University of Illinois at Chicago
College of Engineering
Department of Mechanical and Industrial Engineering
Spring 2004

ME 511- Mechatronics II

Instructor: Professor Sabri Cetinkunt, (312) 996-9611, scetin@uic.edu, ERF 3003.
Office Hours: M 2-4
Labs: ERF 1076 (Mechatronics Lab) , ERF 1083 (CAD Lab), SEL 4249 (ME 341 Lab)
Lecture Room and Time: ERF 1023, M 5:30-8:00pm
Teaching Assistants: Ari de Rosa Neto, arosan1@uic.edu, 413-7410

Textbook:
Fundamentals of Mechatronics, Cetinkunt, S., John Wiley and Sons.

Deitel, H.M, Deitel, P.J., C++ How to Program, Prentice Hall, 3rd Ed.,
Mechatronics Class notes.

Course Web Page: http://blackboard.uic.edu

Course Objectives:

Learn the

- C/C++ Programming language
- Real time computer control hardware and software for mechatronic systems
- Critical differences between real-time and non real-time system designs.
- Real time motion control applications.

Prerequisites: ME 411 and good graduate standing.
Grading: Homework assignments and Labs (50%), Two Quizes (12.5% each x 2 = 25%), Final Exam (25%)

The course consists of two hours of lectures and three hours of lab per week. Lectures are delivered by the instructor. The lab projects involves design, build and testing of various computer control circuits and software in increasing complexity as the semester progresses. These lab projects are done by each student individually and takes about two to three weeks per lab project.

Week #	**Topics Covered:**
1	Introduction to Problem Solving with Computers. Overview of C and C++.
2	Basic Data Structures in C,
3	Operators, Control Structures, Functions.
4	Input and Output functions in C/C++. Monitor and keyboard I/O, file I/O.
5	C++ Extensions: Classes - Constructors, Destructors, Data Members, Function Members
6	Overloading: Operators, Functions.
7	Inheritance and Class Hierarchy, Polymorphism and Virtual Functions Templates: Functions and Classes
8	Microcontrollers: microprocessors (PIC 18F452, 68HC12), digital signal processors (DSP 56000). C18 Compiler.
9-10	Computer Hardware Interface and Digital Circuits.
11-12	Frequency Analysis of Signals, Discrete Sampling and Analysis of Time Varying Signals.
13-14	Implementation of closed loop control algorithms in real-time.
15	Class review.

Finals Week -- Final Exam.