



SACRAMENTO  
STATE

# Course Change Proposal Form A



<b>Academic Group (College):</b> Engineering and Computer Science	<b>Academic Organization (Department):</b> Mechanical Engineering	<b>Date:</b> March 12, 2009
<b>Type of Course Proposal:</b> New ___ Change <input checked="" type="checkbox"/> Deletion ___	<b>Department Chair:</b> Susan L. Holl	<b>Submitted by:</b> Jose J. Granda
<b>Does this course fulfill a requirement for single-subject or multiple subject credential students? Yes ___ No <input checked="" type="checkbox"/></b>	<b>For Catalog Copy: Yes <input checked="" type="checkbox"/> No ___</b> <b>CCE (Extension): Yes ___ No <input checked="" type="checkbox"/></b>	<b>Semester Effective:</b> Fall <input checked="" type="checkbox"/> Spring ___, 2009__

<b>This course replaces experimental course Subject Area (prefix) and Catalog Nbr (course number):</b>	
<b>If changing an existing course, should new version be considered a repeat of the original version? If so, the same Course ID will be maintained. If not, a new Course ID will be assigned. Note: In PeopleSoft terminology, the Course ID is the unique system identifier, not the Catalog Nbr.</b>	Yes <input checked="" type="checkbox"/> No ___

**Change from:**

<b>Subject Area (prefix) &amp; Catalog Nbr (course no.):</b> ME 171	<b>Title: Computer Modeling and Design of Dynamic Systems</b>	<b>Units:</b> 3
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**Change to:**

<b>Subject Area (prefix) &amp; Catalog Nbr (course no.):</b> ME 171.	<b>Title: Modeling and Simulation of Mechatronics and Control Systems</b>	<b>Units:</b> 3
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**JUSTIFICATION:**

Course description has not been updated since 1990. Course is being updated to reflect new advances in modeling and simulation methods and software tools

**NEW COURSE DESCRIPTION:** (Not to exceed 80 words, and language should conform to catalog copy. See <http://www.csus.edu/umannual/acad.htm> - Guidelines for Catalog Course Description)

Computer modeling and mathematical representation of mechanical, electrical, hydraulic, thermal, and electronic systems or combinations of these. Development of system design criteria and solutions using computer modeling and simulation. Use of state of the art automated modeling and simulation methods to build models of multi-energy mechatronics and control systems. Vibration concepts, applied, natural frequencies, eigenvectors, and solution of differential equations using computer simulation. Introduction to state variable feedback control systems. A design project is required.

**Note:**

**Prerequisite: ENGR 110, ME 105**  
**Enforced at Registration: Yes  No \_\_\_**

**Corequisite:**  
**Enforced at Registration: Yes \_\_\_ No \_\_\_**

**Graded: Letter  Credit/No Credit \_\_\_**      **Instructor Approval Required? Yes \_\_\_ No**

**Course Classification (e.g., lecture, lab, seminar, discussion):**  
lecture      **Title for CMS (not more than 30 characters)**  
System Modeling and Simulation

**Cross Listed?**  
Yes \_\_\_ No       **If yes, do they meet together and fulfill the same requirement, and what is the other course.**

**How Many Times Can This Course be Taken for Credit? \_\_\_1\_\_\_**

**Can the course be taken for Credit more than once during the same term? Yes \_\_\_ No**

**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/acad/example.htm>

Students will be able to:

- 1) Use automation methods to develop computer models of mechatronics systems that contain mechanical, electrical, hydraulic, and thermal subsystems or a combination of these using common modeling techniques.
- 2) Build computer models and perform simulations of multi-energy mechatronics systems in the time domain for linear or non-linear models using first and second order differential equations.
- 3) Build computer models and perform computer simulations in the frequency domain using computer generated state space and transfer functions with applications to sensors, actuators and controls systems.
- 4) Use the concepts of natural frequency, eigenvalues, free and forced response to design dynamic systems.
- 5) Describe different types of control systems, use of frequency response and root locus methods.

**\*\*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:

Students will be assessed by quizzes, exams and their final project including an oral presentation and written report.

For whom is this course being developed?

Majors in the Dept  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 \_\_\_

If yes, identify program(s): B. S. in Mechanical Engineering

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

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:**

	<b>Date</b>
Department Chair: <i>Austin S. Hall</i>	4/24/09
College Dean or Associate Dean: <i>John Palumbo</i>	4/24/09
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 Academic Affairs, at mail zip 6016. An electronic copy must also be sent.