

NATIONAL CHENG KUNG UNIVERSITY
Academy of Innovative Semiconductor and Sustainable Manufacturing (AISSM)

Program of Semiconductor Process Technology

The Essentials of Semiconductor Engineering - Fundamentals of Device Physics and Fabrication

Spring 2022

Course Description:

“The Essentials of Semiconductor Engineering – Fundamentals of Device Physics and Fabrication” is concerned with semiconductor properties, materials, devices, and manufacturing technology. It considers the fundamental fields of semiconductor technology and identifies synergistic interactions within various areas in one concise course.

Mode: English taught/remote teaching (asynchronous online classes)

Course upload date: 3/7、3/14、3/21、3/28

Hours: 9 class-hours

Reference books:

1. D. A. Neamen, Semiconductor Physics and Devices, Basic Principles, 4th edition, McGraw Hill, New York, International Edition 2012
2. Plummer, Deal, Griffin, Silicon VLSI Technology: Fundamentals, Practice and Modeling, Prentice Hall, 2000
3. Jerzy Ruzyllo, Guide to semiconductor engineering, World Scientific, 2020

Evaluations:

Homework: 60%

Final Exam(or Report): 40%

Topics:

1. Basics of Semiconductor Materials and Integrated Circuits
2. Silicon Wafer Fabrication Processes
3. Semiconductor Physics
4. Semiconductor Devices and How They Are Used

Registration: this course has 10 non-credit spots open to students of NCKU’s partners until March 4th 2022.