ELC 343 (1 .0 CU)
MICROCOMPUTER SYSTEMS

Course Information **Professor: Orlando Hernandez**
Fall 2010: R 2:00PM–4:40PM/AR144

Course Description:
An introductory course in microcontrollers, microprocessors, embedded control architecture, and assembly language programming. Interfacing of external devices with microcontrollers is emphasized.

Instructor Information:
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Office Hours:
Monday 2:00 PM - 3:20 PM
Thursdays 10:00 AM - 11:20 AM
By appointment (send me email)
And whenever my office door is open

Textbook:
PIC Microcontroller: A Introduction to Software & Hardware Interfacing, by Han-Way Huang, Delmar Cengage Learning, 2007.
ISBN 978-1-4018-3967-3

Prerequisite:
Digital Circuits and Microprocessors (ENG 312)

Grading Policy:

Homework	10%
Three Design Projects @ 17% each	51%
Final Project Report & Presentation	39%
Grand Total	100%

Homework will be announced for each chapter after the chapter has been covered.
Projects are handed out at least two weeks before they are due. Due dates are to be announced in class.

Tips for Success:
Read the book sections prior to their discussion in class.
Do as much homework as possible. Attempt to do all the problems, even the ones that have not been assigned.
Do not be shy about asking questions, either during class or outside of the class.

College Level Policies:
Attendance Policy: http://www.tcnj.edu/~recreg/policies/attendance.html

Academic Integrity Policy: http://www.tcnj.edu/~academic/policy/integrity.html

Americans with Disabilities Act (ADA) Policy: http://www.tcnj.edu/~affirm/ada.html

Tentative Agenda:

Week	Topics	Reading
1 Monday 8/30	**INTRODUCTION TO MICROCONTROLLERS** What is a computer? The computer Software Overview of the MCU Memory Organization Registers Pipelining Instruction Format Addressing Modes Instruction Set	CHAPTER 1
2 Monday 9/6	**ASSEMBLY LANGUAGE PROGRAMMING** Assembly Language Program Structure Assembler Directives Representing the Program Logic A template for Writing Assembly Programs	CHAPTER 2
3 Monday 9/13	**ASSEMBLY LANGUAGE PROGRAMMING** Case Issue Writing Programs to Perform Arithmetic Computations Program Loops Reading and Writing Data in Program Memory	
4 Monday 9/20	**ASSEMBLY LANGUAGE PROGRAMMING** Logic Instructions Using Program Loops to Create Time Delays Rotate Instructions Using Rotate Instructions to Perform Multiplications and Divisions	
5 Monday 9/27	**DEVELOPMENT TOOLS** Software Tools Hardware Tools Using the IDE Using the Simulator for Debugging Applications	CHAPTER 3
6 Monday 10/4	**PARALLEL PORTS** I/O Addressing I/O Synchronization Interfacing with Simple Output Devices Interfacing with Switches and Keypads **PROJECT 1:**	CHAPTER 7
7 Monday 10/11	**TIMERS AND CPP MODULES** **ADDRESSABLE USART** Overview of Serial Communication The EIA232 Standard Serial Communication Interface **PROJECT 2:**	CHAPTER 8 CHAPTER 9

Tentative Agenda (continued):

Week	Topics	Reading
8 Monday 10/18	**ANALOG-TO-DIGITAL CONVERTER** Basics of A/D Conversion Procedure for Performing A/D Conversion Basics of D/A Conversion Procedure for Performing D/A Conversion **PROJECT 3:**	CHAPTER 12
9, 10, 11, 12, 13, 14, 15 Monday 10/25, Monday 11/1, Monday 11/8, Monday 11/15, Monday 11/22, Monday 11/29, Monday 12/6	**FINAL PROJECT**	
16, 17 Monday 12/13, Monday 12/20	**FINAL PRESENTATIONS**	