EE 5356/7356
VLSI Design and Labs

Instructor
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Office location: 337 Junkins Building, SMU campus
Office hours: Tuesday and Thursday 2:00pm-3:00pm

Lecture: 11:00pm-12:20pm Tuesday and Thursday, Junkins Building 0205
Lab: 5:00pm-7:50pm, Monday, Junkins Building 0215

Course Description
This course explores the design aspects of CMOS digital integrated circuits. It covers CMOS devices and manufacturing technology, static and dynamic characteristics of CMOS inverter, combinational logic circuits, sequential logic circuits and clocking approaches, dynamic logic circuits, adders and multipliers, and memory circuits. Design issues such as speed, power and chip area will be emphasized. The influence of interconnect parasitics on circuit performance and approaches to cope with them will also be discussed. The course will be concluded with an examination of VLSI design methodologies. CAD tools for layout, extraction, and simulation will be used for homework assignments, labs and projects.

Textbook and Other Related Materials

References

Prerequisites
EE 2381 – Digital Computer Logic
EE 3311 – Solid State Device

Grading
1. Homeworks 10%
2. Labs and Final Project 20%
3. Mid-Term Exam 1 15%
4. Mid-Term Exam 2 15%
5. Final Exam 40%

Topics Covered:
1. MOS Transistor Theory
2. CMOS Transistor Fabrication Technology
3. CMOS Inverter Static Characteristics
4. CMOS Inverter Dynamic Characteristics
Laboratory / Projects
The students are required to complete a design project to meet certain specifications (speed and power dissipation). In the project, the students design, simulate and layout the circuits using Cadence design tools.

Disability Accommodations: If you need academic accommodations for a disability, you must first contact Disability Accommodations & Success Strategies (DASS) at 214-768-1470 or www.smu.edu/alec/dass.asp to verify the disability and to establish eligibility for accommodations. Then you must schedule an appointment with the professor to make appropriate arrangements.

Religious Observance: Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (See University Policy No. 1.9.)

Excused Absences for University Extracurricular Activities: Students participating in an officially sanctioned, scheduled University extracurricular activity will be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (University Undergraduate Catalogue)