ECE 5180 / 6180 – Microwave Engineering

Students should also sign up for the Laboratory: ECE 5190 / 6190
Course Taught: MWF 8:30-9:30 EC 302
Lab Taught: As scheduled by sign-up sheet

Professor: Cynthia Furse, 797-2870, furse@alpha.ece.usu.edu
Office Hours: MWF 9:30-11:30 EL152
Open Door Policy: When my door is open, you are welcome to come in.

ECE 6130 Website:

http://www.engineering.usu.edu/classes/ece/6130/ (will be changing to 6180)
Lecture notes, announcements, schedule, etc.

Objectives:

After this course, the student should:

- Understand the fundamentals of microwave devices and microwave measurement methods.
- Be able to design basic passive microwave components including matching networks, couplers/power dividers, and filters. Be able to implement designs in Agilent/EESOF Libra software.
- Be able to develop prototypes of passive microstrip devices, measure their characteristics, and understand the measurements.
- Be able to combine passive elements with commercial active elements (amplifiers, mixers, VCOs, etc.) to create a microwave circuit. The project for this class will be an FSK WLAN.

Software:

Course includes use of computational methods for analyzing microwave elements. Students will need a SUN account to run Agilent ADS software. You will also need access to Matlab or Mathcad software.

Portfolios:

You will need a 3-ring binder to maintain your portfolio. Portfolio questions will be assigned with each day's lecture, such as "How do you design a Widget?" You should write a set of notes with the steps needed to answer the portfolio question (a cookbook), and illustrate this with examples. Copies of the solution manual are in the IEEE room. It is critical to keep up with lectures, in order to understand the material. Portfolio sections should be turned in each Monday. They will be verified for completeness. EXAMS WILL BE OPEN PORTFOLIO and LAB BOOK, CLOSED TEXT, so copy all tables, figures, etc. from the text that you will need, and keep them in your portfolio.

Portfolio Grades:

A Index, 100% complete, 2+ examples for each topic
B Index, 95% complete, 1.5+ examples for each topic
C Index, 90% complete, 1+ example for each topic
D Index, 80% complete, 1+ example for each topic

Laboratory:

Laboratory and design projects will be scheduled throughout the quarter. Measurement labs will be approximately bi-weekly. Sign-up sheets will be used to schedule lab times. Design projects (often associated with the measurement lab) will be assigned at the completion of

each "unit". Realistic specifications will be given and you will be asked to design a product through simulation. Later in the quarter you will also prototype and measure your designs. IN addition, each student will design and build an FSK WLAN. Students will need a bound laboratory notebook. Notebooks are due one week after your lab time. See Lab book policies for details of how to maintain your lab book.

Laboratory Notebook:

Fill this notebook with sufficient instructions so that another student of your level could QUICKLY, EASILY, ACCURATELY repeat your results. Do this NEATLY enough that you can proudly show it to an interviewer.

Leave one page in the front of your lab book for a table of contents and grade summary.

Each lab must include

1. A copy of the lab handouts (copy and paste)
2. All preliminary calculations (if done on computer, paste a hard copy of your calculations, programs, etc. in the book, and keep a disk in the back).
3. Sketch of equipment setup, including model #s of equipment.
4. WELL-LABELED data taken during the lab. Make tables, graphs, specific notes, etc. Include UNITS in all results.
5. Conclusions (approximately 1 page long) and SUPPORTING FIGURES/TABLES/GRAPHS for all conclusions. For instance, if you say, "The measured data agreed well with predicted data," you need either a table or a graph where the results are tabulated/plotted together. It would be even better to say, "The measured data agrees with the predicted data with less than 5% error."
6. Also include: name, date, signature at bottom of each page.
7. For your final project, you should include all of your preliminary work and design work in your lab book, and a final written report using this data. I will grade both the lab book and written report.

Exams:

Two midterm exams will be given during the quarter. Dates are given on the schedule. If you have conflicts with these dates, such as travel or an overburden of exams that day, please let me know as soon as possible.

Grading:

Portfolio	20%	OR	20%
Laboratory	20%		20%
Midterm	20%		
Midterm II	20%		
Comprehensive Final	20%		60%

Text: Microwave Engineering, 2nd edition, David M. Pozar, John Wiley & Sons

Your comments and feedback are appreciated !

