

**MIAMI UNIVERSITY
SCHOOL OF ENGINEERING AND APPLIED SCIENCE
DEPARTMENT OF ENGINEERING TECHNOLOGY**

ENT - 192 HA	Circuit Analysis-1	3
Course Number	Title	Credit hours

DESCRIPTION:

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

PREREQUISITES: High school algebra

This course is a prerequisite for ENT 193 Circuit Analysis II, ENT 196 Electronics and ENT 296 Programmable Logic Controllers.

TEXT MATERIAL:

Seifried & Summers, Circuit Analysis I - DC, CD Text w/Lab kit, OrchEd, Cat. No. CP-CA08
Mini Lab Trainer, OrchEd, Cat. No. TR-ML05

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

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.

Tests	40%
Homework	5%
Quizzes	5%
Labs	20%
Lab Exam	10%
Final Exam	20%

Course grade: 90-100% = A, 80-89% = B, 70-79% = C, 60-69% = D, below 60% = F

COURSE SCHEDULE AND TOPICS:

Week	Date	Topic
1 T		1. Current and Voltage
1 R		Lab 1: Build and test trainer
2 T		2. Resistance
2 R		Lab 2: Resistance and TINA
3 T		Test 1
		3. Ohm's Law Power and Energy
3 R		Lab 3: Wheatstone bridge
4 T		4. Series Circuits
4 R		Lab 4: Series resistor circuits
5 T		5. Parallel Circuits
5 R		Lab 5: Parallel circuit applications
6 T		6. Series-parallel networks
6 R		Lab 6: Series-parallel circuits
7 T		Test 2
		7. Network theorems
7 R		Lab 7: Network Theorems
8 T		8. Mesh and nodal analysis
8 R		Lab 8: Build and test mesh circuits
9 T		9. Capacitance
9 R		Lab 9: Build a capacitor
10 T		Test 3
		10. Capacitive transients
10 R		Lab 10: Using transients to measure the value of an unknown capacitor
11 T		11. Magnetic Circuits
11 R		Lab 11: Self Commutating DC Motors
12 T		12. Inductors and Transients
12 R		Lab 12: Understanding inductors
13 T		Test 4
13 R		13. Introduction to AC
14 T		Lab 13 Build an AM radio
14 R		14. Frequency response of basic elements
15 T		Review and evaluation
15 R		Lab Exam
16 T		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.

NOTES:

1. The instructor may make changes as deemed necessary.
2. The order may be changed depending upon students'/instructor's needs.
3. Homework assignments and laboratory reports are due at the beginning of the next class meeting.
4. Late submissions of assignments will result in a reduced grade.