课程大纲
COURSE SYLLABUS

1.	**课程代码/名称** **Course Code/Title**	集成电路材料与工艺 Silicon VLSI Technology, Fundamentals, Practice and Modelling
2.	**课程性质** **Compulsory/Elective**	专业核心课 Major Core Courses
3.	**课程学分/学时** **Course Credit/Hours**	3/64
4.	**授课语言** **Teaching Language**	英 中 English & Chinese
5.	**授课教师** **Instructor(s)**	崔德虎 Cui Dehu
6.	**先修要求** **Pre-requisites**	半导体器件 Semiconductor device
7.	**教学目标** **Course Objectives**	
	课程介绍硅超大规模集成电路芯片生产制造相关的实际工艺技术，讲解这些工艺技术背后的科学工艺过程的物理图像 以及测量方法。包括 CMOS 工艺技术，光刻，刻蚀，薄膜沉积，真空技术，离子注入，化学物理沉积，等离子体技术，薄膜分析等。 This lecture focuses on the basic features of the silicon integrated circuits manufacture， including their distinctions and common underlying principle. Such as: CMOS Technology, lithography, etching, various deposition techniques, vacuum technology, evaporation, ion implantation, epitaxy, chemical vapour deposition, plasma, film analysis.	
8.	**教学方法** **Teaching Methods**	
	讲授 Lectures,，实验/实习 Lab/Practical	
9.	**教学内容** **Course Contents**	
	Section 1	晶体生长：晶圆片制造与硅晶圆片的基本特性，圆片的准备和规格； Crystal Growth, Wafer fabrication and basic properties of silicon wafer
	Section 2	半导体制造——洁净室、晶圆片清洗与吸杂处理； Semiconductor manufacturing, clean rooms, wafer cleaning and guttering
	Section 3-4	光刻：Lithography
	Section 5	热氧化：Thermal oxidation
	Section 6	高 K/金属栅：High-K dielectrics/Metal gate
	Section 7-8	扩散：Diffusion
	Section 9	薄膜淀积：Thin film deposition
	Section 10	刻蚀.：Etching
	Section 11	
	Section 12	
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10.	**课程考核** **Course Assessment**
	请再此注明：①考试；②分数构成。 课堂表现 Class Performance 10% 期末考试 Final Exam 40% 课程报告 Class Presentation 50%
11.	**教材及其它参考资料** **Textbook and Supplementary Readings**
	超大规模集成电路工艺技术：理论，实践及模型。 Silicon VLSI Technology, Fundamentals, Practice and Modelling