ECE 4310: Introduction to Very Large Scale Integrated Circuit Design

Credit / Contact hours: 3 / 3

Course coordinator: Changzhi Li

Textbook(s) and/or other required material: B. Razavi, Design of Analog CMOS Integrated Circuits, McGraw Hill, 2001.

Catalog description: ECE Introduction to VLSI Design (3:3:0). Prerequisite: ECE 3312. For majors only or departmental consent. A basic introduction to very large-scale integrated design of circuits and devices. Geometrical patterns of semiconductor devices on a chip, MOS circuits, masking and patterning, and automation tools.

Pre-requisite(s) or co-requisites: ECE 3312 and 2.25 adjusted cumulative GPA.

Designation: Elective

Course learning outcomes: Upon completion of this course, students should be able to do the following:

1. analyze and design basic digital CMOS integrated circuit subsystems
2. analyze and design basic analog CMOS integrated circuit subsystems
3. CAD programs for layout, functional and provisioning
4. simulate basic IC circuit subsystems

Student outcomes addressed: a, c, e, and k.

Topics covered

Technology of Integrated Circuits - 3 hours
Circuit Layout - 3 hours
Device Modeling - 6 hours
Circuit Simulation - 6 hours
Basic Integrated Circuit Building Blocks - 8 hours
Digital Circuits - 8 hours
Amplifiers - 8 hours
Tests – 3 hours