New Jersey's Science & Technology University

NEWARK COLLEGE OF ENGINEERING

New Jersey Institute of Technology
University Heights
Newark, NJ 07102-1982

Department of Engineering Technology
GITC Building Suite 2100
Phone: 973.596.3228
Fax: 973.624.4184
Email: EngineeringTechnology@njit.edu

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.
7. Produce professional lab reports as a member of a team.

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 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 Learning Outcomes: 1, 2, and 3

NJIT New Jersey's Science & Technology University

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Student Outcome 3: 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

Student Outcome 4: An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes.
Related Course Learning Outcomes: 4, 5, & 6

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.

Prepared By: Daniel Brateris

Course Coordinator: Daniel Brateris

Updated: 11 March 2023