

NEWARK COLLEGE OF ENGINEERING

SYLLABUS AND COURSE INFORMATION

Course Name: Circuits II

Course Number: ECET 202

Course Structure: 2-2-3 (lecture hr/wk – lab hr/wk – course credits)

Course Description: This second course in Electrical Circuits expands on Circuit Theory introduced in ECET 201. It includes Ohm's and Kirchhoff's Laws for analysis of series and parallel AC circuits. Series-parallel, ladder and bridge networks are analyzed using AC signals. Resonance and frequency response are included. The basic theory and operation of diodes and transistors, including dc biasing are studied. Circuit simulation and laboratory experiments are designed to support the theory and obtain measurement skills.

Prerequisites: (ECET 201 or ECE 231) and (Math 138 or Math 112)

Corequisites: None

**Required, Elective,
or Selected Elective:** Required

Required Materials: **Text:** Name: Principles of Electric Circuits, Conventional Current
Author: Floyd
Year: 2009
ISBN: 978-0-13-507309-4

Course Outcomes: By the end of the course students are able to:

1. Analyze basic AC circuits with resistors, capacitors, and inductors driven by sinusoidal and pulse waveforms
2. Model and analyze complex circuits with phasors and Thevenin equivalent circuits where appropriate
3. Assign real and imaginary impedance values to circuit components and calculate circuit effects using both polar and rectangular forms
4. Understand and use basic semiconductor devices such as diodes and transistors in simple electrical circuits
5. Comprehend detailed lab descriptions, perform pre-lab analyses, construct circuits in a lab, take appropriate measurements, analyze results, and prepare summaries and conclusions
6. Practice and use teamwork to complete laboratory experiments in limited time allotted, requiring subdivision of lab work and cross-checking of results
7. Demonstrate an ability to read-ahead course materials in advance of lecture and lab.

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Class Topics: AC Circuit Fundamentals AC Measurements
Capacitors Inductors
RLC Circuits Resonance
Phasors Transformers
Impedance Diodes
Transistors

Student Outcomes: The Course Learning Outcomes support achievement of the following Student Outcomes from the ETAC of ABET Criterion 3 requirements.

Student Outcome a: An ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly defined engineering technology activities.

Related Course Outcome: 1

Student Outcome c: An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes.

Related Course Learning Outcomes: 1, 2, 3, 4, & 5

Student Outcome e: An ability to function effectively as a member or leader on a technical team.

Related Course Learning Outcomes: 6

Academic Integrity: NJIT has a zero-tolerance policy regarding cheating of any kind and student behavior that is disruptive to a learning environment. Any incidents will be immediately reported to the Dean of Students. Please visit the Dean of Students website at <http://www.njit.edu/doss> for a list of student policies relating to academic integrity and student conduct.

Modification to Course: The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the Course Outline.

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