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**	**天线与电波传播** **Antennas and Propagation**
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**	EE307
4.	**课程学分 Credit Value**	3
5.	**课程类别** **Course Type**	专业核心课 Major Core Courses
6.	**授课学期** **Semester**	春季 Spring
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	32		32		64

12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	EE104 电路基础 EE208 工程电磁场理论 EE316 微波工程 EE104 Fundamentals of Electric Circuits EE208 Engineering Electromagnetics EE316 Microwave Engineering
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	
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

本课程主要介绍了有关天线与电波传播的基本理论。涵盖了天线基础知识、简单线天线、缝隙天线与微带天线、喇叭天线、电波传播的基础知识以及电波传播的路径损耗模型。

This course introduces the basic theory of antennas and propagation including antenna basics, wire antennas, slot and patch antennas and horn antennas, radio wave propagation basics, and path loss model.

16. 预达学习成果 Learning Outcomes

(1) 理解天线的辐射原理、基本公式、基本参数以及物理意义

(2) 能运用天线理论解决典型的天线问题

(3) 熟练掌握天线的仿真软件和相关仪器的基本操作

(4) 设计并仿真简单的天线

(5) 应用天线理论和技术完成项目

(6) 能独立学习和开展天线研究

After completing this course, the students will be able to

(1) understand the basic principles and design approaches of antenna

(2) apply theory to analyse antenna.

(3) solve typical antenna problem.

(4) conduct basic analysis and design of antenna, by using simulating software and operating instruments.

(5) apply theory and techniques to some projects.

(6) conduct further study and research in antenna.

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.)

第一讲——天线绪论

Chapter 1, Introduction

第二讲——天线元；

Chapter 2: Antenna elements

第三讲——对称振子

Chapter 3: Dipole

第四讲——单极子天线

Chapter 4: Monopole

第五讲——天线阵列

Chapter 5: Antenna arrays

第六讲——缝隙天线和微带天线；

Chapter 6: Slot antennas and patch antennas

第七讲——喇叭天线

Chapter 7: Horn antennas

第八讲——无线通信系统简介

Chapter 8: Introduction to wireless communication system

第九讲——路径损耗模型；

Chapter 9: Path loss model

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

1. Constantine A. Balanis, Antenna Theory: analysis and design, 3rd, John Wiley & Sons, 2005

2. John D. Kraus, Ronald J. Marhefka, Antennas: For All Applications, McGraw-Hill, 2001

3. S. R. Saunders and A. A. Zavala, Antennas and Propagation for Wireless Communication Systems, 2nd Ed., John Wiley & Sons, 2007

4. John D. Kraus, Ronald J. Marhefka, 天线（上册），第三版，机械工业出版社，2011

课程评估 ASSESSMENT

19.

评估形式 Type of	评估时间 Time	占考试总成绩百分比 % of final	违纪处罚 Penalty	备注 Notes

Assessment		score		
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)				

20. 记分方式 **GRADING SYSTEM**

☑ A. 十三级等级制 **Letter Grading**
☐ 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