

**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:

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

PREREQUISITES: Two years of high school algebra including trigonometry.

TEXT MATERIAL:

Robert L. Boylestad, Introductory Circuit Analysis, 11th edition
Boylestad and Kousourou, Experiments in Circuit Analysis

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:

- Demonstrate knowledge of basic electrical circuits
- Knowledge of electrical engineering safety
- The ability to effectively use electrical/electronic measurement tools
- The ability to apply troubleshooting techniques in the identification and correction of faults in electric circuits
- Ability to conduct experiments, obtain data and make improvements in designs
- Proficiency in the concepts of electrical and computer engineering technology
- A commitment to quality, timeliness, and continuous improvement

OHIO TRANSFER MODULE OET 001 OUTCOMES:

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 (such as superposition, Thevenin's and Norton's theorems)
8. Mesh and/or 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:

Two sessions per week for 1:50 Minutes.

COURSE SCHEDULE AND TOPICS:

Week	Date	Topic	Homework
1		Chapter 1 Introduction 1.6, 1.7 Chapter 2 Current and Voltage	13,15,16,25 2,3,5, 9,11,16,22
1		Lab 1: TINA	
2		Lab 2: Handout: Measuring voltage and current	
2		Chapter 3 Resistance	1,3,6,10,13,40,45,52
3		Switch day - No class	
3		Lab-3: dc-2: Resistors and Color Code (Probs. 1 & 2 only)	
4		Chapter 4 Ohm's Law Power and Energy Quiz 1	1,2,4,6,7,11,22,24,32,39, 49,51,52,41,42
4		Lab 4: dc-3: Ohms Law (Excl. Part 4 & Probs.)	
5		Chapter 5 Series dc Circuits	1,5,7,9,10,18,19,21,22, 23,24,26,33
5		Lab 5: dc-4: Series Resistance	
6		Chapter 6 Parallel dc Circuits, Troubleshooting Quiz 2	1,2,3,4,8,9,10,13,15,16, 25,27,31,35,43,45
6		Lab 6: dc-6: Parallel Resistance Using TINA	
7		Chapter 7 Series-Parallel Circuits	1,2,3,9,10,13,15,25,26,27, 31,35
7		Lab 7: dc-9: Series-parallel dc Circuits	
8		Chapter 10.1-10.6 Capacitors	2,4,7,10,15
8		Mid-term Exam	
9		Chapter 10.7-10.13 Capacitive Transients	21,23,24,36,37,51,53,54
9		Lab 8: dc-14: Capacitors (See handout)	
10		Chapter 12 Magnetic Circuits Quiz 3	3,5,7,9,14
10		Lab 9: Handout: Magnetic Circuits	
11		Chapter 11 Inductors & Transients	7,8,9,10,12,13,35,41
11		Lab 10: dc-15: RL and RLC Circuits (Excl. Prob. 2)	
12		Chapter 13 Sinusoidal ac Quiz 4	1,2,3,4,8,10,11,12,15,17, 26,35,43,47
12		Lab 11: ac-2: The Oscilloscope	
13		Chapter 14.1 - 14.5 Basic Elements Frequency Resp.	1,3,5,8,14,17
13		Lab 12: Build and test a dc power supply	
14		Chapter 14.6 - 14.12 Complex math, Phasors Quiz 5	31,33,39,40,44,45,48
14		Thanksgiving - No class	
15		Chapter 15.1 - 15.6 Series ac Circuits	1,3,4,5,10,15,25,26,28
15		Lab 13 ac-3: RLC Components	
16		Review for final exam. Evaluation	
16		Lab Exam	
17		Final Exam	