Semiconductor Devices for Integrated Circuits
積體電路元件

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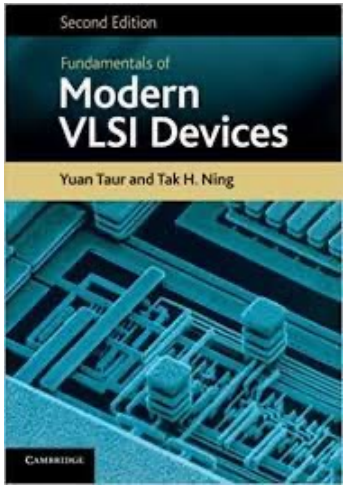
ENE5330　積體電路元件
Semiconductor Devices for Integrated Circuits

- **Professor**: 林崇榮 (cjlin@ee.nthu.edu.tw)
- **TA**: 張薇 (wchang.starlab@gapp.nthu.edu.tw)
- **Handouts and Reference Books**



1. **Handouts (Downloaded)**
2. **Physics of Semiconductor Devices (Ref.)**
   Simon M. Sze, Yiming Li, Kwok K. Ng
3. **Fundamentals of Modern VLSI Devices (Ref)**
   Yuan Taur, Tak H. Ning

Course Description

In this graduate course, the lessons consisting of Semiconductor Devices for Integrated Circuits (積體電路元件) and technology by lectures and assigned homework, which developing students' professional VLSI device knowledge acquired in the previous fundamental physics and microelectronics classes. Students learn to know the band theory, carrier conduction in semiconductor, junction, transistor and MOSFET, memory device and BJT. Furthermore, they learn to understand the device scaling limit, operation concept, and future trends. Extended memory and advanced devices (Fin&GAA) are also addressed and introduced in this class.

Syllabus

- Semiconductor Energy States and Bands
- Carrier Concentration and Conduction
- Semiconductor Junction and Diodes
- MOS Capacitor and Charge Control Model
- Field Effect Transistors (MOSFET & BJT)
- Memory and Advanced (Fin/GAA) FETs

Grading Policy

- 20% - Homework and Attendance
- 80% - Four Exams