

 FLORIDA ATLANTIC UNIVERSITY	COURSE CHANGE REQUEST Graduate Programs		UGPC Approval _____ UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner _____ Catalog _____
	Department CEECS College Engineering and Computer Science		
Current Course Prefix and Number EEE 6374	Current Course Title RF Devices and Circuits		
Syllabus must be attached for ANY changes to current course details. See Guidelines . Please consult and list departments that may be affected by the changes; attach documentation.			
Change title to: Change prefix From: _____ To: _____ Change course number From: _____ To: _____ Change credits* From: _____ To: _____ Change grading From: _____ To: _____ Academic Service Learning (ASL) ** Add <input type="checkbox"/> Remove <input type="checkbox"/>		Change description to: Change prerequisites/minimum grades to: Graduate standing for CEECS students, and instructor's approval for students from other major. Change corequisites to: Change registration controls to: Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade.	
Effective Term/Year for Changes: Spring 2021		Terminate course? Effective Term/Year for Termination:	
Faculty Contact/Email/Phone Hanqi Zhuang/zuang@fau.edu/ 297-3413			
Approved by Department Chair _____ Hanqi Zhuang College Curriculum Chair _____ Francisco Presuel-Moreno College Dean _____ <i>McCardi</i> UGPC Chair _____ UGC Chair _____ Graduate College Dean _____ UFS President _____ Provost _____		Date _____ _____ 10/25/2020 _____ _____ _____ _____	

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

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1. Course title/number, number of credit hours	
RF Devices and Circuits / EEE 6374	3 credit hours
2. Course prerequisites, corequisites, and where the course fits in the program of study	
Prerequisites: Graduate standing for CEECS students, and instructor's approval for students from other major.	
3. Course logistics	
Term: Class location and time:	
4. Instructor contact information	
Instructor's name Office address Office Hours Contact telephone number Email address	
5. TA contact information	
TA's name Office address Office Hours Contact telephone number Email address	
6. Course description	
RF filter design, active RF components and component modeling, matching and biasing networks, RF oscillators, mixers and synthesizers, use of RF CAD software for system simulation.	
7. Course objectives/student learning outcomes/program outcomes	
Course objectives	To introduce students to modern computer-aided RF design procedures for RF communication devices and circuits, enabling them to enter the field of RF design in industry and research.
Student learning outcomes & relationship to ABET 1-7 outcomes	All unmarked topics relate to outcomes 1 and 2. 1. RF behavior of passive components. 2. Transmission lines. 3. The Smith chart. 4. Single and multi-port networks. 5. RF filters, dividers, directional couplers. 6. RF active components. 7. Matching and biasing networks. 8. RF Oscillators and mixers.
8. Course evaluation method	
Computer Projects -	20 %
Homework -	10 %
Tests: Feb. 13, Mar. 26 -	2 at 20 % each
Final Exam: Apr. 30 -	30 %

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9. Course grading scale
Grading Scale: 88 and above: "A", 85-87: "A-", 82-84: "B+", 78-81: "B", 75-77: "B-", 72-74: "C+", 68-71: "C", 65-67: "C-", 62-64: "D+", 58-61: "D", 55-57: "D-", below 55: "F."
10. Policy on makeup tests, late work, and incompletes
<i>Makeup tests</i> are given only if there is solid evidence of a medical or otherwise serious emergency that prevented the student of participating in the exam. Makeup exam should be administered and proctored by department personnel unless there are other pre-approved arrangements <i>Late work</i> is not acceptable. <i>Incomplete grades</i> will not be granted unless there is solid evidence of medical or otherwise serious emergency situation.
11. Special course requirements
None
12. 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.
13. Attendance policy statement
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. 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.
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 –

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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

To reduce costs for our students, we strongly encourage you to explore the adoption of open educational resources (OER), textbooks and other materials that are freely accessible. We also encourage you to clearly state in the syllabus if course materials are available on reserve in the Library.

RF Circuit Design: Theory and Applications, 2nd ed., R. Ludwig and G. Bogdanov, Prentice Hall, 2015.

18. Supplementary/recommended readings

Course Notes, posted on Canvas.

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

1. Introduction, RF behavior of passive elements (1 lecture)
2. Microstrip transmission lines (2 lectures)
3. YZ Smith chart (2 lectures)
4. Multiport parameter sets, scattering parameters (2 lectures)
5. RF filter design (10 lectures as below)
 - Filter types and parameters (1 lecture)
 - Butterworth and Chebyshev filters (1 lecture)
 - Denormalization of prototype LPF, Richards transformation, Kuroda's identities (1 lecture)
 - Coupled-line bandpass filters (1 lecture)
 - Stepped-impedance LPF (1 lecture)
 - Even-odd mode analysis of power dividers and couplers (1 lecture)
 - Wilkinson divider (1 lecture)
 - Quadrature hybrid (1 lecture)
 - Coupled-line directional coupler (1 lecture)
 - Lange coupler and hybrid coupler (1 lecture)
6. Active RF components (3 lectures as below)
 - Schottky, PIN, varactor, IMPATT, Gunn diodes (1 lecture)
 - RF BJTs (1 lecture)
 - RF FETs, MOSFETs, HEMTs (1 lecture)
7. Matching and biasing networks (3 lectures as below)
 - Discrete and microstrip networks (1 lecture)
 - Amplifier classes and efficiency (1 lecture)
 - Biasing networks for BJTs and FETs (1 lecture)
8. Oscillators and mixers (4 lectures as below)
 - Oscillator models (1 lecture)
 - Negative resistance and feedback oscillators (1 lecture)
 - Quartz, DRO and YIG oscillators (1 lecture)
 - Phase locked loops (1 lecture)

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Tests:
Final Examination: