EENG 2910 Digital System Design  
Fall 2009

Instructor: Oluwayomi Adamo - B 208  
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Class Hours: Tues. 1:00 PM - 3:50 PM  
Office Hours: Tues. & Thurs. 4:00 PM - 5:00 PM

Teaching Assistant: Sravani Gottipati  
Office Hours: TBD

Prerequisite: Digital Logic Design (EENG 2710)

Reference Textbooks  

Learning Outcomes  
Student will be able to:

1. Demonstrate an understanding of project life-cycle through semester-long hands-on projects.
2. Design complex digital systems that comprises of combinational and sequential circuits starting from a word description that performs a set of specified tasks and functions.  
3. Demonstrate project Planning and scheduling skills.  
4. Develop skills, techniques and learn state-of-the-art engineering tools (such as Xilinx tools, VHDL) to design, implement and test modern-day digital systems on FPGAs.  
5. Design control units as a state machine for complex systems.  
6. Analyze the results of logic and timing simulations and to use these simulation results to debug digital systems.  
8. Research design ideas and collect reference material that relates to their projects.  
9. Defend their projects orally with good presentation skills.  
10. Thoroughly document all phases of their project.  
11. Understand engineering design and the steps involved and carry out engineering design principles in the design of a processor.  
12. Demonstrate an understanding of ethical and professional issues as related to their projects.

General Policy  
- A perfect attendance is recommended for those aspiring to get good grades because there will be constant evaluation of skills.  
- It is the responsibility of the students with certified disabilities to provide the instructor with appropriate documentation from the Dean of Students Office (see http://www.unt.edu/oda).  
- Please visit http://www.unt.edu/csrr/ for your rights and responsibilities.

Grading Policy  
Hands-on-Exercises: 30%,  
Topics (Tentative)
1. Introduction to Digital System Design, Projects, VHDL and Xilinx tools (Software and Hardware)
2. Combinational logic design with VHDL
3. Sequential logic design with VHDL
4. Project: Main Project I
5. State Machine design with VHDL
6. Main project II
7. I/O Modules – UART, SRAM, VGA, Keyboard, and Mouse
8. Introduction to C and assembly language
9. Microcontroller Architecture, Instructions, Flash Memory, EEPROM Memory, RAM
10. Parallel & Serial I/O, Interrupts, Timers, Pulse-Time Capturing, Pulse-Width-Modulation
11. Sensors, Sampling, ADC and DAC converter
12. Main project II
13. Logic analyzer
14. Introduction to Verilog and How to Write Reports
15. Final presentation and demo