ABET COURSE OUTLINE

Helen and John C. Hartmann Department of Electrical and Computer Engineering New Jersey Institute of Technology

<u>Academic Year</u>: 2023-2024 Term: Spring 2024

<u>Course Instructor</u>: Oksana Manzhura

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hours/open classroom workshop:

office hours and extra sessions schedule provided separately by email and posted on class CANVAS page 24/7 by e-mail. Extra WEBEX online office meetings available upon request.

Course Number and Title: ECE 462: RF/Fiberoptics Systems.

(3 credits, 3 contact hours, required course) *Text books:* David M. Pozar, *Microwave Engineering*, 4th Edition, Wiley, 2011. ISBN-13: 978-0470631554

Course Catalog Description (including prerequisites and co-requisites):

Relevant student outcomes (ABET criterion 3):

(a) an ability to apply knowledge of mathematics, science, and engineering (CLO 1, 2, 3)

(b) an ability to design and conduct experiments, as well as to analyze and interpret data (CLO 1, 2,3)

(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context (CLO 1, 4)

(i) a recognition of the need for, and an ability to engage in life-long learning (CLO 1, 3,4)

(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice (CLO 5)<u>Course Outline</u>:

Week	Book/Chapter/ Sections	Topics	
1-3	Pozar Ch 5	Use of Smith Chart Review, examples and problems of TL matching, transformers, stub matching. Multi-Stage designs. Bandwidth	
4-6		Couplers and power divider	s, filters, Resonators.
7-8	Pozar Ch 14, Agarwal Ch 1,	Introduction to MW and Fiber Optic systems and technology, special considerations of System Cascade calculations, Noise Figure, Linearity, Multiplexing and mode considerations	
9	Test 1	TEST 1	
10-11	Agarwal Ch 2 Balanis Ch 9	Optical Fiber as a dielectric waveguide	
11-12	Pozar Ch 6-8		
13	Pozar Ch 12-13 Agarwal Ch 3	Transmitters/Sources	
14	Agarwal Ch 4	Receivers/detectors	
15	0	Test 2	
16		Final	
Grading Policy:	Grading Policy:		
0	Two class examinations:		25%, 25%
	Final examination:		35%
	Homework, Pop	quizzes, class participation:	5%
	Extra Credit Project		10%

Attendance is mandatory

Occasional and optional Problem Solving sessions may be offered in addition.

Recordings (if available) and notes will be uploaded.

All students are required to complete all assigned homework. Pop quizzes may be provided based on homework problems.

Tests and final exams are open books, formula sheets will be provided for tests and final.

Tests will be carried out in person or in online setting, while proctored by instructor or/and TA. No late submission will be accepted.

Honor Code: The NJIT Honor Code will be upheld; any violations will be brought to the immediate attention of the Dean of Students. All solutions of test problems must be carried out in FULL form, no intermediate formula solutions will be accepted. All solutions must be carried out in the given class/test/problem notation. No change in notation or formulations will be accepted. Cases of similar modifications for multiple students in the same test will be reason for instantaneous failure of the course.

NJIT Honors Code may be reviewed at this link:

https://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf