



Louisiana State University

Department of Electrical and Computer Engineering

EE 4250 Digital Integrated Circuit Course Outline

Catalog Data

EE4250 Digital Integrated Circuit (3) *Prereq: EE 3220, 3221 and 3232. 2-hour lecture; 2-hour laboratory. ABET category: 2-hour. design; 1-hour engineering science. Analysis and design of digital integrated circuit in CMOS technology.*

Schedule

2-hour lecture/week, 2-hour lab/week

Contact Information

Instructor: Dr. Dongsheng Ma

- Email: ma@ece.lsu.edu
- Tel: 578-5532
- Office hours: Mon. & Wed.: 1:30-2:30pm @ EE Rm. 229

TA(s): To be announced.

No textbook required (lecture notes will be provided by Dr. Dongsheng Ma.)

Major Reference

Analysis and Design of Digital Integrated Circuits in Deep Submicron Technology, D. A. Hodges, H. G. Jackson and R. A. Saleh, McGraw-Hill, 3rd Edition, 2003.

Minor Reference

Digital Integrated Circuits – A Design Perspective, J. Rabaey, A. Chandrakasan and B. Nikolic, Prentice Hall, 2nd Edition, 2003.

Prerequisite

EE3220, EE3221 and EE3232

Topics

1. Introduction to integrated circuit and VLSI technology
2. CMOS processing and fabrication

3. MOS transistor theory
4. Bipolar transistor theory
5. IC logic introduction and CMOS inverter designs
6. Combination logic circuits (I)
7. Combination logic circuits: other circuit style (II)
8. Low power design in CMOS ICs
9. Sequential logic circuits
10. CMOS subsystem designs
11. Transistor sizing and technology scaling

Course Grading

Examination: 70%

- Final examination: 40%
- 2 midterms: 15% each

Laboratory: 15%

Homework: 15%