

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	EET 1035
COURSE TITLE:	Fundamentals of DC/AC Electricity
PREREQUISITE(S):	None
COREQUISITE(S):	None
STUDENT ADVISING NOTES:	Suggested Course: MAT 1033 or Satisfactory Score on Placement Test; Also Recommended: MAC 1105
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	4
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	1
Other _____:	
FACULTY WORKLOAD POINTS:	3.67
STANDARDIZED CLASS SIZE ALLOCATION:	20
CATALOG COURSE DESCRIPTION:	
	This is an introductory course in basic electricity intended for the engineering technology programs. It consists of the concepts, laws and definitions encountered in DC and AC electric circuits. Laboratory exercises are required.
SUGGESTED TEXT(S):	<u>Electric Circuits Fundamentals</u> , 2nd ed., Thomas L. Floyd, Charles E. Merrill Publishing Co.
IMPLEMENTATION DATE:	Winter Term, 1988 (882)
REVIEW OR MODIFICATION DATE:	Fall Term, 1994 (951) Fall Term, 2002 (20031)

COURSE TOPICS	CONTACT HOURS <u>PER TOPIC</u>
I. Introduction	5
A. Quantities, Measurements, and Units	
B. Accuracy, Rounding, and Significant Digits	
C. Powers of ten and Scientific Notation	
D. Conversion between Systems of Units	
E. Engineering Prefixes	
II. Current and Voltage	5
A. Atomic Structure	
B. Crystals	
C. Current	
D. Coulomb Force Law	
E. Potential Difference and Voltage	
III. Conductors, Insulators, and Resistors	5
A. Conductors	
B. Insulators	
C. Conduction in Non-Metallic Mediums	
D. The Nature of Resistance	
E. Ohm's Law and Resistance	
F. Resistivity	
G. Temperature and Resistance	
IV. Power	5
A. Energy	
B. Work	
C. Power	
D. Conversion of Units	
E. Efficiency	
V. Circuits and Circuit Laws	6
A. Series Connections	
B. Resistors in Series	
C. Voltage Rises and Drops	
D. Kirchhoff's Voltage Law	
E. Characteristics of Series Circuits	
F. Voltage Dividers	
G. Power in Series Circuits	
H. Parallel Connections	

COURSE TOPICS (continued)

CONTACT HOURS
PER TOPIC

I. Resistors in Parallel	
J. Kirchhoff's Current Law	
K. Current Dividers	
L. Conductance	
M. Characteristics of Parallel Circuits	
N. Power in Parallel Circuits	
O. Series - Parallel Circuits	
P. Equivalent Circuits	
Q. Ideal Voltage Sources	
R. Ideal Current Sources	
S. Voltmeter Loading Effect	
 VI. Capacitance	 4
A. Charges and Electric Fields	
B. Capacitors and Capacitance	
C. Dielectrics and the Dielectric Constant	
D. Capacitors in Series	
E. Capacitors in Parallel	
F. Capacitive Time Constants	
G. Universal Time Constant Chart	
H. Capacitive Energy	
 VII. Magnetism	 4
A. Electricity and Magnetism	
B. Magnetic Fields	
C. Magnetomotive Force	
D. Reluctance and Permeability	
E. Flux Density and Magnetic Field Intensity	
F. Magnetic Materials	
G. Hysteresis	
H. Eddy Current	
I. Magnetic Shielding	
 VIII. Inductance	 4
A. Electromagnetic Induction	
B. Faraday's Law	
C. Lenz's Law	
D. Inductors and Inductance	
E. Inductors in Series	
F. Inductors in Parallel	
G. Inductive Time Constants	
H. Solutions for Instantaneous Currents	

COURSE TOPICS (continued)	CONTACT HOURS <u>PER TOPIC</u>
I. Inductive Energy	
IX. Alternating Current and Reactance	4
A. Basic Generator Construction and Operation	
B. The Sinusoidal Voltage Wave	
C. Average and RMS Values	
D. Reactance	
E. Phase Differences	
X. Phasors and Impedance	4
A. Phasors and Vectors	
B. Phasor Diagrams and Graphical Solutions	
C. Resistance and Reactance in Series	
D. Resistance and Reactance in Parallel	
E. Conductance, Susceptance & Admittance	
XI. AC Power	4
A. Resistance Power	
B. Reactive Power	
C. Apparent Power	
XII. Transformers	4
A. Construction and Operation	
B. Turns Ratio	
C. Reflected Impedance	
D. Leakage and Power Losses	
E. Efficiency	
F. Types of Transformers	
XIII. Reviews and Examinations	6

DC/AC Laboratory Exercises

1. Current and Voltage Measurements with Analog Meters.
2. Resistors and Resistance Measurements with Analog Meters.
3. Ohm's Law
4. Series Circuits and Kirchhoff's V. Law
5. Parallel Circuits and Kirchhoff's C. Law
6. Troubleshooting
7. Capacitance
8. Electromagnetism
9. Measurements with Oscilloscopes
10. Phase Angle and Reactance

PROGRAM TITLE: Industrial Management Technology

COURSE TITLE: Fundamentals of DC/AC Electricity

CIP NUMBER: 0606.200101

LIST PERFORMANCE STANDARD ADDRESSED:

NUMBER(S): TITLES(S):

11.0 DEMONSTRATE APPROPRIATE UNDERSTANDING OF BASIC SCIENCE--The student will be able to:

- 11.01 Understand molecular action as a result of temperature extremes, chemical reaction, and moisture content.
- 11.02 Draw conclusions or make inferences from data.
- 11.03 Identify health related problems which may result from exposure to work related chemicals and hazardous materials, and know the proper precautions required for handling such materials.
- 11.04 Understand pressure measurement in terms of P.S.I., inches of mercury, and K.P.A.

18.0 DEMONSTRATE AN UNDERSTANDING OF TECHNICAL OR INDUSTRIAL COMPETENCIES--The student will be able to:

- 18.01 Demonstrate an understanding of technical or industrial competencies as specified in the curriculum frameworks of any postsecondary adult or postsecondary vocational program.