

课程详述

COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程检讨之后产生变动。如对课程有任何疑问，请联系授课教师。

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	课程名称 Course Title	微波工程 Microwave Engineering
2.	授课院系 Originating Department	电子与电气工程系 Department of Electrical and Electronic Engineering
3.	课程编号 Course Code	EE316
4.	课程学分 Credit Value	3
5.	课程类别 Course Type	专业基础课 Major Foundational Courses
6.	授课学期 Semester	秋季 Fall
7.	授课语言 Teaching Language	中英双语 English & Chinese
8.	授课教师、所属学系、联系方式 (如属团队授课, 请列明其他授课教师) Instructor(s), Affiliation & Contact (For team teaching, please list all instructors)	程庆沙 Qingsha Cheng 刘毅军 Yijun Liu 电子与电气工程系 Department of Electrical and Electronic Engineering
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	待公布 To be announced
10.	选课人数限额(可不填) Maximum Enrolment (Optional)	60

11. 授课方式 Delivery Method	讲授 Lectures	习题/辅导/讨论 Tutorials	实验/实习 Lab/Practical	其它(请具体注明) Other (Please specify)	总学时 Total
学时数 Credit Hours	64				64
12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	EE104 电路基础 EE201-17 模拟电路 EE208 工程电磁场理论 EE104 Fundamentals of Electric Circuits EE201-17 Analog Circuit EE208 Engineering Electromagnetics				
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	EE307 天线与电波传播 EE417 通信系统设计 II EE307 Antennas and Propagation EE417 Communication system design II				
14. 其它要求修读本课程的学系 Cross-listing Dept.					

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

本课程介绍了微波工程中常用的传输线理论、微波网络分析方法以及当今工业界常用的仿真工具和仪表，并用于微带元件、同轴、波导器件的特性分析和设计。

This course introduces transmission line theory, network analysis method, the simulation tools, and instruments. The students learn to use the theory, tools, and techniques in analysis and design of microstrip, coaxial, and waveguide components.

16. 预达学习成果 Learning Outcomes

- (1) 掌握通信系统射频前端部分的各种器件的工作原理
- (2) 掌握微波电路的网络分析方法以及设计方法
- (3) 熟练掌握电磁仿真软件
- (4) 能设计简单的微波电路和器件
- (5) 应用理论和技术完成项目
- (6) 能独立学习和开展射频微波研究

After completing this course, the students will be able to

- (1) understand the basic principles and design approaches of RF/microwave components
- (2) apply network theory to analyse RF/Microwave module and component.
- (3) solve typical RF/microwave problem.
- (4) conduct basic analysis and design of RF/microwave module, by using simulating software and operating instruments.
- (5) apply theory and techniques to projects.

(6) conduct further study and research in RF/microwave.

17. 课程内容及教学日历（如授课语言以英文为主，则课程内容介绍可以用英文；如团队教学或模块教学，教学日历须注明主讲人）

Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)

1. 电磁场理论

Chapter 1: Electromagnetic Theory

2. 传输线理论

Chapter 2: Transmission Line Theory

3. 传输线和波导

Chapter 3: Transmission Lines and Waveguides

4. 微波网络

Chapter 4: Microwave Network Analysis

5. 阻抗匹配

Chapter 5: Impedance Matching and Tuning

6. 谐振器

Chapter 6: Microwave Resonators

7. 功分器和耦合器

Chapter 7: Power Dividers and Directional Couplers

8. 滤波器

Chapter 8: Microwave Filters

9. 噪声和非线性畸变

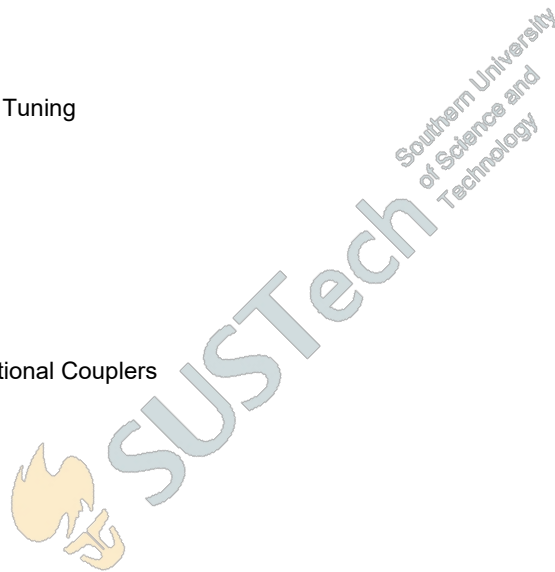
Chapter 9: Noise and Nonlinear Distortion

10. 有源器件

Chapter 10: Active RF and Microwave Devices

11. 微波系统

Chapter 11: Introduction to Microwave Systems



12. 项目设计

Chapter 12. Project

18. 教材及其它参考资料 Textbook and Supplementary Readings

D. M. Pozar, Microwave Engineering, 4rd Ed., John Wiley & Sons, 2010

D. M. Pozar, 微波工程, 第三版, 电子工业出版社, 2006

雷振亚、明正峰、李磊, 《微波工程导论》, 科学出版社, 2010

徐锐敏 唐璞, 《微波技术基础》, 科学出版社, 2009

课程评估 ASSESSMENT

19. 评估形式 Type of Assessment	评估时间 Time	占考试总成绩百分比 % of final score	违纪处罚 Penalty	备注 Notes
出勤 Attendance				
课堂表现 Class Performance				
小测验 Quiz				
课程项目 Projects		30		lab
平时作业 Assignments		10		
期中考试 Mid-Term Test		20		
期末考试 Final Exam		40		
期末报告 Final Presentation				

其它（可根据需要
改写以上评估方
式）
Others (The
above may be
modified as
necessary)

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20. 记分方式 GRADING SYSTEM

<input checked="" type="checkbox"/> A. 十三级等级制 Letter Grading <input type="checkbox"/> B. 二级记分制（通过/不通过） Pass/Fail Grading

课程审批 REVIEW AND APPROVAL

21. 本课程设置已经过以下责任人/委员会审议通过
This Course has been approved by the following person or committee of authority

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