

# Syllabus

## Processing of Electronic Materials

Prof.	Name	HYUNGTAK SEO	Sub.	Student	Department	Department of Materials Science and Engineering
	Position	Associate Professor			Major	Materials Science and Engineering
	Group	Energy Systems Research				

### 1. Course Description

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. Teaching Methods

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

### 3. Evaluation

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

#### 4. TextBooks

--

#### 5. 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 <sub>2</sub> 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	
17	BACK END TECHNOLOGY		

6. Others

--