16.480/552 Microprocessors II and Embedded Systems - Fall 2006

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1. Basic Information

This three credit course provides a continuation of the study of microprocessors begun in 16.317. Topics include CPU architecture, memory interfaces and management, coprocessor interfaces, bus concepts, bus arbitration techniques, serial I/O devices, DMA, interrupt control devices. Focus will be placed on the design, construction, and testing of dedicated microprocessor systems (static and real-time). Hardware limitations of the single-chip system will be investigated along with microcontrollers, programming for small systems, interfacing, communications, validating hardware and software, microprogramming of controller chips, and design methods and testing of embedded systems. Laboratories directly related to microprocessor functions and its interfaces.

Prerequisite: 16.311 - Electronics I Laboratory, 16.317 - Microprocessors Systems Design, 16.365 - Electronics I

Instructor: Prof. Yan Luo

Office Hours: WF 9:30am-11am

Office Location: Ball 413

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Email: Yan_Luo@uml.edu

Class time: W 6:30pm-8:50pm

Class location: Ball 323

Lab time: Open lab

Lab location: BL 407

Course mailing list: http://groups.google.com/group/uml16480F06

2. Course structure

There is a 3-hour class on Wednesday evening each week. The class will be in the format of lecture and laboratory.

3. Course Objectives

1. Gain an Understanding of How to Design Embedded Systems with the 8086/8088 microprocessors.

2. Become Capable of Evaluating and Implementing Memory System Organization, Decoding, and Timing.
3. Understand Different Communication Protocols and Interfaces.
4. Become Capable of Implementing Different Memory System Architectures.
5. Understand Programmable Logic and Design Technology
6. Understand of CISC vs. RISC Processing and PIC microcontrollers.
7. Understand Embedded Operating Systems

4. Textbook

Walter A. Tribel and Avtar Singh, "The 8088 and 8086 Microprocessors - Programming, Interfacing, Software, Hardware, and Applications", Fourth Edition, Prentice Hall, ISBN #0-13-093081-4.

References: John Catsoulis, "Designing Embedded Hardware", 2nd Ed., O'Reilly, 2005, ISBN 0-596-00755-8

Additional technical readings are to be assigned.

5. Course Grade

The distribution of exams and projects are given below.

Components	Percentage
Exam 1	20%
Exam 2	20%
Exam 3	20%
5 Labs	40%
Total	100%

6. Course Schedule

Course schedule is HERE.