ECE 4321: Applications of Analog Integrated Circuits

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, 2000.

Catalog description: Principles involved in designing analog integrated circuits. Device physics, small-signal and large-signal models. Biasing and basic circuit building blocks. Applications.

Pre-requisite(s) or co-requisites: ECE 3312 and ECE 3323.

Designation: Elective

Course learning outcomes: Upon completion of this course, students should be able to do the following:
1. Analyze and design analog integrated circuit subsystems.
2. Apply CAD tools for simulation of analog IC circuit subsystems.
3. Apply CAD tools for layout and layout-versus-schematic (LVS) check of analog IC circuit subsystems.

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

Topics covered:
MOS Device Physics – 3 hours
Single-Stage Amplifiers – 4 hours
Differential Amplifiers – 6 hours Current Mirrors – 4 hours
Noise – 4 hours
Operational Amplifiers – 6 hours
Frequency Response, Stability, and Frequency Compensation – 9 hours
Data Converters – 3 hours
Tests – 3 hours