**DESCRIPTION:**
A detailed study of dc electric circuits and related bilateral devices. Conventional and computer simulation circuit analysis will be utilized.

**PREREQUISITES:** Two years of high school algebra
This course, ENT 192, is a prerequisite for ENT 193 Circuit Analysis II and ENT 196 Electronics. This is a required course for Electrical and Computer ENT A.S. degree.

**TEXT MATERIAL:**
CD Text w/Lab kit, Seifried & Summers, Circuit Analysis I, OrchEd, 2008 including Personal Laboratory Trainer, Mini Lab I, OrchEd, 2004 Rev. 2008

**COURSE OBJECTIVE:**
The student will develop an understanding of the principals and concepts of electricity, current flow; energy, power, work, transient effects, ac and dc circuit analysis, and analysis by computer simulation.

**COURSE OUTCOMES:**
The student will demonstrate knowledge of and ability to use:
1. Electrical components and quantities
2. Definitions of voltage, current, electrical resistance and power
3. Ohm’s law, electrical energy and power, Kirchhoff’s Laws
4. Series circuit analysis
5. Parallel circuit analysis
6. Series-parallel circuit analysis
7. Circuit theorems (Superposition, Thevenin’s and Norton’s theorems)
8. Mesh and nodal analysis techniques
9. Properties of capacitors and their behavior under DC conditions
10. Properties of inductors and their behavior under DC conditions

**STUDENT OUTCOMES ADDRESSED BY THIS COURSE:**
a. An ability to apply knowledge, techniques, skills and modern tools of Electrical and Computer Engineering Technology.

c. an ability to conduct standard tests and measurements, and to conduct, analyze, and interpret experiments
e. an ability to identify, analyze, and solve electrical and computer engineering technology problems

**MEETING PLACE AND TIME:**
Time:
Place:

**INSTRUCTOR:**
Office Hours:

**METHOD OF EVALUATION:**
The students will be evaluated on classroom and laboratory participation, homework, and examinations. The student must meet minimum standards for laboratory work and assignments for satisfactory completion of the course. Grade will be determined as follows.

<table>
<thead>
<tr>
<th>Tests</th>
<th>40%</th>
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<tbody>
<tr>
<td>Homework</td>
<td>5%</td>
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<tr>
<td>Quizzes</td>
<td>5%</td>
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<tr>
<td>Labs</td>
<td>20%</td>
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<tr>
<td>Lab Exam</td>
<td>10%</td>
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<tr>
<td>Final Exam</td>
<td>20%</td>
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Course grade: 90-100% = A, 80-89% = B, 70-79% = C, 60-69% = D, below 60% = F
NOTES:
1. Labs are to be done individually
2. The instructor may make changes as deemed necessary.
3. The order may be changed depending upon students’ instructor’s needs.
4. Homework assignments, quizzes and laboratory reports are due at the beginning of the next class meeting.
5. Late submissions of assignments will result in a reduced grade.
6. This class is being offered in Hybrid form meaning that some of the class may be online and some will be on-campus. The lab instructions, lecture notes, and homework are on the course CD. Quizzes, homework and quiz answers, and lecture recordings will be online on Niihka. Tests and labs will be done on campus.

COURSE SCHEDULE AND TOPICS:

<table>
<thead>
<tr>
<th>Module</th>
<th>Date</th>
<th>Topic</th>
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</table>
| 1      |      | 1. Current and Voltage  
         |      | Lab 1: Electronic circuit construction |
|        |      | **No Class** |
| 2      |      | 2. Resistance  
         |      | Lab 1: Electronic circuit construction (Cont.) |
| 3      |      | 3. Ohm’s Law Power and Energy  
         |      | Test 1  
         |      | Lab 2: Resistance and TINA |
| 4      |      | 4. Series Circuits, Except Part II, 10  
         |      | Lab 4: Series circuits |
| 5      |      | 5. Parallel Circuits  
         |      | Lab 5: Parallel circuit applications |
| 6      |      | 6. Series-parallel networks  
         |      | Lab 6: Series-parallel circuits |
| 7      |      | 7. Network theorems  
         |      | Test 2  
         |      | Lab 7: Network Theorems  
         |      | **No Class – Spring Break** |
| 8      |      | 8. Mesh and nodal analysis  
         |      | Lab 8: Loop and nodal analysis |
| 9      |      | 9. Capacitance  
         |      | Lab 9: Build a capacitor |
| 10     |      | 10. Capacitive transients  
         |      | Test 3  
         |      | Lab 10: Using transients to measure the value of an unknown capacitor |
| 11     |      | 11. Magnetic Circuits  
         |      | Lab 11: Magnetic fields |
| 12     |      | 12. Inductors and Transients  
         |      | Lab 12: Varying inductance |
| 13     |      | 13. Introduction to AC. Quiz 1-12 only  
         |      | Test 4 |
| 14     |      | 14. Review and evaluation  
         |      | Lab 13 The Oscilloscope |
| 15     |      | 15. Final Exam |

MIAMI UNIVERSITY LEARNING COMMUNITY:
Miami University is committed to fostering a supportive learning environment for all students irrespective of individual differences in gender, race, national origin, religion, handicapping condition, sexual preference, or age. Students should expect, and help create, a learning environment free from all forms of prejudice. Disparaging comments, sexist or racist humor, or questioning the academic commitment of students based upon these individual differences are behaviors that undermine our learning community. If such behaviors occur in class or lab, please seek the assistance of your instructor or department chair.