

# ECE 3626

## Integrated Circuit Fabrication Processes

Electrical and Computer Engineering Department, Northeastern University

**Instructor:** Prof. J. Hopwood  
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**Text:** "The Science and Engineering of Microelectronic Fabrication,"  
Stephen A. Campbell, Second Edition (Oxford University Press, 2001).

**Time:** 9:50-11:30 Tuesday and Thursday

### Office

**Hours:** 1:00-2:00 Tu, Th (or by appointment)

**Prerequisite:** ECE 3384 "Solid State Devices I"

**Description:** This is a survey course intended to cover the basic techniques used in fabricating modern CMOS integrated circuits. Emphasis will be placed on the underlying physical principles of the major process steps, computer simulation of process steps, and process integration.

**Grading:** Homework/Projects: 30%  
Midterm Exam: 30%  
Final: 40%

### Course Outline:

Week	Subject	Text Readings
1/3	Introduction to CMOS processes, Wafers, Diffusion	Ch. 1, 16.3, 2, 3 +handout
1/7	Diffusion, Oxidation	Ch. 3, 4
1/14	Ion Implantation, RTP	Ch. 5, 6
1/21	Lithography	Ch. 7
1/28	Photoresist, e-beam Lithography	Ch. 8, 9
2/4	Vacuum, Plasma	Ch. 10 + handouts
2/11	Midterm Exam, Etching	Ch. 11
2/18	Thin films/Sputtering	Ch. 12
2/25	CVD, Epitaxial Growth	Ch. 13, 14
3/4	Process Integration, (Yield)	Ch. 16, 18, (19)

**Web Page:** <http://www.ece.neu.edu/edsnu/hopwood/ece3626.html>