

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	集成电路剖解分析实践 Analysis Practice of Integrated Circuit Dissection
2.	授课院系 Originating Department	深港微电子学院 School of Microelectronics
3.	课程编号 Course Code	SMES208
4.	课程学分 Credit Value	1
5.	课程类别 Course Type	专业选修课 Major Elective Courses
6.	授课学期 Semester	夏季 Summer
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 (For team teaching, please list all instructors)	蒋苓利, 深港微电子学院, jiangll@sustech.edu.cn, 18589050095 Lingli Jiang, school of Microelectronics, jiangll@sustech.edu.cn , 18589050095
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)	

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
12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	SME204 微电子基础 II - 半导体器件 SME204 Fundamentals of Microelectronics II -Semiconductor Device				
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

本课程的教学目标在于学习集成电路剖解分析的方法，掌握对常规模拟集成电路解剖照片的基本分析能力。

The teaching objective of this course is to learn the method of IC dissection analysis, and master the basic analysis ability of conventional analog IC dissection photos.

16. 预达学习成果 Learning Outcomes

通过本课程的学习，学生应当掌握以下知识：

1. 在模拟集成电路剖解照片中，能辨认常见基本器件，包括：MOS、三极管、二极管、电阻、电容等；
2. 能对剖解照片中的器件进行掺杂类型辨别，如：NMOS 和 PMOS 的区分；
3. 能对剖解照片中的电路连接进行提取；
4. 学会分析软件的基本操作方法。

In this course, students should master the following knowledge:

1. In the photos of analog integrated circuits, basic devices can be identified, including MOS, bipolar, diode, resistor, capacitor, etc;
2. Be able to distinguish the doping type of devices in IC photos, such as NMOS and PMOS;
3. Be able to extract circuit connections in IC photos;
4. Learn the basic operation methods of analysis software.

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.)

1-4 学时：集成电路剖解分析概述及集成电路剖解照片中的器件介绍；

5-8 学时：集成电路剖解分析软件的使用及器件提取，包含器件定义、端口定义、尺寸参数提取、多实例调用等；

9-12 学时：器件之间的连接线网提取，包括线网跟踪、引脚连接等；

13-16 学时：ERC 检查，包括悬空引线头检查、逻辑检查、命名检查等；

17-20 学时：SVS 检查，保证提取电路的正确性；

21-32 学时：集成电路剖解分析提取项目。

1-4 hours: overview of IC dissection analysis; and the devices in the IC dissection photos;

5-8 hours: usage of the analysis software; and device extraction method, including device definition, port definition, size parameter extraction, multi-instance call, etc;

9-12 hours: extraction of connecting wire network between devices, including wire network tracking, pin connection, etc;

13-16 hours: ERC check, including floating check, logic check, naming check, etc;

17-20 hours: SVS check to ensure the correctness of the extracted circuit;

21-32 class hours: IC dissection extraction project.

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

《集成电路反向分析技术》，中国科学技术出版社，ISBN: 9787504657695

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		20%		
课堂表现 Class Performance		10%		
小测验 Quiz				
课程项目 Projects		70%		

平时作业 Assignments				
期中考试 Mid-Term Test				
期末考试 Final Exam				
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