# Academic Affairs - Course Proposal

**Academic Unit:** Mechanical Engineering  
**Department Chair:** Robin Bandy

**Type of Course Proposal:**  
**Date:** March 7, 2006

**New X Change Deletion**  
**Does this course fulfill a requirement for single-subject or multiple subject credential students?** Yes No X

**For Catalog Copy:** Yes X No__  
**CCE:** Yes __ No X

**Semester Effective:** Fall X Spring 2006  
**Units:** 3

**Prefix & No.** ME 196M  
**Title:** Fundamentals of Mechatronics Design

**Change to:**  
**Prefix & No.** ME 166  
**Title:** Fundamentals of Mechatronics Design  
**Units:** 3

## JUSTIFICATION:

Mechatronics is the merging of mechanical and electrical systems into product designs. The traditional boundaries between mechanical and electrical systems within product designs are becoming less distinct. New products are highly integrated systems incorporating motors, sensors, and microcontrollers within the mechanical systems. To create successful products, Mechanical Engineers need a fundamental understanding of the interaction between the electrical components and the mechanical system. This course provides the mechanical engineering students with an introduction to the principles of mechatronics design. This course will give the students experience that many of the employers in the area are requesting.

This course has been offered twice as the experimental course ME 196M, in the Fall of 2003 and again in Spring 2006.

## NEW COURSE DESCRIPTION: (Not to exceed 80 words, and language should conform to catalog copy.

See [http://www.csus.edu/acai/univmanual/crspl.htm - Guidelines for Catalog Course Description](http://www.csus.edu/acai/univmanual/crspl.htm)

Basic concepts in mechatronics. Foundation to incorporate electronic components, microcontrollers, and software in design of mechanical systems. Hands-on experience with components and measurement equipment used in design of mechatronic products. 2 hours lecture, 3 hours laboratory

## Note:

**Prerequisite:** ME 118 or MET 164, ME 175 or MET 150

**Corequisite:**

**CAN (California Articulation Number):**

**Graded:** Letter X Credit/No Credit  
**Instructor Approval?** Yes __ No X

**Course Classification:** 4 and 16  
**Title for SIS+ (not more than 25 characters):** FNDMTL MECHATRONICS DSGN

**Cross Listed?** Yes __ No X  
If yes, with what course:

**How Many Times Can This Course be Taken for Credit?** One
FOR NEW COURSE PROPOSALS OR SUBSTANTIVE CHANGES ONLY:

Description of the Expected Learning Outcomes: Describe outcomes using the following format: "Students will be able to: 1), 2), etc." See the example at http://www.csus.edu/acaf/example.htm

Students will be able to: 1) Use electronic components in mechanical system design. 2) Program a microcontroller to control a mechanical system. 3) Interface a computer to a physical system to take data and/or to control the system. 4) Understand the control and operation of electrical motors. 5) Understand the concepts of digital and analog systems design.

**Attach a list of the required/recommended course readings and activities [Note: it is understood that these are updated and modified as needed by the instructor(s).] This attachment should be forwarded only to your Dean's office, not Academic Affairs.

Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre- and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above:

The course assessment will consist of homework assignments, examinations, laboratory assignments, and a final project report.

For whom is this course being developed?

 Majors in the Dept__X__Majors of other Depts__ Minors in the Dept__ General Education__ Other__

Is this course required in a degree program (major, minor, graduate degree, certificate)? Yes__ No_X__

If yes, identify program(s):

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer facilities, faculty, etc.)? Yes__ No_X__

If yes, attach a description of resources needed and verify that resources are available.

Indicate which department or programs will be affected by the proposed course (if any). ____________________________________________

The Department Chair's signature below indicates that affected programs have been sent a copy of this proposal form.

Approvals: If proposed change, new course or deletion is approved, sign and date below. If not approved, forward without signing to the next reviewing authority, and attach an explanatory memorandum to the original copy.

Signatures: ___________________________ Date: 4/5/2006

Department Chair: Robie Bonds

College Dean or Associate Dean: Mary Jane Leri

CPSP (for school personnel courses ONLY)

Associate Vice President

and Dean for Academic Programs

Distribution: Academic Affairs (original), Department Chair and College Dean. Dean's office to send original after approval to Jerri McAttee, at zip 6016. An electronic copy must also be sent to mcatrejj@csus.edu.
ME 196M Mechatronics

Instructor: Dr. Kenneth Sprott
            RVR 4031

Units: 3
Location: SCL 1349

Course Description
This course is intended to provide students with basic concepts in mechatronics. It is designed to provide the
foundation necessary to incorporate electronic components and microcontrollers and use software in the design of
mechanical systems. Hands-on experience with components and measurement equipment used in the design of
mechatronic products will culminate in a final project.

Grading
Homework 15%
Lab Assignments 20%
Midterm Exam 30%
Final Project 35%

Course Outline

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