

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 111)

Corequisites: None

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

Required Materials: **Text:** Name: Principles of Electric Circuits, Conventional Current
Author: Floyd
Year: 2020, 10th Edition ISBN: 978-0-13-487948-2

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. Simulate a circuit to enhance understanding of a circuit's behavior.
6. Comprehend detailed lab descriptions, perform pre-lab analyses, construct circuits in a lab, take appropriate measurements, and analyze results
7. Practice and effectively use teamwork to complete laboratory experiments in time allotted, requiring subdivision of lab work and cross-checking of results
8. Present conclusive experiment results in the form of lab reports

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

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

Student Outcome 1: An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problems appropriate to the discipline.

Related Course Outcome: 1 & 2

Student Outcome 2: An ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature.

Related Course Learning Outcomes: 7 & 8

Student Outcome 5: An ability to function effectively as a member as well as a leader on technical teams.

Related Course Learning Outcomes: 7

Academic Integrity: Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at:
<http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf>

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu

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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Updated: 11 March 2023