Nanoelectronics and nanotechnology (奈米電子及奈米技術)

Course level : Graduate students
Course goals : Understanding knowledge of nanoelectronics, and the technology applied to nanodevices.
Text Book :

A : "Nanoelectronics and information technology" Rainer Waser, Wiley-VCH, 2005 (ISBN-13:978-3-527-40542-8, ISBN-10: 3-527-40542-9)

B: "Modern Physics for Engineers," Jasprit Singh, John Wiley & Sons, 1999 (ISBN 0-471-33044-2)

C : "Semiconductor Devices : Physics and technology," S. M. Sze, John Wiley & Sons, 2002, 2nd edition. (ISBN 0-471-33372-7)

Course Outline

1. Solid-state-electronic properties (2/24, 3/3, 3/10) Book B, A
2. Organic molecule-electronic properties (3/17) Book A
3. Microfabrication and characterization technology (3/24) Book A, C

Exam 1 (3/31)

4. Field effect transistors (4/7) Book C
5. Bipolar transistors (4/14) Book C
6. Light-emitting-diodes (4/21) Book C
7. Solar cells (4/28) Book C
8. Tunneling devices (5/5) Book C

Exam 2 (5/12)

9. Single-electron device (5/19) Book A
10. Carbon nano tube (5/26) Book A
11. Molecular devices (6/2) Book A
12. Sensors (6/9)

In class Presentation & Reports (6/16)

Grading : Exam 1- 30%, Exam 2- 30%, In class presentation20%, report 20%.