

 FLORIDA ATLANTIC UNIVERSITY	COURSE CHANGE REQUEST Undergraduate Programs		UUPC Approval <u>10-11-21</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department Electrical Engineering and Comp Science College Engineering and Computer Science		
Current Course Prefix and Number EEL 4512		Current Course Title Communication Systems	
<i>Syllabus must be attached for ANY changes to current course details. See Checklist. Please consult and list departments that may be affected by the changes; attach documentation.</i>			
Change title to: Principles of Communications Systems Change prefix From: _____ To: _____ Change course number From: 4512 To: 4512C Change credits* From: _____ To: _____ Change grading From: _____ To: _____ Change WAC/Gordon Rule status** Add <input type="checkbox"/> Remove <input type="checkbox"/> Change General Education Requirements*** Add <input type="checkbox"/> Remove <input type="checkbox"/> <small>*Review Provost Memorandum</small> <small>**WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See WAC Guidelines.</small> <small>***General Education criteria must be indicated in syllabus and approval attached to this form. See GE Guidelines.</small>		Change description to: Please see syllabus attached for new course description. Change prerequisites/minimum grades to: MAC 2313 AND EEL 3514 AND (EEE 4541 or STA 4821) with "C" or better Change corequisites to: EEE 4541 or STA 4821 Change registration controls to: Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).	
Effective Term/Year for Changes: Spring 2022		Terminate course? Effective Term/Year for Termination:	
Faculty Contact/Email/Phone Hanqi Zhuang, zhuang@fau.edu, 561-297-3413			
Approved by Department Chair _____ College Curriculum Chair <u>Dan Meeroff</u> College Dean <u>Fred Bloetscher</u> UUPC Chair <u>Dan Meeroff</u> Undergraduate Studies Dean <u>Edward Pratt</u> UFS President _____ Provost _____		Date 9/23/2021 <u>10-4-21</u> <u>10-4-21</u> <u>10-11-21</u> <u>10-11-21</u> _____ _____	

Email this form and syllabus to mjenning@fau.edu seven business days before the UUPC meeting.

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1. Course title/number, number of credit hours	
Principles of Communication Systems – EEL 4512C	3 credit hours
2. Course prerequisites, corequisites, and where the course fits in the program of study	
Prerequisite: MAC 2313 AND EEL 3514 AND (EEE 4541 or STA 4821) with "C" or better Co-requisite: EEE 4541 or STA 4821	
3. Course logistics	
Term: TBD Class location and time:	
4. Instructor contact information	
Instructor's name Office address Office Hours Contact telephone number Email address	TBD
5. TA contact information	
TA's name Office address Office Hours Contact telephone number Email address	TBD
6. Course description	
Linear time-invariant systems; impulse response and transfer function; AM/FM modulators and demodulators; random processes through linear systems; power spectral density; noise effects in continuous waveform modulation systems. Select homeworks require use of Matlab for experimentation and simulations.	
7. Course objectives/student learning outcomes/program outcomes	
Course objectives	The goal of the course is to familiarize students with the basic principles concerning modern electrical communication systems via practical experiments which deal with the design and measurement of analog and digital communication systems.
Student learning outcomes & relationship to ABET 1-7 objectives	6. An ability to apply engineering/computer science theory and hardware/software development fundamentals to develop and conduct appropriate experimentation, analyze and interpret data, and use computing/engineering judgment to produce engineering/computing-based solutions/conclusions. (Experimentation and/or simulation) The students will know about: (a) Electrical communication signal (b) Various modulation and demodulation techniques

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	<p>(c) Details on signal characteristics such as bandwidth, noise, power spectrum, power budget etc.</p> <p>(d) Differences between AM and FM radio.</p> <p>(e) Concept of pulse communication</p>
8. Course evaluation method	
<p>1. Lab Reports 70%</p> <p>2. Tests (Pop quiz) 15%</p> <p>3. Final Exam (Theory & Practical) 5%</p> <p>4. Build and test AM- FM radio 10%</p> <p>5. Extra credit: pass amateur radio license.</p>	<p><i>Note: The minimum grade required to pass the course is C.</i></p>
9. Course grading scale	
<p>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."</p>	
10. Policy on makeup tests, late work, and incompletes	
<p>Late Assignments Policy –</p> <p>Make-up Policy for Tests: Makeup tests are given only if there is solid evidence of a medical or otherwise serious emergency that prevented the student from participating in the exam.</p> <p>Incomplete Grade Policy Incomplete grades are against the policy of the department. Unless there is solid evidence of a medical or otherwise serious emergency situation and the student is currently passing the class, incomplete grades will not be given.</p>	
11. Special course requirements	
TBD	
12. Classroom etiquette policy	
<p>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.</p>	
13. Disability policy statement	
<p>Students are expected to attend all of their scheduled University classes and 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.</p> <p>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</p>	

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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.

14. Disability policy statement

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/.

15. 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/>

16. Code of Academic Integrity policy statement

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](#). If your college has particular policies relating to cheating and plagiarism, state so here or provide a link to the full policy—but be sure the college policy does not conflict with the University Regulation.

17. Required texts/reading

Textbook: Communication Systems 5th Edition by Simon Haykin
ISBN-13: 978-0471697909

18. Supplementary/recommended readings

TBD

19. Course topical outline, including dates for exams/quizzes, papers, completion of reading

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- Introduction to signals and systems
 - Time-invariance and linearity
 - Classification of signals and systems
 - Impulse response
 - Fourier transforms
 - Measures of Bandwidth
 - Transmission through linear systems; linear distortion
 - Lab 1: Linear Systems (Matlab/TIMS)
- Continuous waveform modulation systems
 - Double Sideband-Suppressed Carrier modulation
 - Amplitude modulation (AM) fundamentals
 - AM modulators/demodulators
 - Lab 2: AM modulation/Demodulation (Matlab/TIMS)
 - Quadrature Amplitude Modulation/Single Sideband Modulation
 - Angle Modulation
 - Frequency modulation and demodulation
 - Superheterodyne Receiver
 - Lab 3: FM modulation/demodulation (Matlab/TIMS)
- Random Processes
 - Ensemble and time averages
 - Autocorrelation Function and Power spectral density
 - Random processes through linear systems
 - Gaussian noise
 - Narrowband noise
- Noise effects in continuous waveform modulation systems
 - Noise in Double Sideband-Suppressed Carrier modulation
 - Noise in AM/FM receivers
 - Interference in Angle modulation and capture effect
 - Lab 4: Effect of noise and interference (Matlab)
- Additional Topics
 - Overview of cellular system and co-channel interference
 - Multiple access techniques and Evolution of cellular standards