EEE 4331 – Microelectronic Fabrication Technologies

Catalog Description: (3cr) Principles of microelectronic device fabrication. Emphasis on fundamentals of microfabrication processing and microelectronic device process flows. Computerized process simulation.

Prerequisites: EEE 3396C or permission of instructor

Textbook:

Silicon VLSI Technology: Fundamentals, Practice and Modeling by Plummer, Deal, and Griffin

Course Objective: This course focuses on advanced modern IC processing. We will cover each of the processing steps in detail, including oxidation, dopant diffusion, ion implantation, lithography, thin film deposition, and etching. We will emphasize how these steps combine to build modern IC devices. We will also give examples of how software packages are used to simulate and model the physics and chemistry of IC fabrication.

Professional Component: 3 credits of Engineering Science

Instructor: Prof. Ant Ural

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Teaching Assistant: n/a

Class Schedule:
        3 classes per week of 50 minutes each

Meeting Times: Tu 8-9/ Th 9

Meeting Location: Benton 328

Grading: Homework, Midterm exam, Final exam

Course outline:
- Introduction
- CMOS Technology
- Crystal Growth
- Clean Rooms
- Oxidation
- Diffusion
- Ion Implantation

- Lithography
- Deposition
- Etching
- Backend processing
- CMOS Technology/ Process Integration