CMPE 310: Systems Design and Programming

Course:

CMPE 310: Systems Design and Programming,
Spring 2002. 4 credits.

Course Instructors:

Dr. Jim Plusquellic, Professor of Computer Science & Electrical Engineering
Office: ECS 212, Telephone: 410-455-1349
Chintan Patel, Lecturer in Computer Science & Electrical Engineering
Office: ECS 233G, Telephone: 410-455-3963
Email: plusquel@csee.umbc.edu, cpatel2@csee.umbc.edu
Home Page: http://www.cs.umbc.edu/~plusquel/, ~cpatel2/
Office Hours: T&Th 5:00-6:30pm or by appointment
Teaching Assistant: Sanat Kamal Bahl, 209 ECS, skamal2@csee.umbc.edu
Office Hours: M&F, 10:00-11:30

Text:

Barry B. Brey, "The Intel Microprocessors, 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium and Pentium Pro Processor Architecture, Programming and Interfacing" Fifth Edition, Prentice Hall (2000). ISBN: 0-13-995408-2

Supplementary texts:

Muhammad Ali Mazidi and Janice Gillispie Mazidi, "The 80x86 IBM PC and Compatible Computers (Volumes I&II), Assembly Language, Design, and Interfacing", Third Edition, Prentice Hall (2000).

John Uffenback, "The 80x86 Family, Design, Programming and Interfacing", Third Edition, Prentice Hall (2002).

Lab Text:

Rubini & Corbet, "Linux Device Drivers", 2nd Edition, O'Reilly

Course Description:

This course introduces Intel 80x86 assembly language and the basic architecture of the Intel microprocessor. There are two exams and three laboratory projects plus some homework and laboratory assignments. In the lab, assembly will be covered first followed by linux device drivers and a hardware project to be determined. NASM will be used for the assembly projects.

Grading:

The distribution of weights for the exams, homeworks and projects is as follows:

Midterm	20%
Final	25%
Programming Projects	50%
Class Participation	5%

No incompletes will be given, except as required by university policy for truly exceptional circumstances. The final exam is cumulative. However, material covered after the second exam will be emphasized.

Students are encouraged to participate in class.

NOTE: Cheating at any time in this course will cause you to fail the course.

CMPE 310: Systems Design and Programming

Tentative Course Outline:

Date	Topic
Jan 28	Introduction
Jan 30	Intel Microprocessor History and Overview (Feb 1 Lab: Intro)
Feb 4	Intel Architecture Basics
Feb 6	OS Fundamentals (Feb 8th Lab: NASM and Assembly Basics)
Feb 11	Intel Register Architecture: Basics
Feb 13	Segmentation and Paging: (Feb 15 Lab: Data Movement Instructions)
Feb 18	Advanced topics
Feb 20	8086/8088 Hardware Specs (Feb 22 Lab: Arithmetic and Logic Instructions)
Feb 25	8086/8088 Hardware Specs
Feb 27	Bus Timing (March 1 Lab: Flow of Control Instructions)
March 4	Bus Timing
March 6	Memory Interface (March 8 Lab: Intro Linux Device Drivers)
March 11	Memory Interface
March 13	Midterm exam (March 15 Lab: Linux Device Drivers)
March 18	Spring Break
March 20	Spring Break
March 25	Basic I/O
March 27	Basic I/O (March 8 Lab:Linux Device Drivers)
April 1	Interrupts
April 3	Interrupts (April 5 Lab: Hardware lab)
April 8	Direct Memory Access
April 10	Direct Memory Access (April 12 Lab: Hardware lab)
April 15	Arithmetic Coprocessor and MMX Technology
April 17	Arithmetic Coprocessor and MMX Technology (April 19 Lab: Hardware lab)
April 22	Bus Interface
April 24	Bus Interface (April 26 Lab: Assembly/linux/hardware)
April 29	8086/8088/80286/
May 1	8086/8088/80286/ (May 3 Lab: Assembly/linux/hardware)
May 6	80386/80486
May 8	Pentium/Pentium Pro (May 10 Lab: Final Project due)
May 13	Pentium II-IV
May 15-21	Final Exam Week

(Note: Changes/Additions to this schedule will be posted on my website http://www.cs.umbc.edu/~plusquel/)