EE 4253/6253 Principles of VLSI Design — Class Policy and Syllabus — Fall 1998

Benjamin J. Blalock, Assistant Professor, Dept. of Electrical and Computer Engineering
email: blalock@erc.msstate.edu

Office information: Simrall (EE Building) Microsystems Prototyping Laboratory
Room 233 Engineering Research Center (ERC)
ph# 325-2196 (also Voice mail) ERC office; Room 211
Office hrs: Friday 9am-11am ERC ph# 325-2294
(or by appointment)

Sanjay Rangarajan, Teaching Assistant for VLSI Laboratory
Office: MPL, email: sanjay@erc.msstate.edu

Textbooks: • N.H.E. Weste and K. Eshraghian, Principles of CMOS VLSI Design, 2nd Ed.,
• HSPICE manual set
• + class handouts

Grading: (3) Exams 55%
(1) Final 25%
Labs & Homework 10%
Project 10%
Total 100%

Grade assignment is on a 10-point scale.

Lecture Classes will meet at the McCain Hall, room 353, from 8am-9:15am on Tuesdays & Thursdays. Class attendance is encouraged and strongly recommended.

Lecture Notes will be available on the Web in the form of postscript files at URL address http://www.ece.msstate.edu/~blalock/vlsi/fall98 if not handed out in class. It is YOUR responsibility to print out the lecture notes weekly and bring them to class (once again, if not received in class). Do not use MPL or ECE printers! MSU provides Web printing resources for students at Butler Hall (for example).

One of the homework assignments will address engineering ethics and will require the preparation of a well written, formal in style, document. Information on the web located at URL address http://www.engr.washington.edu/epp/Pepl/Ethics will be helpful while doing this assignment.

VLSI Laboratory

Lab/Project policy: If you fail to hand in TWO or more labs you will be assigned an 'F' in the course regardless of test average. If you fail to hand in the Project you will also be assigned an 'F' in the course regardless of test average.

For on campus students, all labs will meet in Room 135 at Simrall. On campus VLSI Labs will meet at the following times:
Tuesdays 3:30-6:20pm
Wednesdays 3:00-5:50pm

Warning! Due to lab schedule conflicts with the CADD course, one lab section, probably the Wednesday section, will need to be moved to Friday (on campus students only).
All labs will involve probably approximately 1/2 hour of lecture before starting, so BE ON TIME! Unless otherwise noted, labs will be due at the beginning of your assigned lab period one week after the lab was handed out. All lab materials must be contained in an MSU lab folder.

Your assigned lab hours are the ONLY time you are guaranteed a workstation in Simrall 135. You will NOT be allowed to use a workstation during a normal period if you are not assigned that lab period. Outside of these lab hours, Simrall 135 workstations are available on a first-come, first-serve basis.

WARNING! If we find a workstation in Simrall 135 screen-looked by a VLSI student, 10 points will be deducted from that student's last VLSI test grade. We do NOT have enough workstations resources to allow screen-locking.

**SYLLABUS**

**Course Topics and Order of Coverage**

- **Week 1** (Aug25, Aug27): Introduction to CMOS Circuits (Chpt. 1)
- **Week 2** (Sept1, Sept3; Lab 1): CMOS Transistor Theory (Chpt. 2)
- **Week 3** (Sept8, Sept10; Lab 2): CMOS Transistor Theory, CMOS Process Video (Chpt. 3)
- **Week 4** (Sept15, Sept17; Lab 3): CMOS Processes (Chpt. 2)
- **Week 5** (Sept22, Sept24; TEST#1, Lab 4): CMOS Layout (Chpt. 3)
- **Week 6** (Sept29, Oct1; Lab 5): CMOS Layout (Chpt. 3)
- **Week 7** (Oct6, Oct8; Lab 6): Delay Characterization (Chpt. 3)
- **Week 8** (Oct13, Oct15; Lab 7): Capacitance Characterization (Chpt. 4)
- **Week 9** (Oct20, Oct22; Lab 8): Standard Cell Methodology
- **Week 10** (Oct27, Oct29; TEST#2, Lab 9): Transient Analysis
- **Week 11** (Nov3, Nov5; Lab 10): Transient Analysis
- **Week 12** (Nov10, Nov12; Lab Project Assignment): Dynamic Logic
- **Week 13** (Nov17, Nov19): Dynamic Logic
- **Week 14** (Nov24, TEST#3):
- **Week 15** (Dec1, Dec3): Dynamic Logic
- **Week 16** (Dec8, Dec10; "Dead" days): Review for Final, PROJECT DUE!!

**Final exam date:** Thursday, December 17, 1998, 8:00-11:00am

**Other important dates:**

- Sept4 Last day for registration, adding or dropping a course without a "W"
- Oct5 Last day to drop a class with a "W" grade

**Disclaimer:**

The syllabus is subject to change! Updated versions will be available on the course's homepage.