EE-2111  
Electric Circuits I

Curricular Designation:  
EE: required  
CpE: required

Catalog Description:  
EE 2111 - Electric Circuits  
This course will cover basic electrical concepts, resistive circuits, node and mesh analysis techniques, superposition, Thevenin and Norton equivalents, maximum power transfer, capacitance and inductance, AC steady-state analysis, transient analysis of first-order circuits and op amps.

Credits: 3.0  
Lec-Rec-Lab: (3-0-0)  
Semesters Offered: Fall Spring Summer  
Pre-requisites: EE 1110 and MA 2160

Textbooks(s) and/or Other Required Materials:  

Prerequisites by Topic:  
1. Familiarity in solving linear algebraic equations.  
2. Familiarity with complex numbers and complex number arithmetic.  
3. Familiarity in solving first order differential equations with constant coefficients.

Course Objectives:  
1. Mastery of dc circuit analysis by node and mesh methods.  
2. Mastery of ac circuit analysis using phasors.  
3. Familiarity with network theorems including superposition and Thevenin's equivalents.  
4. Introduction to the transient analysis of source-free and dc-driven first-order circuits.  
5. Introduction to ideal op amps.

Topics Covered:  
1. Circuit elements, sources, variables and laws (Kirchhoff's, Ohm's)  
2. DC circuit analysis by node and mesh methods.  
4. Inductors and capacitors.  
5. Phasors and ac analysis of circuits.  
6. Transient analysis of first-order circuits.  
7. Analysis of circuits containing ideal op amps
**Relationship of the Course Content to Program Outcomes:**

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<thead>
<tr>
<th>Outcome</th>
<th>Important</th>
<th>Moderately</th>
<th>Minimally</th>
<th>Important</th>
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<tbody>
<tr>
<td>a</td>
<td>an ability to apply knowledge of mathematics, science and engineering</td>
<td>x</td>
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<td>b</td>
<td>an ability to design and conduct experiments, as well as to analyze and interpret data</td>
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<td>c</td>
<td>an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, health and safety, manufacturability and sustainability</td>
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<td>d</td>
<td>an ability to function on multi-disciplinary teams</td>
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<tr>
<td>e</td>
<td>an ability to identify, formulate and solve engineering problems</td>
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<td>f</td>
<td>an understanding of professional and ethical responsibility</td>
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<td>an ability to communicate effectively</td>
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<td>h</td>
<td>the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context</td>
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<td>i</td>
<td>a recognition of the need for, and an ability to engage in life-long learning</td>
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<td>j</td>
<td>a knowledge of contemporary issues</td>
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<td>k</td>
<td>the ability to use the techniques, skills, and modern engineering tools necessary for the practice of electrical engineering</td>
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**Contribution of Course to Meeting Degree Requirements:**

3 Credit Hours – Engineering Topics

**Class/Laboratory Schedule** (note: 1 hour = 50 minutes):
Lecture: 42 hours = 3 hours/week for 14 weeks

**Prepared by:**
Ashok Ambardar, Associate Professor, November 29, 2016