

SAN FRANCISCO STATE UNIVERSITY

School of Engineering

ENGR 357 Digital Design Laboratory

Coordinator: Dr. Hamid Shahnasser

Instructor: Rakesh Rao

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Lab : Thursday 9:35am-12:20pm at SCI-215

Rakesh Office Hours: SCI-215, Thursday 3pm-4:30pm

Prerequisites: (1) ENGR 205 or CSC 210,
with at least a grade of C;

(2) ENGR 356 (grade C or better)
(may be taken concurrently)

<u>Week</u>	<u>Experiments</u>	<u>Theme</u>	<u>Exp. Report Due</u>
8/27	1	Laboratory Organization, Requirements, etc. Familiarization with the Digital Trainer	
9/03	2	Basic Logic Operations	1
9/10	5	Introduction to Troubleshooting	2
9/17	3	Familiarization with EDA Tools (Active-CAD)	5
9/24	4	Combinational Circuit Design	3
10/01	7	Iterative Circuits -- Adders and Subtractions	4
10/08	6	Decoders and Multiplexers	7
10/15		Individual Hands-on Midterm exam	6
10/22	8	Latches and Flip-Flops	
10/29	9	Sequential Circuit Design	8
11/05	10	Registers	
11/12	11	Counters	10
11/19		Make up lab	11
11/26		Fall Recess	
12/03		Individual Hands-on Final exam	

Laboratory Manual:

Hu, S. C., *Computer Logic Experiments. Second Edition.*

Lab References:

M. Morris Mano & Michael D. Ciletti, Digital Design with an Introduction to the Verilog HDL, Fifth Ed

Kit: One Engr 357 Kit for each lab team (**no more than 2** students/team); take voucher to pay \$34 for kit at Bursar's Office (Adm 155); pick up kit at SCI-140 with receipt from Cashier.

Memory stick: one per student. All Lab experiments using Xilinx software must be created on a USB Thumb drive to be accepted.

Lab Experiment's: All the circuit design of each experiment should be designed and validated using Xilinx software before coming to lab, and this design should be implemented using bread board in lab.

Lab Reports: The completed report for each experiment is due the week after that experiment.

See Appendix C, "General Guidelines for Lab Reports," in the laboratory manual and the sample report for Experiment #1 appended to it.

Evaluation: Laboratory Experiments & Reports 100% of the Course's Final Grade as follows:

Lab Grading: Reports (late reports are not accepted) and Pre-lab: 40%
Lab hands-on final exam: 60%

Each lab report will be given up to 100 points which encompasses: Design work: 60; neatness: 5;
Typewritten summary: 15; completed worksheets & questions: 10; detailed design work: 10.

Grading scale:

100 93 90 87 83 80 77 73 70 67 63 60 0
| A | A- | B+ | B | B- | C+ | C | C- | D+ | D | D- | F |

Lab rules: (1) Take good care of equipment; (2) do not smoke, eat, or drink in the lab; (3) keep lab clean;

Observe safety requirements. (4) ON TIME ATTENDANCE IS REQUIRED. **YOU MAYBE ASKED TO LEAVE THE LAB IF YOU ARE LATE MORE THAN 10 MINUTES.**