FAU

FLORIDA ATLANTIC UNIVERSITY

NEW COURSE PROPOSAL
Graduate Programs

Department EECS

College ENG&CS

*(To obtain a course number, contact **erudolph@fau.edu**)*

UGPC Approval _____
UFS Approval _____
SCNS Submittal _____
Confirmed _____
Banner _____
Catalog _____

Prefix EEL

Number 6915

(L = Lab Course; C = Combined Lecture/Lab; add if appropriate)
Lab Code

Type of Course Lecture

Course Title Telecommunication: Waves, Fibers and Antennas

Credits *(Review Provost Memorandum)* 3

Effective Date *(TERM & YEAR)* Spring 2023

Grading *(Select One Option)*
Regular (X)
Sat/UnSat ( )

Course Description *(Syllabus must be attached; see Guidelines)*
Provides students of engineering/science with an introduction to basics of physics and engineering of telecommunication systems' components.

Prerequisites

None

Prerequisites, Corequisites and Registration Controls are enforced for all sections of course.

Academic Service Learning (ASL) course ☐
Academic Service Learning statement must be indicated in syllabus and approval attached to this form.

Corequisites

None

Registration Controls *(For example, Major, College, Level)*

Eng or CS Graduate Standing or approval by instructor

Minimum qualifications needed to teach course:
Member of the FAU graduate faculty and has a terminal degree in the subject area (or a closely related field.)

List textbook information in syllabus or here

See attached syllabus

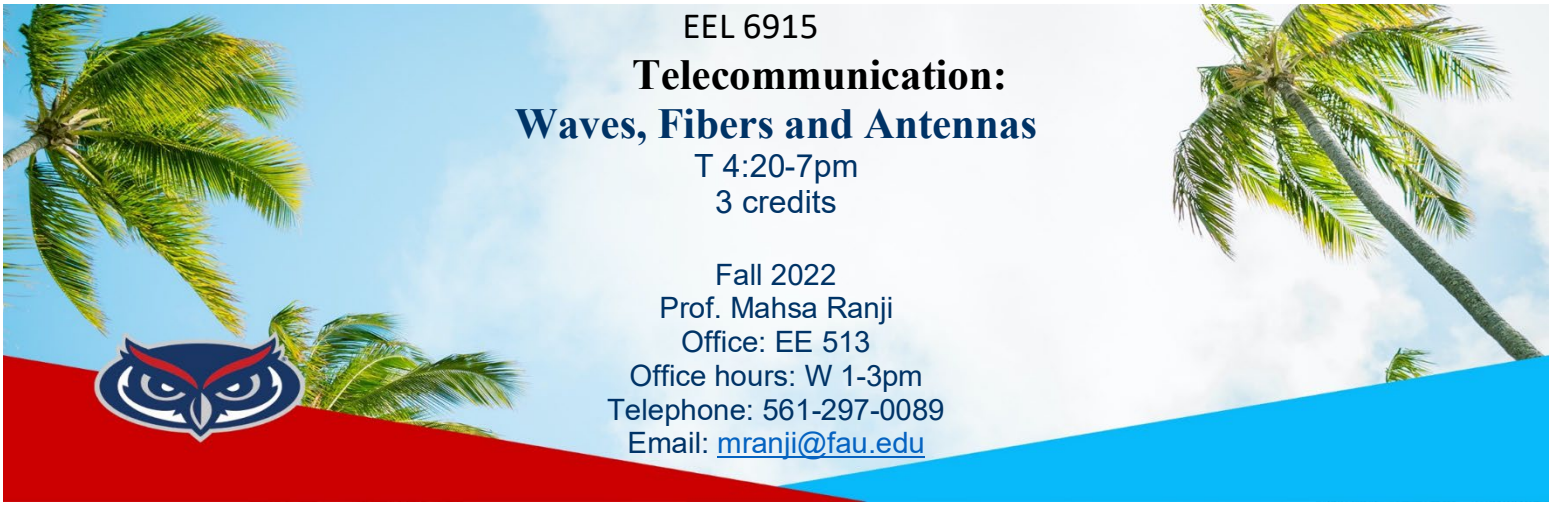
Faculty Contact/Email/Phone

mranji@fau.edu

List/Attach comments from departments affected by new course

Approved by	*Date*
Department Chair	8/31/2022
College Curriculum Chair	9/19/2022
College Dean	9/19/2022
UGPC Chair	
UGC Chair	
Graduate College Dean	
UFS President	
Provost	

Email this form and syllabus to UGPC@fau.edu 10 days before the UGPC meeting.



