ECE323  Electronic Analysis, Design, and Simulation

Objectives: Learn the basics of analysis and design of modern electronics, mainly for preparation for advanced courses. Introduction to electronics design projects.

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Text: Microelectronic Circuits by Sedra/Smith 5th ed.

Course Outline:

Week

1. Electronics Overview, Design and Project methods: Chp. 1, notes.

2. Op Amps Chapter 2, Secs. part of 2.1 – 2.4,

3. Diodes Chapter 3, Secs. part of 3.1 – 3.5, and 3.9

4. MOS Transistors Chapter 4, Secs. 4.2 – 4.9, and 4.12

5. BJT Transistors Chapter 5, Secs. part of 5.2 – 5.9, and 5.11

6. Review and Exam I week 6

7. Analog ICs Chapter 6, Secs. 6.3 and 6.5 Current Mirror Loads

7. MOS Diff. Pair Chapter 7, Secs. 7.1 and 7.2

8. Feedback Chapter 8, Secs. 8.1 and 8.2

9. Digital ICs Secs. 1.7, 4.10, and 10.1

10. Tuned Amps and Op Amps & Filters Sec. 12.11.1 – basic principle of tuned MOS amp Sec. skim 2.5 – 2.7, part of 2.9

Review Sec. 12.7, 12.12 Ex. 12.6 Spice of Tow-Thomas biquad

Deliverables and Grading:

Homework (maybe quizzes) – 20%

Exam 1 – 30% Exam 2 – 40%

Design Report – 10%

ECE Honor System for Individual work.