

Microelectronic Device Fabrication II  
PH 546, Winter Quarter  
Syllabus

I. Interconnects

1. Resistivity parameters, RC constant
2. Metal/semiconductor contacts: Schottky and Ohmic
3. Al interconnects
  - interface with Si
  - electromigration
  - Blech effect
  - Stress induced voids
4. Silicides, salicides, and polycides
5. Barrier layers: sacrificial, stuffed, passive, and amorphous.
6. Tungsten CVD
7. Copper interconnects, electrodeposition
8. Au interconnects
9. General film properties

Mid-term exam

II. Chemical vapor deposition

1. Amorphous films
2. Polycrystalline films
3. Epitaxial films : Si and SiGe, SiGe devices
4. Autodoping, buried layers.
5. Selective epitaxy, SOI, Simox , SOI devices.
6. SiO<sub>2</sub> , PSG, BPSG, Si<sub>3</sub>N<sub>4</sub>, SiON, and STI.
7. Thin gate oxides, high-k dielectrics.
8. Multilevel metallization

Final grade will be based on: 40% midterm, 40% final, and 20% homework.