EE210 Electric Circuits I

Catalog Data

Circuit Analysis I (3–0–3) – 3 credits
Units and definitions; experimental laws and simple circuits; useful techniques of circuit analysis; inductance and capacitance; source-free RL and RC circuits; application of the unit step forcing function; RLC circuits; the sinusoidal forcing function; the phasor concept; the sinusoidal steady-state response.
Pre-requisites: 921020; PreCo: 902030

Textbook


Reference


Coordinator

Dr. Abdel-Rahman Jaradat
http://www.just.edu.jo/~amjaradat

Course Objectives

1. Ability to apply basic circuit laws and rules.
2. Understand and apply circuit theorems.
3. Ability to analyze first and second order transient circuits.
4. Ability to analyze steady-state sinusoidal circuits.

Pre-Requisites by Topic
1. Calculus
2. Ordinary Differential Equations
3. Electricity and Magnetism

Topics
1. Introduction to Circuit Analysis and Design 1.5 Hours
2. Basic Components and Electric Circuits 1.5 Hours
3. Voltage and Current Laws 6 Hours
4. Basic Nodal and Mesh Analysis 6 Hours
5. Circuit Analysis Techniques 6 Hours
6. The Operational Amplifier 3 Hours
7. Capacitors and Inductors 3 Hours
8. Basic RL and RC Circuits 6 Hours
9. The RLC Circuit 3 Hours
10. Sinusoidal Steady State Analysis 6 Hours

Computer Usage

Matlab and PSpice Circuits Simulation

Estimated Content
Engineering Science 3.0 Credits
Engineering Design 0.0 Credits

Prepared by
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Dr. Fathi Amoura

Date 2010.09.19
## Mapping of course (EE210) objectives to program objectives

<table>
<thead>
<tr>
<th>Course Objective</th>
<th>Delivery Methods</th>
<th>Assessment Methods</th>
<th>(a)</th>
<th>(b)</th>
<th>(c)</th>
<th>(d)</th>
<th>(e)</th>
<th>(f)</th>
<th>(g)</th>
<th>(h)</th>
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</thead>
<tbody>
<tr>
<td>1. Ability to apply basic circuit laws and rules.</td>
<td>Lectures, tutorials.</td>
<td>Homework, quizzes, Exams.</td>
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<td>2. Understand and apply circuit theorems.</td>
<td>Lectures, tutorials.</td>
<td>Homework, quizzes, Exams.</td>
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<tr>
<td>3. Ability to analyze first and second order transient circuits.</td>
<td>Lectures, tutorials.</td>
<td>Homework, quizzes, Exams.</td>
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<td>4. Be able to use PSpice to analyze simple electric circuits in DC, AC, and transient.</td>
<td>Lectures, tutorials.</td>
<td>Homework, quizzes, Exams.</td>
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<td>5. Ability to analyze steady-state sinusoidal circuits</td>
<td>Lectures, tutorials.</td>
<td>Homework, quizzes, Exams.</td>
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### ABET a–k Engineering and Technology program objectives

- **(a)** An ability to apply knowledge of mathematics, science, and engineering
- **(b)** An ability to design and conduct experiments, to analyze and interpret data
- **(c)** An ability to design a system, component, or process to meet desired needs
- **(d)** An ability to function on multi-disciplinary teams
- **(e)** An ability to identify, formulate, and solve engineering problems
- **(f)** An understanding of professional and ethical responsibility
- **(g)** An ability to communicate effectively
- **(h)** The broad education necessary to understand the impact of engineering solutions in a global 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