Course: ECE 331
Credit Hours: 3
Course Title: Principals of Electrical Engineering
Course Description:

Concepts, units and methods of analysis in electrical engineering. Analysis of d-c and a-c circuits, characteristics of linear and non-linear electrical devices; principles of Operational Amplifiers; transformers; motors; and filters.

Prerequisite(s): MA 241, PY 208
Textbook(s) and/or other required material:


Course objectives. By the end of this course, the student should be able to (use demonstrative verbs):

1. Analyze AC and DC circuits using Kirchhoff's Laws.
2. Solve basic circuit problems using nodal and mesh analysis.
3. Perform the analysis of first order R-C and R-L transient circuits.
4. Use transfer functions and Bode plots to analyze Filter circuits in the frequency domain.
5. Explain AC steady-state power and basic principles of power delivery.
6. Analyze currents and voltages in non-linear diode circuits.
7. Perform analysis of motors.

Topics covered:

2. Resistor Networks. (2)
3. Node Voltage Analysis(1)
4. First Order R-C and R-L Transient Circuits. (2)
5. AC Sinusoidal Circuit Analysis. (8)
6. Filters. (5)
7. Operational Amplifiers. (2)
8. Diodes.(3)
9. Motors.(3)
10. Transistors.(1)

Class/laboratory schedule (sessions per week and duration of each session):

Three 50-minutes lectures per week.

Contribution of course to meeting the requirements of Criterion 5 - other:

Contribution of course to meeting the requirements of Criterion 5 - math and basic
# ECE 331 Syllabus

### Contribution of course to meeting the requirements of Criterion 5 - engineering topics:

3 hours.

### Contribution of course to meeting the requirements of Criterion 5 - general education:

### Relationship of this course to program learning outcomes:

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Level of Instruction</th>
<th>Related Course Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome A</td>
<td>Major</td>
<td>Students analyze d-c and a-c circuits. They characterize linear and non-linear electrical devices, study transfer functions and analyze circuits in the frequency domain.</td>
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<tr>
<td>Outcome B</td>
<td>N/A</td>
<td>Students solve Electrical Engineering problems using the analysis tools they are given in the course.</td>
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<tr>
<td>Outcome C</td>
<td>N/A</td>
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<tr>
<td>Outcome D</td>
<td>N/A</td>
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</tr>
<tr>
<td>Outcome E</td>
<td>Major</td>
<td>Students from other engineering departments learn basic electrical engineering analysis techniques to satisfy their program criteria.</td>
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<tr>
<td>Outcome F</td>
<td>N/A</td>
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<tr>
<td>Outcome G</td>
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<td>Outcome H</td>
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<td>Outcome I</td>
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<tr>
<td>Outcome K</td>
<td>Intermediate</td>
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**Person who last prepared this description and date of preparation:**
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<td>Ozturk, Hatice Orun (hoo) - Aug 17th, 2009 (04:53pm)</td>
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