New Jersey Institute of Technology
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NEWARK COLLEGE OF ENGINEERING

SYLLABUS AND COURSE INFORMATION

Course Name: Integrated Circuit Applications

Course Number: ECET 305

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

Course Description: Provides a working knowledge of the characteristics and applications of integrated circuits. Topics include how linear ICs work, the most common circuit configurations in which ICs are used, and how to design the most commonly needed circuits with ICs, using manufacturers specification sheets.

Prerequisites: ECET 303 and (Math 238 or Math 112)

Corequisites: ECET 300

Required, Elective, or Selected Elective: Required

Required Materials: **Text:** Name: Operational Amplifiers and Linear Integrated Circuits
Author: Coughlin and Driscoll
Year: 2000
ISBN: 978-0-13-014991-6

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

1. Describe the op-amp and its functions.
2. Explain how the non-ideal aspects of op-amps can affect circuits and how to design to minimize these effects.
3. Explain the fundamentals of how active filter design is approached.
4. Design, simulate, test, and evaluate common op-amp circuits.
5. Design, simulate, test, and evaluate active filters.
6. Design, simulate, test, and evaluate A to D and D to A circuits.

Class Topics:

Operational Amplifiers	Circuit Simulation
Inverting Amplifiers	Non-Inverting Amplifiers
Comparators	Active Filters
A to D Converters	D to A Converters
Level Detectors	Open and Closed Loop Circuits

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 Learning Outcomes: 1 & 2

New Jersey's Science & Technology University

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Student Outcome b: An ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies.
Related Course Learning Outcomes: 3

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: 4, 5, & 6

Student Outcome d: An ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives.
Related Course Learning Outcomes: 4, 5, & 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.

Prepared By: Daniel Brateris

Course Coordinator: Daniel Brateris