课程大纲
COURSE SYLLABUS

1.	**课程代码/名称** **Course Code/Title**	半导体芯片封装测试与可靠性 Semiconductor IC assembly, test, and reliability
2.	**课程性质** **Compulsory/Elective**	专业选修课 Major Elective Courses
3.	**课程学分/学时** **Course Credit/Hours**	2/48
4.	**授课语言** **Teaching Language**	英 中 English & Chinese
5.	**授课教师** **Instructor(s)**	郭跃进 Yuejin Guo
6.	**先修要求** **Pre-requisites**	半导体器件 Semiconductor device

7. 教学目标
Course Objectives

集成电路产业由芯片设计、晶圆制造，和封装测试三部分组成，本课程旨在通过让学生学习和了解芯片的封装测试与可靠性，使学生认识到封装在集成电路产业中起着越来越重要的作用。内容包括集成电路芯片封装概述、封装工艺流程、陶瓷封装、塑料封装、气密性封装、封装可靠性工程、封装过程中的缺陷分析和先进封装技术。通过该课程，学生能较容易地认识封装行业，理解封装技术和工艺流程，了解先进的封装技术。培养学生将掌握封装的基本原理，学会并培养分析解决封装技术能力，为今后从事人集成电路芯片科研及开发工作打下良好的专业基础。

Integrated circuit industry consists of three parts: chip design, wafer manufacturing, and package testing, this course aims to enable students to learn and understand the packaging testing and reliability of chips, so that students realize that packaging plays an increasingly important role in the integrated circuit industry. The content includes IC chip package overview, packaging process, ceramic packaging, plastic packaging, hermetic packaging, packaging reliability Engineering, defect analysis in the packaging process and advanced packaging technology. Through this course, students can easily understand the packaging industry, understanding packaging technology and process flow, and understanding advanced packaging technology. Learn the ability of analysis and solution of packaging technology.

8. 教学方法
Teaching Methods

讲授 Lectures， 习题/辅导/讨论 Tutorials，实验/实习 Lab/Practical

9. 教学内容
Course Contents

Section 1	课程介绍，芯片封装和测试 Introduction of assembly, test, and reliability。
Section 2	引线键合和倒装芯片封装技术 Wire bonding and flip chip packaging technology
Section 3-4	扇出和晶圆级封装, 2.5D 和 3D 封装， 和 SiP 等先进封装 Fanout and csp packaging，2.5D and 3D packaging, and SiP advanced packaging
Section 5	GaN 和 SiC 第三代半导体的大功率电力器件和 rf 功放器件的封装

		GaN and SiC device packaging
	Section 6	芯片测试 IC Testing
	Section 7-8	可靠性 reliability
	Section 7	
	Section 8	
	Section 9	
	Section 10	
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10.	**课程考核** **Course Assessment**
	请再此注明：①考查/考试；②分数构成。 考查 出勤 Attendance 10% 课堂表现 Class Performance 10% 平时作业 Assignments 30% 期中报告 Mid-Term Report 20% 期末报告 Final Report 30%
11.	**教材及其它参考资料** **Textbook and Supplementary Readings**