

**University of Illinois at Chicago**  
College of Engineering  
Department of Mechanical and Industrial Engineering

**ME 411- Mechatronics I**

**Instructor:** Professor Sabri Cetinkunt, (312) 996-9611, [scetin@uic.edu](mailto:scetin@uic.edu), ERF 3003.

**Office Hours:** TBD (to be determined each semester)

**Labs:** SEL 4249, ERF 1076

**Lecture Room and Times:** TBD

**Teaching Assistants:** Assigned at the beginning of each semester.

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

Introduction to Mechatronics and Measurement Systems,  
Hiland, M.B., Alciatore, D.G. WCB McGraw Hill, 1999, ISBN: 0-07-029089-X

**Course Objectives:**

Learn the

- fundamental physical principles of sensing and actuation,
- current state of art components in sensors, actuators, electronics, and microprocessor based controls,
- analyze, design, build and test computer controlled electro-mechanical systems involving sensors, actuators, control computer hardware and software.

**Prerequisites:** Senior undergraduate or graduate student in good standing.

**Grading:** Homework assignments and Labs (50%), Two Quizzes (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:**

Week 1	Introduction to Mechatronic Systems. Lab # 1 – Introduction to the lab.
Week 2 -3	Mechanism Design for Automation Systems, Lab # 2
Week 4-6	Electronic Design and OP-AMP circuits, analog circuits, Lab # 3
Week 7-9	Sensors and Measurement Systems: operating principles and current state of art, Lab #4
Week 10-12	Actuators: Hydraulics (pumps, valves, motors, cylinders, accumulators), Lab #5
Week 13-15	Actuators: Electric motors

Finals Week -- Final Exam.