

AC/DC CIRCUITS II

COURSE SYLLABUS

Revised 11/29/2011

C - L - CR
2 - 6 - 4

COURSE NUMBER: EEM 118

PREREQUISITE(S): None

CO-REQUISITE(S): None

COURSE DESCRIPTIONS This course is a continuation of the study of direct and alternating current theory to include circuit analysis using mathematics and verified with electrical measurements.

TEXTBOOK(S): Herman, Stephen L. Standard Textbook of Electricity, Albany: Delmar, 2004.
Lab Book: LABVOLT INVESTIGATIONS IN ELECTRICAL POWER
HeathKit AC Parts Kit# EB-6102-31

REFERENCE(S): None

OTHER REQUIRED MATERIALS, TOOLS, AND EQUIPMENT: Safety Glasses; Digital Multimeter (Fluke 77 or equivalent); Calculator (Texas Instruments TI-30XA or equivalent)

METHOD OF INSTRUCTION: This is written as a lecture/lab course. The course will be supplemented throughout by visual presentations and lab demonstrations.

GRADING SYSTEM:

90	-	100	=	A
80	-	89	=	B
70	-	79	=	C
60	-	69	=	D
Below	-	60	=	F

GRADE CALCULATION METHOD:

Unit Test	=	50%
Projects and Labs	=	30%
Exams	=	10%
Participation	=	10%
		<hr/>
		100%

**ATTENDANCE
POLICY:**

Students are responsible for punctual and regular attendance in all classes, laboratories, field trips, and other class activities. The College does not grant excused absences; therefore, students are urged to reserve their absences for emergencies. When illness or other emergencies occur, the student is responsible for notifying instructors and completing work missed.

Students are tardy if not in class at the time the class is scheduled to begin. Tardy students are admitted to class at the discretion of the instructor.

If you have attended at least one session during the first week of the semester you are responsible for dropping yourself from the class. It is the students' responsibility to withdraw from a course. A student who stops attending class and fails to initiate a withdrawal will remain on the class roster. Points deducted for attendance.

If you do not attend a class session during the first week of class you will automatically be dropped by the College.

A student who does not complete an assignment, test, or final exam in the course will receive a zero for each missing grade and the final course grade will be calculated accordingly.

Absences for Religious Holidays: Students who are absent from class in order to observe religious holidays are responsible for the content of any activities missed and for the completion of assignments occurring during the period of absence. Students who anticipate their observance of religious holidays will cause them to be absent from class and do not wish such absences to penalize their status in class should adhere to the following guidelines:

1. Observance of religious holidays resulting in three or fewer consecutive absences: Discuss the situation with the instructor and provide written notice at least one week prior to the absence(s). Develop (in writing) an instructor-approved plan which outlines the make-up of activities and assignments.
2. Observances of religious holidays resulting in four or more consecutive absences: Discuss the situation with the instructor and provide the instructor with written notice within the first 10 days of the academic term. Develop an instructor-approved plan which outlines the make-up of activities and assignments.

ACADEMIC CONDUCT:

ACADEMIC DISHONESTY: Students are expected to uphold the integrity of the College's standard of conduct, specifically in regards to academic honesty. All forms of academic dishonesty including, but not limited to, cheating on assignments/tests, plagiarism, collusion, and falsification of information will call for disciplinary action. Disciplinary action imposed may include one or more of the following: written reprimand, loss of credit for assignment/test, termination from course, and probation, suspension, or expulsion from the College. For further explanation of this and other conduct codes, please refer to the Student Handbook.

CELLULAR PHONES AND PAGERS/BEEPERS: Cellular phones, pagers and beepers are not permitted to be turned on or used within the classroom. Use of these devices during classroom time will be considered a violation of the student code as it relates to “disruptive behavior.”

CLASS/LAB PROCEDURES:

All labs will be submitted in written form, complete with equipment list, procedures, results and summaries.

ACCOMMODATIONS:

Students who need special accommodations in this class because of a documented disability should notify Student Disability Services. You may contact Student Disability Services by calling, (864) 592-3811, toll-free 1-800-922-3679; via email through the Spartanburg Community College web site at www.sccsc.edu/SDS/; or by visiting the office located in the Dan Lee Terhune Student Services Building, room 112 of the Spartanburg Community College campus. By contacting Student Disability Services early in the semester, students with disabilities give the College an opportunity to provide necessary support services and appropriate accommodations.

COURSE COMPETENCIES & OBJECTIVES:

Upon satisfactory completion of this course, the student will be able to:

- I. Differentiate between direct and alternating current.
 1. Compute instantaneous values of voltage and current for a sine wave.
 2. Compute peak, RMS, and average values of voltage and current.
 3. Identify the phase relationship or voltage and current in a pure resistive circuit.

- II. Analyze various configurations of AC circuits containing resistance and inductance
 1. Explain the relationship of resistance and inductance

- in an alternating current series circuit.
2. Calculate values of voltage, current, apparent resistance, inductive reactance, and power factor in an R-L series circuit.
 3. Explain the operation of a parallel circuit containing resistance and inductance.
 4. Compute circuit values of an R-L parallel circuit.
 5. Construct and measure various RL circuits.
- III. Analyze various configurations of AC circuits containing resistance and capacitance.
1. Explain current flow through a capacitor in an AC circuit and the relationship of voltage and current in a pure capacitive circuit.
 2. Define capacitive reactance.
 3. Calculate values of voltage, current, apparent resistance, capacitive reactance, and power factor in an R-C series circuit.
 4. Explain the operation of a parallel circuit containing resistance and capacitance.
 5. Compute circuit values of an R-C parallel circuit.
 6. Construct and measure various RC circuits.
- IV. Analyze various configurations of AC circuits containing resistance, inductance and capacitance.
1. Explain the operation of a series and parallel circuit containing resistance and capacitance.
 2. Compute circuit values of an R-L-C series and parallel circuit.
 3. Compute power factor values of an R-L-C series and parallel circuits.
 4. Construct and measure various R-L-C circuits.
- V. Differentiate between 3-phase and single-phase volts
1. Explain the characteristics of delta and wye connections.
 2. Compute voltage and current values for delta and wye connections.
 3. Compute the amount of capacitance needed to correct the power factor of a three-phase motor.
 4. Construct and measure various delta and wye circuits.