Office	EE513
Office hours	W 1-3pm
Telephone	561-297-0089
Email	mranji@fau.edu

Course Description

Provides students of engineering/science with an introduction to basics of physics and engineering of telecommunication systems' components.

Course Objectives/Student Learning Outcomes

The course objective is to provide the necessary fundamental concepts of light, fibers, antennas, laser operations, fiber optics, optical signal processing including, wave propagation, group velocity, dispersion, geometrical optics, refraction and reflection of waves, interference, wave optics, Fraunhofer and Fresnel diffraction, optical sensing, coherence, photonics, and frequency analysis of optical imaging systems. Students will learn how to design telecommunication and optical communication systems and analyze the system response by the end of the course.

Instructional Method

A brief statement about the Instructional Method and the expectations for student attendance in the class will be included here. For a list of the Instructional Methods and their definitions, see https://www.fau.edu/registrar/courses/Instru_Method.php

Prerequisites/Corequisites

None.

Course Evaluation Method

Homework:	30%
Exam1:	35%
Exam2:	35%

Exam 2 is noncumulative and all exams are open book.

Homework

10 homework will be assigned and each counts for 3% of total grade. Due one week after assignment in class. Late homework is not accepted unless there is a justifiable reason for late submission.

Course Grading Scale

90 and above: “A”, 87-89: “A-“, 83-86: “B+”, 80-82: “B”, 77-79 : “B-“, 73-76: “C+”, 70-72: “C”, 67-69: “C-“,63-66: “D+”, 60-62: “D”, 51-59: “D-“, 50 and below: “F.”

Policy on Makeup Tests, Late Work, and Incompletes (if applicable)

Late HW will not be accepted except reasonable justification for up to one week of delay and with only 50% of credit. Make up exam is not allowed unless there is a justifiable reason.

Classroom Etiquette Policy

University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions.

Policy on the Recording of Lectures

Because of a new Florida Statute in 2021, the following model language is suggested for inclusion in course syllabi, at the discretion of individual faculty: Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University’s Student Code of Conduct and/or the Code of Academic Integrity.

Attendance Policy

Attendance is optional but recommended for University classes and students are expected to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

Counseling and Psychological Services (CAPS) Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to http://www.fau.edu/counseling/

Disability Policy

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

Code of Academic Integrity

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001.

Required Texts/Readings

Optics, Ajoy Ghatak, McGraw Hill, 7th ed, 2020.

https://www.amazon.com/Optics-Ajoy-Ghatak/dp/9390113598/ref=sr_1_1?dchild=1&keywords=optics+ghatak&qid=1629227930&s=books&sr=1-1

Supplementary/Recommended Readings

Recommended: Communications systems, B.P. Lathi

Course Topical Outline

Week	Topic
1	Intro to TCOM, Optics
2	Geometrical optics, Ray Matrices
3	Reflection and refraction of optical waves, Group Velocity and pulse dispersion , HW 1 due
4	Fourier Transform and 2D Signals and systems, HW 2 due
5	Interference and its applications, HW 3 due
6	Coherence and applications, HW 4 due
7	Polarization and double refraction, HW5 due
8	**Review, Exam 1**
9	Electromagnetic waves, Wave equation and wave propagation
10	Fraunhofer and Fresnel Diffraction, HW 6 due
11	Laser operation, Fibers, HW 7 due
12	Fiber optics, optical waveguides, HW 8 due
13	Antennas, Antenna array, HW 9 due
14	Optical imaging, microscopy, review, HW 10 due