射 频 和 天 线 设 计 培 训 课 程 推 荐

易迪拓培训(www.edatop.com)由数名来自于研发第一线的资深工程师发起成立，致力并专注于微波、射频、天线设计研发人才的培养；我们于 2006 年整合合并微波 EDA 网(www.mweda.com)，现已发展成为国内最大的微波射频和天线设计人才培养基地，成功推出多套微波射频以及天线设计经典培训课程和 ADS、HFSS 等专业软件使用培训课程，广受客户好评；并先后与人民邮电出版社、电子工业出版社合作出版了多本专业图书，帮助数万名工程师提升了专业技术能力。客户遍布中兴通讯、研通高频、埃威航电、国人通信等多家国内知名公司，以及台湾工业技术研究院、永业科技、全一电子等多家台湾地区企业。

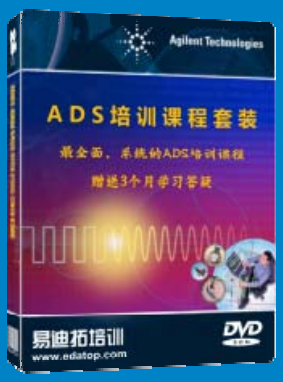
易迪拓培训课程列表：http://www.edatop.com/peixun/rfe/129.html

射频工程师养成培训课程套装

该套装精选了射频专业基础培训课程、射频仿真设计培训课程和射频电路测量培训课程三个类别共 30 门视频培训课程和 3 本图书教材；旨在引领学员全面学习一个射频工程师需要熟悉、理解和掌握的专业知识和研发设计能力。通过套装的学习，能够让学员完全达到和胜任一个合格的射频工程师的要求…

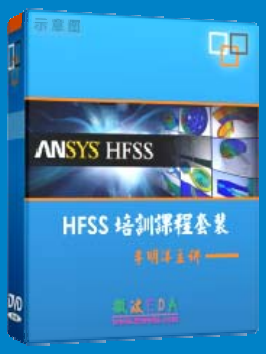
课程网址：http://www.edatop.com/peixun/rfe/110.html

ADS 学习培训课程套装



该套装是迄今国内最全面、最权威的 ADS 培训教程，共包含 10 门 ADS 学习培训课程。课程是由具有多年 ADS 使用经验的微波射频与通信系统设计领域资深专家讲解，并多结合设计实例，由浅入深、详细而又全面地讲解了 ADS 在微波射频电路设计、通信系统设计和电磁仿真设计方面的内容。能让您在最短的时间内学会使用 ADS，迅速提升个人技术能力，把 ADS 真正应用到实际研发工作中去，成为 ADS 设计专家...

课程网址： http://www.edatop.com/peixun/ads/13.html



HFSS 学习培训课程套装

该套课程套装包含了本站全部 HFSS 培训课程，是迄今国内最全面、最专业的 HFSS 培训教程套装，可以帮助您从零开始，全面深入学习 HFSS 的各项功能和在多个方面的工程应用。购买套装，更可超值赠送 3 个月免费学习答疑，随时解答您学习过程中遇到的棘手问题，让您的 HFSS 学习更加轻松顺畅…

课程网址：http://www.edatop.com/peixun/hfss/11.html

CST 学习培训课程套装

该培训套装由易迪拓培训联合微波 EDA 网共同推出，是最全面、系统、专业的 CST 微波工作室培训课程套装，所有课程都由经验丰富的专家授课，视频教学，可以帮助您从零开始，全面系统地学习 CST 微波工作的各项功能及其在微波射频、天线设计等领域的设计应用。且购买该套装，还可超值赠送 3 个月免费学习答疑…

课程网址：http://www.edatop.com/peixun/cst/24.html

HFSS 天线设计培训课程套装

套装包含 6 门视频课程和 1 本图书，课程从基础讲起，内容由浅入深，理论介绍和实际操作讲解相结合，全面系统的讲解了 HFSS 天线设计的全过程。是国内最全面、最专业的 HFSS 天线设计课程，可以帮助您快速学习掌握如何使用 HFSS 设计天线，让天线设计不再难…

课程网址：http://www.edatop.com/peixun/hfss/122.html

13.56MHz NFC/RFID 线圈天线设计培训课程套装

套装包含 4 门视频培训课程，培训将 13.56MHz 线圈天线设计原理和仿真设计实践相结合，全面系统地讲解了 13.56MHz 线圈天线的工作原理、设计方法、设计考量以及使用 HFSS 和 CST 仿真分析线圈天线的具体操作，同时还介绍了 13.56MHz 线圈天线匹配电路的设计和调试。通过该套课程的学习，可以帮助您快速学习掌握 13.56MHz 线圈天线及其匹配电路的原理、设计和调试…

详情浏览：http://www.edatop.com/peixun/antenna/116.html

我们的课程优势：

※ 成立于 2004 年，10 多年丰富的行业经验，

※ 一直致力并专注于微波射频和天线设计工程师的培养，更了解该行业对人才的要求

※ 经验丰富的一线资深工程师讲授，结合实际工程案例，直观、实用、易学

联系我们：

※ 易迪拓培训官网：http://www.edatop.com

※ 微波 EDA 网：http://www.mweda.com

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