## ELEG 842 (Previously ELEG 867)

## **RF and Microwave Technology** SYLLABUS

NTU Course Number: EM 735 DE University Course Number: ELEG 842

Course Title: RF and Microwave Technology

Instructor:Dr. Robert G. Hunsperger, Electrical & Computer Engineering, University of<br/>Delaware, 214 Evans Hall, Newark, DE 19716Phone: (302) 831-8031FAX: (302) 831-8179

Office Hours: Tues/Thurs 2:00 3:00 p.m. Fri 12:15 1p.m.

Telephone Office Hours: Tues/Thurs 2:00-4:00 p.m. Eastern time.

Days course meets on campus: Tues/Thurs. 12:30pm – 1:45pm Eastern time.

Text: Matthew M. Radmanesh: <u>Radio Frequency and Microwave Electronics Illustrated</u> (Prentice Hall, Upper Saddle River, NJ ©2001) ISBN 0-13-027958-7

Prerequisites: Basic undergraduate course in electromagnetics.

Course Objectives:

- 1) To describe the basic principles of RF and microwave devices and circuits.
- 2) To explain the representation of RF and microwave devices and circuits by means of S-parameters and the Smith Chart.
- 3) To illustrate the current state-of-the-art by reference to journal articles and to examples of actual applications in use today.

Course Description:

Modern telecommunications and datacom systems operate at frequencies in the radio frequency (RF) and microwave range. This is true even for lightwave systems, in which the modulation frequencies are in this range. The basic concepts and technologies required to design RF and microwave devices and circuits will be explained. Examples of applications to wireless and lightwave systems will be discussed.

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**Course Requirements** 

| Homework:         | Problems assigned on a bi-weekly basis.  |
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| Exams:            | Midterm and a Final exam.  |
| Class Attendance: | Students are responsible for all material covered in the videotapes and reading assignments. |

Submit all homework and exams to the course instructor at the above address by the due dates shown on the lecture schedule. (FAX to 302-831-8179 is preferred.) This will ensure rapid grading and recording of your work. Please include the University course number on all work. (Delays of up to one week are OK. Approval for longer delays should be requested from the instructor.)

The homework will account for 15% of your grade and the exams will count equally into the other 85%. Each exam will cover roughly half of the course material. The Midterm exam will be 1.5 hours long, while the Final will be 2 hours long.

The exams will be 'closed-book" but a formula and data sheets will be provided, so it will not be necessary to memorize equations or constants. It will only be necessary for you to be able to select the right equations and data from a list of all those covered by the course. Graded midterm exams will be returned by mail with a copy of the solutions. Final exams are not usually returned unless you specifically request it.

A complete set of all homework assignments will be sent to you at the beginning of the term, and/or will be posted on the course website (www.ece.udel.edu/~hunsperg/842). Homework will be graded on a "logical approach" basis rather than on whether you obtain the right answer. Thus you should be able to obtain 100% on the homework by making a reasonable effort to solve all problems and submitting them. Graded homework submitted by FAX will not be returned to you, but solutions will be posted on the website and you will be notified by e-mail that we have received your homework. If you do not have web and/or FAX access, mail in your homework and it will be returned with a copy of the solutions. Note that solutions may be posted before the problems are due to be handed in, since I do not grade on the basis of correct answers and often students at different locations are taking the course on different schedules. Please try your best on the problems and then submit them before you look at the solutions. Be sure that you understand the homework solutions before taking the exams.