ME 58800
MECHATRONICS – INTEGRATED DESIGN OF ELECTRO MECHANICAL SYSTEMS

Course Outcomes

1. Provide the students with a working familiarity with the *electronics* and *interfacing techniques* needed in the *design* and *control* of electro-mechanical systems.
2. Introduce *operation principles* and *interfacing techniques* for *common* electro-mechanical *sensors* and *actuators*.
3. Provide the students with the experience of working in an *interdisciplinary* team environment.
4. Provide the students with the experience of *concurrent engineering* and *product development*.

Laboratory Experiments

1. Familiarity with instrumentation and computer aided tools for designing, modeling and simulating analog and digital electronics
2. Familiarity with computer aided tools for designing programmable digital and analog devices
3. Provide hands-on experience in and techniques for designing and debugging analog, digital and interfacing electronics
4. Provide experience in design and building ‘intelligent’ electro-mechanical system
5. Provide experience in product development from generating specifications and evaluation metrics to building functioning prototypes.
6. Provide experience in project planning, resource management, teamwork, and conflict resolution

Revision Date: 6/19/2013
1. COURSE NUMBER: ME 58800 Mechatronics – Integrated Design of Electro-Mechanical Systems

2. CREDITS AND CONTACT HOURS: 3 credits
   a. Lecture – 3 days per week at 50 minutes for 16 weeks

3. COURSE COORDINATOR OR INSTRUCTOR: W. Peine

4. TEXTBOOK: No Textbook Required

5. SPECIFIC COURSE INFORMATION:
   a. Catalog Description: Electronic and interfacing techniques for design and control of electro-mechanical systems. Basic digital and analog design with applications to electro-mechanical interfacing via hands-on laboratory experience. Commonly used actuators and sensors and corresponding interfacing techniques. Realistic and integrated product development experience provided through a comprehensive final project where working prototypes are built to defined specifications. Typically offered in the fall.
   b. Prerequisites: First Semester Senior Standing or Higher
   c. Status: Elective

6. SPECIFIC GOALS FOR THE COURSE:
   a. Course Outcomes:
      1. Provide the students with a working familiarity with the electronics and interfacing techniques needed in the design and control of electro-mechanical systems.
      2. Introduce operation principles and interfacing techniques for common electro-mechanical sensors and actuators.
      3. Provide the students with the experience of working in an interdisciplinary team environment.
      4. Provide the students with the experience of concurrent engineering and product development.

   b. Related ME Program Outcomes:

7. LIST OF TOPICS: See following page.