

FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—NEW COURSE PROPOSAL¹

UGPC APPROVAL _____
 UFS APPROVAL _____
 SCNS SUBMITTAL _____
 CONFIRMED _____
 BANNER POSTED _____
 CATALOG _____

DEPARTMENT: **COMP. & ELEC. ENGR. AND COMP. SCI.**

COLLEGE: **ENGINEERING AND COMPUTER SCIENCE**

RECOMMENDED COURSE IDENTIFICATION:

PREFIX EEL COURSE NUMBER 5437 LAB CODE (L or C) _____

(TO OBTAIN A COURSE NUMBER, CONTACT RSHIMAN@FAU.EDU)

COMPLETE COURSE TITLE: **MICROWAVE ENGINEERING**

CREDITS: **3**

TEXTBOOK INFORMATION: **MICROWAVE ENGINEERING, 4TH ED., D. M. POZAR, WILEY, 2012**

GRADING (SELECT ONLY ONE GRADING OPTION): REGULAR SATISFACTORY/UNSATISFACTORY _____

COURSE DESCRIPTION, NO MORE THAN THREE LINES: **ELECTROMAGNETIC THEORY, HARMONIC TRANSMISSION LINES, WAVEGUIDES, MICROWAVE NETWORK ANALYSIS, IMPEDANCE MATCHING AND TUNING, MICROWAVE RESONATORS, POWER DIVIDERS, COUPLERS AND FILTERS, MICROWAVE OSCILLATORS AND MIXERS, CAD DESIGN TECHNIQUES.**

PREREQUISITES*:

EEL 3300 ELECTRONICS 1
EEL 3470 ELECTROMAGNETIC FIELDS AND WAVES

COREQUISITES*:

REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL)*:

* PREREQUISITES, COREQUISITES AND REGISTRATION CONTROLS WILL BE ENFORCED FOR ALL COURSE SECTIONS.

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE: **PH.D. OR GRADUATE FACULTY STANDING**

Faculty contact, email and complete phone number:
Jonathan Bagby, bagby@fau.edu, 561-297-3462

Please consult and list departments that might be affected by the new course and attach comments. N/A

Approved by:

Department Chair: _____
 College Curriculum Chair: _____
 College Dean: _____
 UGPC Chair: _____
 Graduate College Dean: _____
 UFS President: _____
 Provost: _____

Date:

11/27/13
 11/29/13
 12/2/13
 12/1/14
 1-29-14

1. Syllabus must be attached; see guidelines for requirements: www.fau.edu/provost/files/course_syllabus.2011.pdf
2. Review Provost Memorandum: Definition of a Credit Hour www.fau.edu/provost/files/Definition_Credit_Hour_Memo_2012.pdf
3. Consent from affected departments (attach if necessary)

Email this form and syllabus to UGPC@fau.edu **one week before** the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.

EEL 5426 Microwave Engineering Syllabus

May 24, 2013

1. Microwave Engineering, EEL ~~5426~~⁵⁴³⁷, 3 credits
2. Prerequisites: EEE 3300 Electronics 1, EEL 3470 Electromagnetic Fields and Waves
3. Course logistics: Classroom-based, TBD
4. Dr. Jonathan Bagby
EE 518
Hours TBD
561.297.3462
bagby@fau.edu
5. TA information: NA
6. Course description: Review of electromagnetics, transmission lines, waveguides, microwave network analysis, impedance matching and tuning, microwave resonators, microwave power dividers, couplers and filters, microwave oscillators and mixers, CAD design techniques.
7. Course objectives/student learning outcomes: 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.
8. Course evaluation method:

Homework assignments	20%
Computer design projects	20%
Semester tests (2)	20% each
Final exam	20%
9. Course grading scale:

85 – 100%	A
75 – 84%	B
65 – 74%	C
55 – 64%	D
<55%	F

Note: “+” and “-” grades are awarded in these ranges.
10. Policy on makeup tests, late work, and incompletes: *Late assignments* will be accepted for a reasonable period with appropriate penalty. *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. *Accommodation* will be made for university-approved activities and religious observances. A grade of incomplete will be given only if there is solid evidence of medical or otherwise serious emergency situation.

11. Special course requirements: NA

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. Disability policy statement: In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in Boca Raton campus, SU 133 (561) 297-3880 and follow all OSD procedures.

URL to be added.

14. Code of academic irregularity policy: 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 unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf

15. Required textbook: *Microwave Engineering*, 4th ed., D. M. Pozar, Wiley, 2012

16. Supplementary material: *Microwave Engineering Class-Notes*, Rev. '12, J. Bagby, available on Blackboard

17. Course topical outline

<u>LectureTopics</u>	<u>Approximate # of 1.5 hr. Lectures</u>
1. Introduction to microwave engineering	1
2. EM plane waves	2
3. Conventional transmission lines	2
4. Parallel plate waveguide	2
5. Rectangular waveguide	2
6. Circular waveguide	2
7. Coaxial waveguide	2
8. Dielectric slab waveguide	2
9. Metallic strip waveguides	1
10. Wave velocities and dispersion	1
11. Microwave network modal analysis	2
12. Excitation of waveguides	1

13. Impedance matching and tuning	1
14. Theory of small reflections	1
15. Multisection transformers	1
16. Transmission line resonators	1
17. Cavity resonators	2
18. Cavity perturbations	2
19. Tests and reviews	2
<u>Exam Dates:</u> TBD	