ELEC 60 Course Outline as of Fall 2009

CATALOG INFORMATION

Dept and Nbr: ELEC 60 Title: DC AND AC THEORY
Full Title: Direct & Alternating Current Theory
Last Reviewed: 9/8/2003

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	5.00	Lecture Scheduled	5.00	17.5	Lecture Scheduled	87.50
Minimum	5.00	Lab Scheduled	0	10	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 175.00 Total Student Learning Hours: 262.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade Only
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
Atomic theory, basic laws of physics, electrical units, direct current circuit analysis, batteries, magnetism, meters, alternating current, capacitance, inductance, transformers, and AC circuit analysis.

Prerequisites/Corequisites:
Completion of or concurrent enrollment in ELEC 90A. MATH 27 (formerly MATH 57) or higher may be substituted for ELEC 90A.

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Schedule of Classes Information:
Description: Atomic theory, basic laws of physics, electrical units, direct current circuit analysis, batteries, magnetism, meters, alternating current, capacitance, inductance, transformers & AC circuit analysis. (Grade Only)
Prerequisites/Corequisites: Completion of or concurrent enrollment in ELEC 90A. MATH 27 (formerly MATH 57) or higher may be substituted for ELEC 90A.

Recommended: Eligibility for ENGL 100 or ESL 100
Limits on Enrollment:
Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**	Effective:	Inactive:
CSU GE:	**Transfer Area**	Effective:	Inactive:
IGETC:	**Transfer Area**	Effective:	Inactive:

CSU Transfer:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Certificate Applicable Course

COURSE CONTENT

Outcomes and Objectives:
Upon completion of this course the student will be able to:

1. Using algebraic functions, signed numbers and metric notations, make circuit calculations using Ohm's Law and Watt's Law.
2. Using Algebraic expressions and numerical representations, analyze and evaluate series, parallel, and series-parallel circuits.
3. Using metric notations, design a basic voltage divider.
4. Using algebraic functions, design ammeter shunts and voltmeter multipliers.
5. Identify and describe characteristics of fuses, circuit breakers, switches, resistors, and conductors.
6. Evaluate characteristics of batteries.
7. Summarize characteristics of magnetism.
8. Identify A.C. units.
9. Using signed numbers, calculate values in an A.C. resistive circuit.
10. Identify and describe characteristics of capacitors, inductors, and transformers using trigonometric functions.
11. Analyze and evaluate RC (resistor-capacitor), RL (resistor-inductor), and RLC (resistor-capacitor-inductor) circuits through the application of reight triangle geometry.
12. Apply Thevenin's theorem to evaluate networks, by use of loop equations and through the application of the characteristics of functions (rational, exponential, and trigonometric).

Topics and Scope:

I. Atoms
A. Structure
B. Theory
II. Basic Laws of Physics
A. Ohm's Law
B. Watt's Law
III. Resistive Circuits
A. Series circuits
B. Parallel circuits
C. Series-Parallel circuits
IV. Voltage dividers
V. Meters
A. Alternating current
B. Direct current
C. Volt meters
D. Ammeters
E. OHM meters
VI. Conductors/Insulators
VII. Controls
A. Switches
B. Fuses
C. Circuit breakers
VIII. Resistors
A. Potentiometers
B. Rheostats
IX. Batteries
X. Magnetism
A. Magnetizing force
B. Magnetomotive force
XI. Alternating current (AC)
XII. Capacitance
A. Series RC (resistor-capacitor) circuits
B. Parallel RC circuits
XIII. Inductance
A. Series RL (resistor-inductor) circuits
B. Parallel RL circuits
XIV. RLC (resistor-capacitor-inductor) Circuits
XV. Transformers
XVI. Thevenin's theorem

Assignment:

1. Textbook readings, 20 - 30 pages per week.
2. Textbook homework problems.
3. Handout homework problems including problems for Ohm's law and series, parallel, and series-parallel resistive circuits.
4. Four to eight quizzes; midterm; final exam.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems	Problem solving 30 - 70%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice, Completion, Computational; quizzes.	Exams 30 - 70%

Other: Includes any assessment tools that do not logically fit into the above categories.

None	Other Category 0 - 0%

Representative Textbooks and Materials:
Thomas L. Floyd. Electric Circuit Fundamentals, 6th edition. Prentice Hall: 2003.
Grob/Schultz. Basic Electronics, 9th edition. Glencoe McGraw Hill: 2003.