

ECE 238L Computer Logic Design, Fall 2009

Contact Information

Instructor: Prof. Marios S. Pattichis,

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Office hours: Tuesday and Thursday 11:00am – 12:00pm and by appointment.

Registration information

30903 Computer Logic Design – ECE 238L 001 Jiaewi Xu (14 students)

Lecture: Tuesday and Thursday 9:30am - 10:45am, Mech-218

Lab: Thursday 7:00pm – 9:45pm, EECE-216

Extra Lab: Friday 1pm-2pm

TA: Jiawei Xu, xujiawei@unm.edu

30906 Computer Logic Design – ECE 238L 002 (23 students)

Lecture: Tuesday and Thursday 9:30am - 10:45am, Mech-218

Main Lab: Tuesday 2:00pm - 3:45pm, EECE-216

Extra Labs: Thursday 3-4pm, Friday 11am-12noon

TA: Fareena Saqib, rfareena@unm.edu

36271 Computer Logic Design – ECE 238L 003 (20 students)

Lecture: Tuesday and Thursday 9:30am - 10:45am, Mech-218

Lab: Monday 1:00pm - 3:45pm, EECE-216, also see below

TA: Charles Lamech, clamech@ece.unm.edu

36703 Computer Logic Design -ECE 238L 004 (13 students)

Lecture: Tuesday and Thursday 9:30am - 10:45am, Mech-218

Lab: Wednesday 5:30pm – 8:15pm, EECE-216, also see above

TA: Charles Lamech, clamech@ece.unm.edu

Course Catalog Description

ECE 238L - Computer Logic Design Binary number systems. Boolean algebra.

Combinational, sequential and register transfer logic. VHDL. Arithmetic/logic unit.

Memories, computer organization. Input-output. Microprocessors. Prerequisites: CS 151L.

Credit Information

We have four credit hours. Three hours for lecture and one lab hour.

Textbooks

The required textbook for the course is:

Mano and Kime, *Logic and Computer Design Fundamentals*, 4th edition, Pearson, Prentice Hall, 2007.

The book has a companion website at <http://www.writphotec.com/mano4/>.

I strongly recommend that you get an additional book on VHDL. However, note that a lot of VHDL material is included in the required textbook and there is also a lot of material online.

If you want to get a book that will also be useful in more advanced courses, then I recommend:

P. P. Chu, *RTL Hardware Design Using VHDL: Coding for Efficiency, Portability and Scalability*, Wiley-Interscience, 2006.

Please note that I will be covering material from this textbook (see below).

If you are looking for a reference to VHDL, then I would recommend:

Peter J. Ashenden, *The Designer's Guide to VHDL*, 2nd edition, 2001.

A nice introductory textbook that has been previously used for ECE 238 is the following:

S. Yalamanchili, *VHDL A Starter's Guide*, Prentice-Hall, 2nd edition, 2005.

An excellent introductory textbook is the following:

V. A. Pedroni, *Circuit Design with VHDL*, MIT Press, 2004.

I am hoping to cover selected sections from each chapter of the required textbook. The complete list of chapters includes:

- Chapter 1. Digital Systems and Information
- Chapter 2. Combinational Logic Circuits
- Chapter 3. Combinational Logic Design
- Chapter 4. Arithmetic Functions and HDLs
- Chapter 5. Sequential Circuits
- Chapter 6. Selected Design Topics
- Chapter 7. Registers and Register Transfers
- Chapter 8. Memory Basics
- Chapter 9. Computer Design Basics

From Chu, we want to discuss “chapter 6 Synthesis of VHDL Code”. I would like to cover in detail:

Chapter 11. Register Transfer Methodology: Principle.

Grading

Exam 1	100 points
Exam 2	100 points
Homework	100 points
Labs	150 points
Final Exam	150 points
Total	600 points

Class Goals

This course provides an introduction to the design of computer components (but not systems). Students will learn the necessary mathematical background to carry out logic design. Students will design and implement simple combinational and sequential circuits.

Website: www.ece.unm.edu/vhdl. Please note that the website has not yet been updated for the current textbook and assignments. Please look at http://www.ece.unm.edu/vhdl/lecture_notes.htm for old exam examples.