


# 固態電子元件

## Solid State Electronic Devices

Spring 2009

**NTHU EE**  
**EE3350 固態電子元件導論**  
**Introduction to Solid-State Electronic Devices**



# EE3350 固態電子元件導論

## Introduction to Solid-State Electronic Devices

### ■ Class Time & Venue

- W3W4F4 ; 資電館 (CSEE) R206

### ■ Textbook

- [Fundamentals of Semiconductor Devices](#)  
by Betty L. Anderson & Richard L. Anderson (Mc GRAW.HILL)

### ■ References

- [Semiconductor Physics and Devices](#)  
by Donald A. Neamen (Mc GRAW.HILL)
- [Solid State Electronic Devices](#)  
by Ben G. Streetman & Sanjay K. Banerjee (Pearson)

### ■ ftp for handout/material download

address: [well.ee.nthu.edu.tw](http://well.ee.nthu.edu.tw)

login account : ee3350

password: 113350



# Information

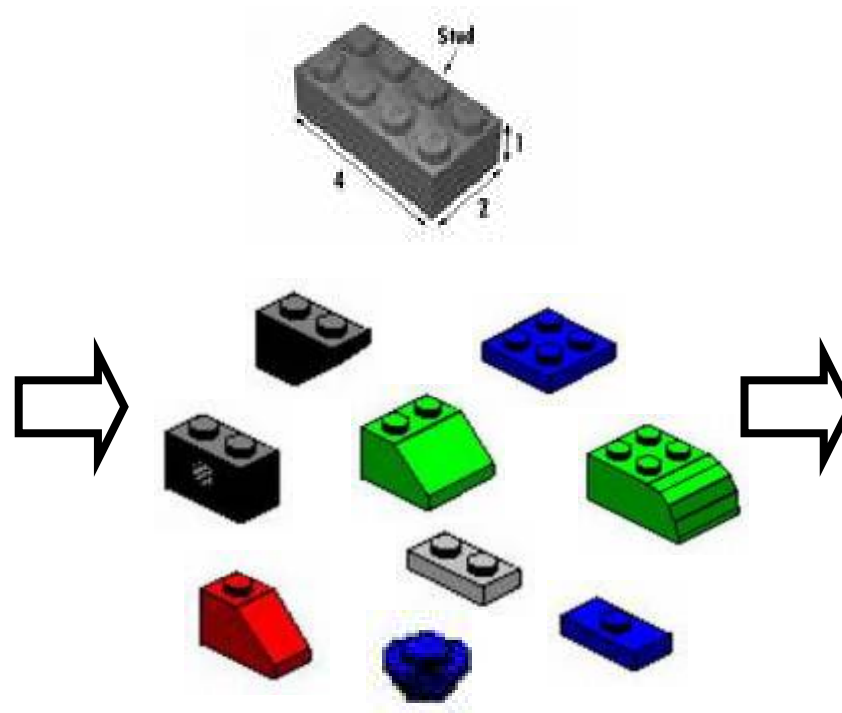
- INSTRUCTOR                    林崇榮
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- TA: TBD
  - [Microelectronics Lab.](#) : 教育館 (Edu. Build.) R111
  - Phone: ext.34034
  - Office hour: TBD
  - Email: TBD

# What's Device ?

Manufacturing



Components

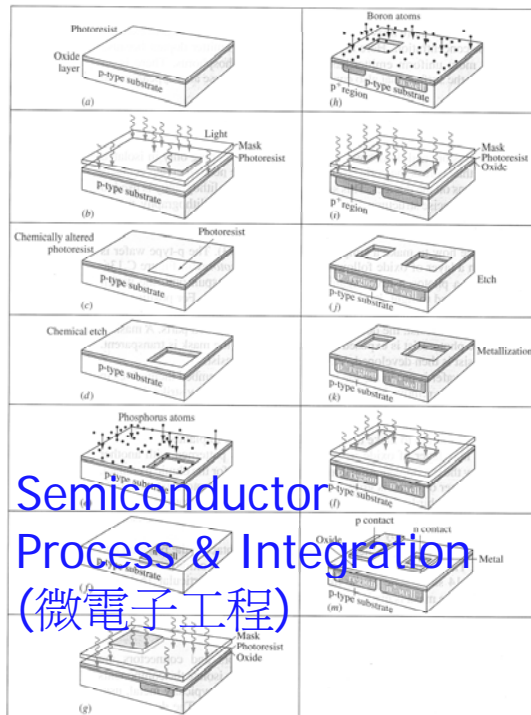


Composition



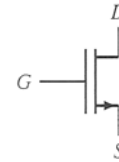
# What's Device ?

## Manufacturing



Semiconductor  
Process & Integration  
(微電子工程)

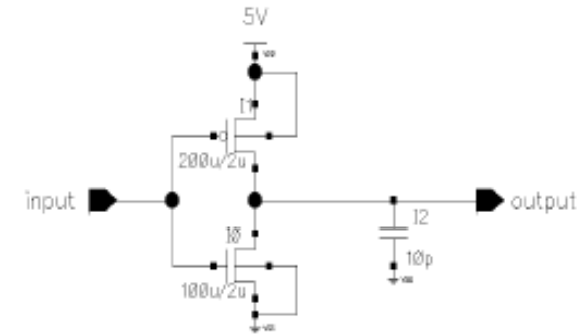
## Components



Semiconductor  
Devices  
(固態電子元件)

VLSI Device  
(積體電路元件)

## Composition



Microelectronics  
(電子學)

VLSI Circuit Design  
(積體電路設計)



# Syllabuses

- Semiconductor Material & Energy States
- Semiconductor Diodes
- Field Effect Transistors
- Bipolar Junction Transistors (Optional)
- Power and Memory Devices (Optional)

# Contains

	Topic	Syllabus
A	Semiconductor Material	Energy State and Model
B		Energy Bands & Levels
C		Current Flow Model
D	Diode	Homogeneous Junction
E		Small Signal & Transient Effect
F		Nonstep & Hetero Junctions
G	MOSFET	MOS Capacitor
H		Charge Control Model
I		MOSFET Characteristics 1
J		MOSFET Characteristics 2
K	Bipolar	Heterojunction Bipolar (HBT)
L		SCR & BJT
M	Optoelectronic Device	Photodetector & LED
N		CMOS Image Sensor



# Grading Policy

- GRADING:
  - Test (n) 20%
  - Midterm (1) 40%
  - Final (1) 40%