

ECE 3401 Spring 2009
Digital Systems Design
T/Th 11 AM-12:15 PM ITE 125

Instructor: Prof. Yunsi Fei
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Instructor's office hours : T/Th 5-6pm, or upon appointments, @ ITEB 439.

TA: Tiansi Hu
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TA's office hours : TBD.

Lab: ITE C30

Course Description: Design and evaluation of control and data structures for digital systems. Hardware design languages are used to describe and design both behavioral and register transfer level architectures and control units with a microprogramming emphasis. Cover basic computer architecture, memories, digital interfacing, timing and synchronization, and microprocessor systems. (*three credits*)

All the course materials (slides, assignments, discussions, etc.) will be provided on HuskyCT. (<http://huskyct.uconn.edu>)

Prerequisites: CSE 2300 W (old number: 210W) - Digital Logic Design

Text: *Digital Systems Design Using VHDL* by Charles H. Roth, Jr. and Lizy Kurian John, 2nd Edition, Thomson.

Reference *The Student's Guide to VHDL* by Peter J. Ashenden, Morgan Kaufmann.

Software Tools: The course is very tool-intensive. Homework will include designing and simulating some functional modules by using hardware description languages. We will use Xilinx ISE and ModelSim simulator. <http://www.xilinx.com/ise/webpack>

<u>Grading:</u>	Homework (about 9) and pop quizzes	20%
	Midterm exam (~ Mar. 5 th , 2009)	25%
	Final project design	25%
	Final Exam (~ May 6 th , 2009)	30%

Rules:

Participation in class discussion is strongly encouraged. Homework is due at the beginning of class on the due date, no extensions. Turn cell phones and MP3s (iPods) off during class.

Topics:

Overview of digital systems
Combinational logic circuits and design
FPGA & CPLD
VHDL Description Of Digital Systems - Behavioral Modeling
VHDL Description Of Digital Systems - Structural Modeling
VHDL Description OF Arithmetic Functions
Sequential circuits
Sequential system design, processor datapath and control unit
Memory and timing issues
Computer design basic
Instruction set architecture
Pipeline design
Verilog basics (optional)
I/O, bus design, D/A, A/D, power issues (optional)