Syllabus

ECE 571—Microelectronic Fabrication

Department of Electrical and Computer Engineering
University of Massachusetts Amherst
Spring 2012

Course Instructor: Prof. Qiangfei Xia, 201D Marcus Hall, qxia@ecs.umass.edu
Office Hours: M/W: 2:30-3:30 pm

TA: Yuchen Li, 14A Marcus Hall, yuchenli@ecs.umass.edu
Office Hours: TBA

Organization:
  Lecture – M/W/F 1:25 - 2:15PM, ELAB 325
  Lab – TBA, Marcus 15

Enrollment: limited to 20 students

Prerequisites: ECE 344 or equivalent background

Credits: 4 (with lab)

Grading: 50% Laboratory, 20% Exam 1, 20% Exam 2, 10% Homework

Course Goals
  • To introduce basic technologies and knowledge of IC fabrication.
  • To fabricate semiconductor devices and integrated circuits starting from bare silicon wafers.
  • To test devices/circuits and analyze their performance using your knowledge in semiconductor physics and electronics.

Lecture Topics:
  • Overview of IC fabrication
  • Crystal Growth
  • Substrate Preparation and Cleaning
  • Thermal Oxidation
  • Optical Lithography
  • Dopant Diffusion and Ion Implantation
  • Thin Film Deposition and Etching
  • Metallization and Interconnection
  • Packaging, Yield, and Process Integration
  • Current Status and Future Prospects

Course Materials (I’ve requested reserve in the library for the books):
  • Lab manual and other handouts.