EEL 5344C; Digital CMOS VLSI Design  
FALL 2008; BSN 2205; MW 3:05pm-4:20pm

Instructor: Dr. Sanjukta Bhanja  
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Teaching Assistant: Not available

Prerequisites: Logic Design, Computer Organization and knowledge of Unix Environment.

Objectives: To make the student a skilled VLSI designer – is the sole objective of this course.

Course Textbook:

Bibliography:

Grade Distribution:
Assignments: (10+15)%  Test1: 25%  Test2: 25%  Test3: 25%

Topics:
- Basic CMOS Gates  
- MOS Transistor Theory (nMOS/pMOS Enhancement Transistor)  
- MOS Device Design Equations, Transmission gate  
- CMOS Processing Technology (Brief)  
- Circuit Characterization and Performance Estimation  
- Resistance/Capacitance Estimation, Switching Characteristics  
- Power Dissipation, Delay Models, Charge Sharing, Design Margining  
- CMOS Logic Structures (BICMOS, Psuedo-, Dynamic, Clocked, Pass-transistor, Domino, Cascade)  
- Clocking Strategies  
- I/O Structures  
- Design Methods and Tools  
- CMOS Testing (Brief)  
- Subsystem Design (Adders, Parity Generators, Comparators, Multipliers, Memory Elements)  
- Control Design  
- CMOS System Design Examples, Case-studies

Special Notes:
- Academic dishonesty will not be tolerated and the student, in question, will be dealt with in accordance with the departmental policies.
- Make-up exams are only permitted for unplanned emergency issues, and you need to document your reason for absence.
- If you need any special accommodation according to the American Disability Act, please let me know.
- Students who anticipate the necessity of being absent from class due to the observation of a major religious observance must provide notice of the date(s) in writing by the second class meeting.