Course Name: RF and Microwave Design, EE 444
Instructor: Loren Betts
E-mail: loren.betts@sonoma.edu
Course page: https://canvas.instructure.com/courses/1102700

Class Schedule (Salazar 2009A): Monday/Wednesday: 4:00pm to 5:15pm.

Office Hours: By Appointment.


Assignments: Assignments will consist of written homework as well as ADS (Advanced Design System) simulations. Assignment are due at the beginning of lecture and no late assignments will be accepted. Please show all work! Note: The assignments will not be graded. If you hand in an assignment that appears that you have attempted to answer the questions you will get full credit.

Project: There will be one class project that will require the use of ADS; and generation of a report to be handed in for grading.

Exams: There will be one mid-term exam and one final exam. See the Canvas schedule of homework assignments for the due dates and the chapters covered for each exam.

Canvas: I am not normally located on campus, so Canvas will be a great resource for this class. I will post homework assignments, homework solutions, lecture notes, calendar information, and additional resources on this website. It is required that you use Canvas. It will be the primarily location for class announcements, schedule changes, etc. If you have not received an invitation from me, please let me know immediately.

Grade: Assignments 10% (not graded but handed in)
Project 40%
Mid-term Exam 20%
Final exam 30% (The final will cover all topics)
Class Outline: Here is an outline of the units we will be covering. These are subject to change.

1. Definition of Units

2. Transmission Line Theory
   a. Lumped-Element Model
   b. Lossless Transmission Line
   c. Wave Equations
   d. Characteristic Impedance
   e. Termination of a Transmission Line
      i. Reflection Coefficient, Average Power, Return Loss, Voltage Standing Wave Ratio (VSWR, SWR)
      ii. Reflection Coefficient vs Distance
      iii. Input Impedance vs Distance
      iv. Two Transmission Lines
   f. Generator and Load Mismatches

3. Microwave Network Analysis Theory and Measurements
   a. Smith Chart
   b. Linear Parameters
      i. Impedance
      ii. Admittance
      iii. Scattering (S-parameters)
   c. Vector Network Analysis (VNA)
   d. Nonlinear Scattering Parameters
      i. X-Parameters
   e. Nonlinear Vector Network Analysis (NVNA)
   f. Lossy Transmission Line
   g. Generator and Load Mismatches

No classes: March 13 - 17 (Spring break)
March 31 (Cesar Chavez day)

Key Dates: TBD (Mid-term exam)
May 12 (Last day of classes)
TBD (Final exam)