practices for electric circuits. Solidify understanding of the theoretical concepts presented in EEC 310 and EEC 311 through hands-on experience.

Expected Outcomes: Upon completion of this course the student should be able to
1. Use basic test and measurement equipment such as signal generators, oscilloscopes and meters.
2. Build and verify electric circuits on breadboards using established practices.
3. Employ test & measurement equipment and circuit construction to verify basic circuit theory, including Ohm’s Law, DC power, series and parallel circuits, superposition and Thevenin’s theorems, circuit analysis methods and $RC$ & $RL$ circuits.

Fulfills The Following Electrical Engineering Program Objectives and Outcomes:

Objectives:
1) Practice electrical engineering in one or more of the following areas: communications, computers, controls, power electronics, and power systems.
2) Define and diagnose problems, and provide and implement electrical engineering solutions in an industrial environment.
3) Collaborate with others as a member or as a leader in an engineering team.

Outcomes:
(a) An ability to apply knowledge of mathematics, science, and engineering to general electrical engineering and, in particular, to one or more of the following areas: communications, computers, controls, power electronics, and power systems.
(b) An ability to design and conduct electrical engineering experiments, as well as to analyze and interpret data.
(c) An ability to design a system, component, or process to meet desired needs.
(g) An ability to communicate effectively.
(k) An ability to use the techniques, skills, and modern engineering tools necessary for electrical engineering practice.

**Contribution of Course to Meeting the Professional Component:**
Math & Basic Science: 0 credits;
Engineering Topics: 2 credits;
General Education: 0 credits

**Prerequisites by Topic:**
1. Working knowledge of circuit laws
2. DC circuit analysis techniques

**Pre-/Co-requisites by Topic:**
1. Sinusoids and phasors
2. Steady-state AC circuit analysis techniques
3. RC and RL circuits

**Topics:**
Lab # refers to the particular experiment number in the textbook.

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<th>Week</th>
<th>Experiment</th>
<th>Topic</th>
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<td>Intro. to Test &amp; Measurement Equip. &amp; Circuit Construction</td>
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<td>Lab 11</td>
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<td>Lab 12</td>
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<td>Lab 15</td>
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**Total** 45

**Computer Usage:** Students are expected to use word processing package for the preparation of their laboratory reports.

**Design Projects:** Last two laboratory experiments.

**Non-design Projects:** None.

**Prepared by:** Dr. Murad Hizlan

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