ESE 324: Electronics Laboratory C
SPRING 2011

Instructor: Emre Salman
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Office: Room 257, Light Engineering Building
Time and Location: Lecture: Thursday, 3:50 pm – 4:45 pm at Harriman Hall 112
Lab L01: Tuesday, 5:20 pm – 8:20 pm Light Engineering, 283
Lab L02: Monday, 6:55 – 9:55 pm Light Engineering, 283
Office Hours: Tuesdays, 9:00 am to 11:00 am and Thursdays, 4:50 pm to 6:50 pm

Course Description: Illustrates and expands upon advanced concepts presented in ESE 372. Experiments include analog circuits such as oscillators and voltage regulators; mixed-signal circuits such as analog to digital and digital to analog data converters and phase-locked loops, and several experiments emphasizing the analog design issues in digital circuits such as transmission gates, registers, and dynamic logic. Weekly lectures cover the minimum required theory for these experiments.

Text Books: Microelectronic circuits by A. S. Sedra and K. C. Smith, 5^{th} or 6^{th} edition (required) and Analysis and Design of Digital Integrated Circuits by D. Hodges, H. Jackson, and R. Saleh, 3^{rd} edition (recommended)

Prerequisites: ESE 211, 372

Grading: Lab work/reports: 45% Midterm: 20% Final: 30% Portfolio: 5%

Tentative outline:

Week 1: Introduction and review of MOS theory and CMOS technology
Week 2: Transmission gate design and characterization
Week 3: Transistor level flip-flop design
Week 4: Setup/hold time characterization and delay analysis
Week 5: Dynamic CMOS logic and comparison with static CMOS
Week 6: Damping theory
Week 7: Voltage regulator design
Week 8: Multivibrator circuits: Astable, monostable, bistable structures
Week 9: Design of a variable duty cycle oscillator
Week 10: A/D converter design
Week 11: D/A converter design
Week 12: Phase-locked loop design
Week 13: Discrete versus integrated design
Week 14: Course summary and integration

If you have a physical, psychological, medical or learning disability that may impact on your ability to carry out assigned course work, you are urged to contact the staff in the Disabled Student Services office (DSS), Room 133, Humanities, 632-6748/TDD. DSS will review your concerns and determine, with you, what accommodations are necessary and appropriate.