CALENDAR DESCRIPTION:
This course is an introduction to circuit analysis, a mathematical model used to represent a variety of engineering problems such as electric circuits. In particular, students will learn about phasor analysis and AC power; transfer functions; Bode plots; filters and resonance; transformers, and two-port networks.

PREREQUISITES: PHYS 112
COREQUISITES:
PRE or COREQUISITES: PHYS 381

SYNONYMOUS COURSE(S):
(a) Replaces: ______________________
(b) Cross-listed with: ______________________
(c) Cannot take: ______________________ for further credit.

TOTAL HOURS PER TERM: 75
STRUCTURE OF HOURS:
Lectures: 75 Hrs
Seminar: Hrs
Laboratory: Hrs
Field experience: Hrs
Student directed learning: Hrs
Other (specify): Hrs

OTHER:
Maximum enrolment: 24
Expected frequency of course offerings: annually
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only) □ Yes □ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department) □ Yes □ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE: □ Yes □ No

Course designer(s): Xiaolin Long, Peter Mulhern, Joss Ives
Department Head: Derek Harnett
Date approved: August 26, 2013
Campus-Wide Consultation (CWC) Date of meeting: June 28, 2013
Curriculum Committee chair: David Fenske
Date approved: September 20, 2013
Dean/Associate VP: Lucy Lee
Date approved: September 20, 2013
Undergraduate Education Committee (UEC) approval Date of meeting: October 25, 2013
LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- Describe key circuit elements including resistors, capacitors, inductors, and transformers.
- State the fundamental laws (Kirchhoff’s Laws) and theorems (Thevenin/Helmholtz’s and Norton/Helmholtz’s equivalences) needed for circuit design and analysis.
- Analyze electrical circuits containing a variety of circuit elements using the basic laws and theorems.
- Simulate circuits on the computer using appropriate software such as SPICE.
- Calculate both steady state and transient responses in 1st and 2nd order circuits.
- Analyze single and three phase AC circuits.
- Apply both Laplace and Fourier transforms to circuit analysis problems.

METHODS: (Guest lecturers, presentations, online instruction, field trips, etc.)

Lectures.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

- Examination(s)
- Portfolio assessment
- Interview(s)

Other (specify):

- PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]


SUPPLIES / MATERIALS:

None

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments: 20%
Quizzes: 10%
Midterm exam: 25%
Final exam: 45%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

- Basic circuit variables, Ohm’s Law (review)
- Voltage and current sources
- Real source models (Thevenin/Helmholtz’s and Norton/Helmholtz’s)
- Parallel connection vs. series connection (review)
- Kirchhoff’s Laws: Voltage Law (KVL) and Current Law (KCL) (review)
- Modified Nodal Analysis, Loop Analysis.
- 1st order circuits (review)
- 2nd order circuits
- AC circuits including steady-state analysis, power analysis, 3-phase circuits, frequency response
- Two-port networks