

Syllabus

Processing of Electronic Materials

Course Name	Course type (credit/hours)		전선(3/3)		Course code	
	Target students Division/major/grade		신소재공학과/		Opening semester	2018년 2학기
	Class time and classroom		수7(팔1001) 수8(팔1001) 수9(팔1001)(팔1001)			
Reference to this course	Related basic courses					
	Recommended concurrent courses					
	Related advanced courses					
Instructor	Name (title/division)		서형탁 (부교수/신소재공학과)			
	Office Room Number		Office phone Number	3532	e-mail	hseo@ajou.ac.kr
	Office hours			Homepage address	aeem.ajou.ac.kr	
Teaching Assistant	Name (title/division)					
	Office Room Number		Office phone Number		e-mail	

1. Introduction

This class deals with various processing techniques of electronic materials. Lecture topics contains introduction of each process step such as lithography, etching, ion-implantation, diffusion, bulk/single-crystal substrate growth and particularly, various analysis technique to evaluate the special properties in each process step. Finally, it aims for students to get knowledge about low-level structure concepts on representative solid-state devices such as memory, CMOS, MEMS utilizing electronic materials.

2. Course Objectives

3. Class types and activities

4. Teaching Method

강의를 바탕으로 진도 체계에 따라 진행하되 각 반도체 단위 공정에서의 기본 원리 학습을 선행하고 이후 실용적 응용으로 진행 한 후 최신 기술 동향을 리뷰하는 순서로 진행한다.

The lecture for each chapter follows a regular order like below:

1. Introduction
2. Historical Development and Basic Concepts
3. Manufacturing Methods
4. Measurement Methods
5. Models and Simulation
6. Limits and Future Trends
7. Summary

5. Knowledge and ability required for taking this course

6. Method of Evaluation

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance			
midterm exam			
final exam			
quiz			
presentation			
discussion			
homework			
etc			

프로젝트 보고서 (Term-Project) 40%
Mid-Term Exam 60%

7. Textbooks

Main/Sub	Title	Writer	Publisher	Publication year
주교재	Silicon VLSI Technology: Fundamentals, Practice, and Modeling	James D. Plummer / Michael D. Deal / Peter B. Griffin	Prentice Hall	2000

8. Lecture Schedule

Week	Lecture contents	Lesson type	Remark
1	INTRODUCTION AND PERSPECTIVES	강의	
2	MODERN CMOS TECHNOLOGY	강의	
3	CRYSTAL GROWTH, WAFER FABRICATION AND BASIC PROPERTIES OF SILICON WAFERS	강의	
4	SEMICONDUCTOR MANUFACTURING: CLEAN ROOMS, WAFER CLEANING, AND GETTERING	강의	
5	LITHOGRAPHY	강의	
6	THERMAL OXIDATION AND THE Si/SiO ₂ INTERFACE	강의	
7	DIFFUSION	강의	
8	MID TERM EXAM	시험	
9	ION IMPLANTATION	강의	
10	THIN FILM DEPOSITION	강의	
11	SILICON EPITAXY	강의	
12	PROCESS INTEGRATION	강의	
13	PHYSICAL VAPOR DEPOSITION	강의	
14	ETCHING	강의	
15	PROCESS INTEGRATION AND MOS DEVICE TOPICS	강의	
16	PROCESS INTEGRATION AND BIPOLAR DEVICES	강의	

8. Lecture Schedule

Week	Lecture contents	Lesson type	Remark
17	BACK END TECHNOLOGY		

9. Others