ECE 510 Radio Frequency Integrated Circuit Design Syllabus March 2014

Draft Syllabus

Course Description

Analysis, design and measurement of Radio Frequency Integrated Circuits, from block diagram concept sketch through circuit analysis and simulation, layout, fab, and measurement. Class projects will include all of the above steps, and prepare students for design, tapeout, and evaluation of RFICs on several current RFIC processes.

Schedule--Spring Quarter 2014
Monday and Wednesday 17:00 - 18:50 West Side Campus

Course Outcomes

Familiarity with the 50 ohm environment
Familiarity with RFIC Layout
Understanding Transmission Lines to, from, and inside RFICs
Designing with RFIC Package Parasitics
Inventory of RF device models: Transistor, Diode, R, L, C Transformer
Catalog of familiar circuit topologies for RF amplifiers
The language and basic operation of RF modulators/demodulators
Quantify the noise contributions of various structures on an RFIC
Familiarity with the use of a circuit and EM simulator to support RFIC design

Supplementary Textbooks: RF Power Amplifiers for Wireless Communications, by Steve Cripps; Microwave Transistor Amplifiers by Guillermo Gonzalez; Microwave Engineering, by Dave Pozar.

Course structure: weekly study guides with homework assignments and prep material for upcoming exercises.

Grading: weekly ungraded and graded exercises and in-class project exercises.

In-Class midterm exam Wednesday May 14 covering the basics, final individual student project