FLORIDA ATLANTIC UNIVERSITY

# COURSE CHANGE REQUEST
## Graduate Programs

**Department** CEECS

**College** Engineering and Computer Science

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

| ***Current* Course Prefix and Number** | EEL 5437 | ***Current* Course Title** | Microwave Engineering |
|---|---|---|---|

*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** ☐ **Remove** ☐

* Review Provost Memorandum
** Academic Service Learning statement must be indicated in syllabus and approval attached to this form.

**Change description to:**

**Change prerequisites/minimum grades to:**
Graduate standing

**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*** | | ***Date*** |
|---|---|---|
| Department Chair | Hanqi Zhuang — Digitally signed by Hanqi Zhuang Date: 2020.10.21 15:52:46 -04'00' | |
| College Curriculum Chair | Francisco Presuel-Moreno — Digitally signed by Francisco Presuel-Moreno DN: cn=Francisco Presuel-Moreno, o=Florida Atlantic University, ou=Ocean and Mechanical Engineering, email=fpresuel@fau.edu, c=US Date: 2020.10.22 11:55:58 -04'00' | |
| College Dean | MCardei — Digitally signed by Mihaela Cardei DN: cn=Mihaela Cardei, o=Florida Atlantic University, ou, email=mcardei@fau.edu, c=US Date: 2020.10.25 19:55:03 -04'00' | 10/25/2020 |
| 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.

**Department of Computer and Electrical Engineering & Computer Science Engineering**
**Florida Atlantic University**
**Course Syllabus**

| **1. Course title/number, number of credit hours** | |
|---|---|
| Microwave Engineering / EEL 5437 | 3 credit hours |
| **2. Course prerequisites, corequisites, and where the course fits in the program of study** | |
| Prerequisites: Graduate standing | |
| **3. Course logistics** | |
| *Term*:<br>*Class location and time*: | |
| **4. Instructor contact information** | |
| *Instructor's name*<br>*Office address*<br>*Office Hours*<br>*Contact telephone number*<br>*Email address* | |
| **5. TA contact information** | |
| | |
| **6. Course description** | |
| Electromagnetic theory, harmonic transmission lines, waveguides, microwave network analysis, impedance matching and tuning, microwave resonators, powder dividers, couplers and filters, microwave oscillators and mixers, CAD design techniques. | |
| **7. Course objectives/student learning outcomes/program outcomes** | |
| *Course objectives* | To provide students with a firm foundation in microwave engineering and design techniques. Design considerations include transmission lines and waveguides, network analysis, impedance matching and tuning, microwave resonators, power dividers, couplers, filters, oscillators and mixers, and use of CAD software packages. |
| *Student learning outcomes & relationship to ABET a-k objectives* | ll unmarked points relate to criteria a and c<br>1. The student will learn analysis and synthesis techniques microwave waveguides<br>2. The student will learn techniques of microwave network analysis, including scattering parameters<br>3. The student will understand methods of microwave impedance matching and tuning<br>4. The student will be able analyze and design microwave resonators<br>5. The student will understand how to design microwave power dividers, couplers, filters, oscillators and mixers<br>6. The student will be able to design microwave devices and networks using modern CAD software, including MATLAB and Agilent's Advanced Design Software (ADS) |
| **8. Course evaluation method** | |
| Homework assignments: 15%<br>Computer design projects: 20%<br>Semester exams, Sept. 18 and Oct. 21: 20% each<br>Final exam, Dec. 4: 25% | |

**Department of Computer and Electrical Engineering & Computer Science Engineering**
**Florida Atlantic University**
**Course Syllabus**
EEL 5934/4930 Microwave Engineering
Fall 2014

**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-", 54 and below: "F."

**10. Policy on makeup tests, late work, and incompletes**

*Makeup tests* 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 tests should be administered and proctored by department personnel unless there are other pre-approved arrangements. Unless there is solid evidence of medical or otherwise serious emergency situation incomplete grades will not be given.

**11. Special course requirements**

**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 – 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.

**17. Required texts/reading**

Textbook: *Microwave Engineering*, 4th ed., D. M. Pozar, Wiley, 2012.

**18. Supplementary/recommended readings**

*Microwave Engineering Class Notes*, Rev. '14, J. Bagby, available on Blackboard.

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

| **Lecture Topics** | **Approximate # of Lectures** |
|---|---|
| 1. Review of electromagnetic theory and transmission lines | 3 |
| 2. Waveguides | 6 |
| 3. Microwave network analysis | 3 |
| 4. Impedance matching and tuning | 5 |
| 5. Microwave resonators | 2 |
| 6. Microwave power dividers, couplers, filters, oscillators and mixers | 6 |
| 7. Tests and reviews | 3 |

**Exam Dates**

Exam 1:
Exam 2:
Final Exam: