

University of California, Santa Barbara
Department of Electrical and Computer Engineering

ECE 152A – Digital Design Principles (5 units)

Course Fact Sheet

Catalog Description

Prerequisites: ECE 15 or 15A or Computer Science 30 with a minimum grade of C- in each course; open to electrical engineering, computer engineering, and computer science majors only. Lecture, 3 hours; laboratory, 6 hours.

Design of synchronous digital systems: timing diagrams, propagation delay, latches and flip-flops, shift registers and counters, Mealy/Moore finite state machines, Verilog, 2-phase clocking, timing analysis, CMOS implementation, S-RAM, RAM-based designs, ASM charts, state minimization.

Instructor

Dr. John M. Johnson (johnson@ece.ucsb.edu)

Office hours: Monday and Wednesday, 2:00 – 3:00 PM; held in Harold Frank Hall (Engineering 1), 1124 (digital lab)

Lecture

Monday and Wednesday, 12:30 – 1:50 PM, North Hall 1109

Teaching Assistants

Nilesh Modi (nilesh@ece.ucsb.edu)

Hosein Mahjoubi (hosein_mahjoubi@umail.ucsb.edu)

Sheng-Luen Wei (swei@umail.ucsb.edu)

ECE 152A Web Site

http://www.ece.ucsb.edu/courses/ECE152/152A_Su09Johnson/default.html

Course and lab materials, homework, solutions and announcements.

Text

(Required) Stephen Brown and Zvonko Vranesic, *Fundamentals of Digital Logic with Verilog Design*, Second Edition (McGraw-Hill, New York NY, 2008)

(Optional) Charles H. Roth Jr., *Fundamentals of Logic Design*, Fifth Edition (Brooks/Cole – Thomson Learning, Belmont CA, 2004)

Prerequisite Knowledge

Roth Units 1 – 5, 7 – 9

Number Systems and Conversion, Boolean Algebra, Karnaugh Maps,
Combinational Design Using Gates, MUXes/Decoders and PLDs

Grading

Midterm #1: 25%, Midterm #2: 25%, Final: 25%, Lab: 25%

Exam Dates

Midterm #1: (week 4), Wednesday 7/15, 12:30 – 1:50 pm

Midterm #2: (week 7), Wednesday 8/5, 12:30 – 1:50 pm

Final Exam: (week 10), Wednesday 8/26, 12:30 – 1:50 pm

All exams are closed book, closed notes, no calculators.

Homework

Homework will be assigned weekly but will not be collected or graded. Solutions will be posted on the class website one week after assignment.

Lab Sections

Tuesday and Thursday, 5:00 – 7:50 pm

Monday and Wednesday, 6:00 – 8:50 pm

Tuesday and Thursday, 2:00 – 4:50 pm