

**NEWARK COLLEGE OF ENGINEERING**

**SYLLABUS AND COURSE INFORMATION**

**Course Name:** Introduction to Communication Systems

**Course Number:** ECET 214

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

**Course Description:** A study of amplitude modulation, frequency modulation, and pulse modulation systems of transmission and reception, including applications of these systems in radio, television and telemetry. Introduces the latest digital communications theory and applications. Computer simulation and laboratory experiments are designed to support the theory and obtain measurement skills.

**Prerequisites:** ECET 202 or ECE 232

**Corequisites:** ECET 205

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

**Required Materials:** **Text:** Name: Modern Electronic Communication  
Author: Beasley and Miller  
Year: 2007  
ISBN: 978-0-13-225113-6

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

1. Describe a basic communication system and the need for modulation
2. Define electrical noise and explain its effect a receiver
3. Understand circuits used to generate AM/FM
4. Analyze various power, voltage, and current calculations in AM/FM systems
5. Define the sensitivity and selectivity of a radio receiver
6. Analyze the operation of a complete AM/FM transmitter/receiver system
7. Understand the basic principles, benefits, and drawbacks of digital baseband and bandpass communication systems
8. Perform measurements of AM/FM Transmitter/Receiver using multimeters, oscilloscopes, and spectrum analyzers
9. Perform a test analysis on the power levels (dBm) at each stage of AM/FM transmitter/receiver systems
10. Discuss various types of SSB and explain their advantages compared to AM
11. Explain how a PLL can be used to generate FM

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12. Describe the basics of a wireless digital communications link
13. Provide detail on the various schemes used to transmit digital signals, including FSK, PSK, BPSK, QPSK, DPSK, and QAM
14. Produce professional lab reports as a member of a team.

<b>Class Topics:</b>	Modulation	Signal-to-Noise Ratio
	Filters	Oscillators
	Amplitude Modulation	Frequency Modulation
	Phase Modulation	Amplifiers
	Receivers	Transmitters
	Digital Modulation	Eye Patterns

**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:** 4, 7, and 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:** 6, 8, and 9

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

**Related Course Learning Outcomes:** 14

**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)

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**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