

SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: ENGR 320 Department: Engineering & Sci. Transfer

Course Title: Circuit Analysis 1 Semester: Spring Year: 2001

Objectives/Competencies

| Course Objective | Competencies |
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| 1. Basic concepts of circuit analysis | <ol style="list-style-type: none">1. Identify circuit elements.2. Describe Ohm's Law.3. Describe Kirchoff's Law.4. Analyze single loop circuits.5. Analyze single node circuits6. Describe series and parallel combinations.7. Solve circuits with dependent sources. |
| 2. Techniques of circuit analysis | <ol style="list-style-type: none">1. Apply branch circuit analysis.2. Solve using Nodal analysis.3. Solve using Mesh analysis4. Solve using Loop analysis.5. Write a SPICE program to solve a circuit. |
| 3. Circuit analysis theorems | <ol style="list-style-type: none">1. Describe Operational Amplifiers.2. Explain Superposition.3. Apply Source Transformations.4. Analyze using Thevenin's and Norton's Theorems |

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| 4. Energy storage devices | 5. Compute the maximum power transfer. 1. Describe capacitors and their properties. 2. Describe inductors and their properties. 3. Explain Ramp and Step functions. |
| 5. First order system | 1. Explain complete response. 2. Analyze RC and RL source free circuits. 3. Explain pulse response. |
| 6. Second order circuits | 1. Write a mathematical development of response equations. 2. Analyze an RLC source free circuit. 3. Compute the response due to constant forcing functions. |