

**NEWARK COLLEGE OF ENGINEERING**

**SYLLABUS AND COURSE INFORMATION**

**Course Name:** Fundamentals of Analog Electronics

**Course Number:** ECET 205

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

**Course Description:** This course introduces students to the active components used in electronics circuits. It covers the physics, the characteristics, and some applications of semiconductor diodes and transistors. The applications will include amplifiers, rectifiers, op amps, oscillators, and timers. Circuit simulation and laboratory experiments are designed to support the theory and provide measurement skills.

**Prerequisites:** ECET 202 or ECE 232

**Corequisites:** None

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

**Required Materials:** **Text:** Name: Electronic Principles with Experiments Manual  
Author: Malvino and Bates  
Year: 2015 ISBN: 978-0-07-337388-1

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

1. Identify and describe the operation of common semiconductor devices such as diodes, bipolar junction transistors, field effect transistors, and operational amplifiers.
2. Perform DC and AC analysis of circuits containing analog components.
3. Design common circuits using analog devices such as power supplies and amplifiers.
4. Locate and select analog devices using component specifications based on circuit requirements.
5. Select and demonstrate the use of appropriate test equipment and procedures to analyze circuit operation and troubleshoot faulty circuits.
6. Demonstrate and use knowledge of electrical safety in laboratory setups and the workplace.
7. Effectively interact with other team members to analyze circuits and complete assignments and lab reports.

**Class Topics:** Diodes BJT and FET Transistors  
Op Amps and Power Suppliers Biasing  
Amplifiers

**NEWARK COLLEGE OF ENGINEERING**

**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

**Student Outcome 2:** An ability to design systems, components, or processes meeting specified needs for broadly defined engineering problems appropriate to the discipline.

**Related Course Learning Outcomes:** 3

**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

**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](mailto: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