RF Devices and Circuits Syllabus March 1, 2013

1. RF Devices and Circuits, EEL 4421C, 3 credits

2. Prerequisites: EEL 4364C High Frequency Amplifier Design or permission of instructor

3. Course logistics: Classroom-based, TBD

4. Dr. Jonathan Bagby

EE 518

Hours TBD

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5. TA information: NA

6. Course description: RF filter design, active RF components and component modeling, matching and biasing networks, RF oscillators, mixers and frequency synthesizers, use of RF CAD software for system simulation.

7. Course objectives/student learning outcomes: To introduce students to modern computer-aided RF design procedures for RF communications devices and circuits, enabling them to enter the field of RF design in industry or research.

8. Course evaluation method:

Homework assignments 10%

Computer design projects 25%

Semester tests (2) 20% each

Final exam 25%

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. *Incomplete grades* are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency situation incomplete grades will not be given.

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.

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](http://www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf)

15. Required textbook: *RF Circuit Design: Theory and Applications*, 2nd ed., R. Ludwig and G. Bogdanov, Prentice Hall, 2009

16. Supplementary material: *RF Devices and Circuits Class-Notes*, Rev. 2012, J. Bagby, available on Blackboard

17. Course topical outline

LectureTopics Approximate # of Lectures

1. Introduction to RF design 1

2. Conventional and microstrip transmission lines 2

3. Conventional and YZ Smith chart 2

4. Single and multiport networks 3

5. RF filter design: special filter realization 3

6. RF filter design: filter implementation 4

7. Active RF components 3

8. Matching and biasing networks 3

9. RF oscillators and mixers 4

10. Tests and reviews 2

Exam Dates (tentative)

Test 1: Sep. 20; Test 2: Oct. 23; Final Exam: Nov. 29