

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

ENT - 192	Circuit Analysis-1	3
Course Number	Title	Credit hours
		Contact hours 4

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.

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

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:

Module	Date	Topic
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		Review and evaluation
		Lab 13 The Oscilloscope
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.