

## ECE 421 – MECHATRONICS

**Type (check one):** Required: \_\_\_\_\_ Elective:  X

**2005-2006 Catalog Data:** ECE 421. Mechatronics. An intermediate treatment of the design of systems with interdependency of electrical and mechanical components. Topics will include measurement theory, computer interfacing and control, sensors, and actuators. Prerequisites: ECE 251 or ME 202 or permission of the instructor. *One semester; three credits.*

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**Co-Requisites:** None

**Textbook:** *Mechatronics, An Integrated Approach*, C. W. deSilva, CRC Press, 2002.

**Other Required Materials:** Project notebook

**Other References:** *The Mechatronics Handbook*, Robert H. Bishop (ed.), CRC Press, 2002.

**Instructor:** Robert L. Drake, Ph.D., P.E.

**Course Objectives:** Design and implementation of small analog/digital systems with mechanical and electromechanical components.

**Prerequisites by Topics:** Introduction to microprocessors, dynamics; linear controls desirable, but not required.

**Topics:** Computer interfacing to mechanical/electrical devices. Each group will select and complete a course project for implementation. Interdisciplinary projects are expected.

**Class Schedule:** Two 50-minute sessions plus one 2-hour session per week

**Prepared by:**  Robert L. Drake, Ph.D., P.E.  **Date:**  October 2005

**Professional Component:  
ECE 421 – MECHATRONICS**

Category (check one)	<input type="checkbox"/> Math/Basic Science <input checked="" type="checkbox"/> Engineering <input type="checkbox"/> General Education <input type="checkbox"/> Other
Design (check one)	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Some <input type="checkbox"/> None
Realistic Constraints (check all that apply)	<input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Sustainability <input type="checkbox"/> Manufacturability <input type="checkbox"/> Ethical <input type="checkbox"/> Health & Safety <input type="checkbox"/> Social <input type="checkbox"/> Political

**Relationship to Program Outcomes:**

Check all that apply:

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs
- (d) an ability to function on multi-disciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
- (i) a recognition of the need for and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice