



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 6, 2009
<b>Type of Course Proposal:</b> New ___ Change <input checked="" type="checkbox"/> Deletion ___	<b>Department Chair:</b> Sue Holl	<b>Submitted by:</b> Estelle Eke
<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 ___</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 175	<b>Title: Computer Applications in Mechanical Engineering</b>	<b>Units: 3</b>
--	---	-----------------

**Change to:**

<b>Subject Area (prefix) &amp; Catalog Nbr (course no.):</b> ME 105	<b>Title: Introduction to Technical Problem Solving</b>	<b>Units: 3</b>
--	---	-----------------

**JUSTIFICATION:**

This course replaces ME 175. It combines portions of ME 75 and ME 175. Emphasis is placed on applications that reinforce programming concepts. ME 75 will be deleted in the near future.

**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)**

Introduction to the use of computers for engineering, science and mathematical computations. Introduction to linear algebra and matrix applications. Introduction to concepts of programming and visualization using MATLAB and PBasic. Practical applications involving design using a microcontroller. Applications will be drawn from a variety of science and engineering areas. Lecture two hours, laboratory three hours.

**Note:**

**Prerequisite: ENGR 17, ENGR 30**  
**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 & Lab      **Title for CMS (not more than 30 characters):**  
Intro to Tech Problem Solving

**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/acaf/example.htm>

The student will be able to:

1. Use matrix operations and linear algebra techniques to solve engineering problems.
2. Utilize MATLAB for programming and engineering problem solving.
3. Use programming concepts in microcontroller applications.
4. Work in a team to solve an open-ended group project.
5. Demonstrate communication skills via an oral presentation and a technical report.

**\*\*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:

**Tests; Homework; Team Design Project; Oral Presentation; Final 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):

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.

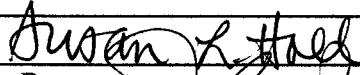
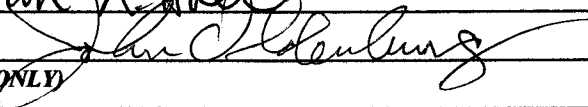
Indicate which department or programs will be affected by the proposed course (if any). \_\_\_\_\_

*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:**

**Date**

Department Chair:		3/20/09
College Dean or Associate Dean:		3/23/09
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.

## ME 105: Introduction to Technical Problem Solving

Fall 2009

Instructor: Estelle Eke

Email: [emeke@csus.edu](mailto:emeke@csus.edu)

Tel: (916) 278-6248

Office: RVR 4014

Office Hours: TBD

### Objectives:

By the end of this course the student will be able to

1. Use matrix operations and linear algebra techniques to solve problems.
2. Structure a well-defined set of steps that can be carried out on a computer.
3. Write programs in Matlab that involve loops, conditional statements, logical and relational operators, and data files.
4. Demonstrate how actions defined by code can be linked to a user interface object by creating a Graphical User Interface.
5. Visualize data by generating plots in 2D and 3D.
6. Demonstrate a basic level of confidence in programming by completing a group project that employs a microcontroller.
7. Locate sources of information and effectively document how a project was accomplished.

### Course Materials:

- Texts**
1. Sticklen, J. and Eskil, M.T. , An Introduction to Technical Problem Solving with MATLAB V.7, 2<sup>nd</sup> Edition. St. Louis, MO: Great Lakes Press, Inc., 2006.
  2. Lindsay, Andy. Whats a Microcontroller? Text v2-2, Rocklin, 2004.
  3. Lindsay, Andy. Robotics with the Boe-Bot Text v2.2, Rocklin, 2004.

Texts 2 & 3 available for free download at the URL:

<http://www.parallax.com/Education/ProductInformation/StampsinClassTutorials/tabid/535/Default.aspx>

**Software** : MATLAB version 7 or higher. (Available in engineering labs - RVR 2011, RVR 4001, SCL 1218, SCL 1234). Although not required, students are encouraged to buy their personal copies.

**Lab Materials:** Purchase the **custom class kit for ME 105** directly from Parallax Inc., Rocklin, CA.

### Assessment policy:

Each assignment will be used to assess the student's understanding of the course material covered. 60% of the course grade is attributed to the MATLAB exercises, 30% to microprocessor applications and 10% to technical writing. The metric is based upon an analysis of programming assignments, tests, oral presentation, and final project. The performance criterion is based on the average score for each assignment. If the score is 65% or above, then the performance is considered acceptable. If the score is between 50% and 65%, then there is a concern. A score below 50% is considered a weakness. You can monitor your progress on SacCT.

**Grading Metric:**

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
90	85	83	80	78	73	70	65	60	50	45	0

Week	Topic	Labs
1	Introduction to the Computing Environment (SacCT, UNIX, Voyager, MATLAB)	
	Introduction to Technical Problem Solving	Lab1
2	Introduction to Linear Algebra (Array and Matrix Operations)	
	Entering Commands in the Interactive Mode	
	Solving Systems of Equations: Cramer's Method; Gauss' Method	Lab 2
3	Introduction to m-files	
	Polynomials	Lab 3
4	Input/Output (formatted and unformatted )	
	Data files: .xls, .dat	Lab 4
5	Loops; colon operator; 2D and 3D plots	Lab 5
6	User functions	Lab 6
7	Graphical User Interface	Lab 7
8	Logical and Relational operators	Lab 8
9	Conditional Statements	Lab 9
10	Technical Writing	
11	Microcontroller Basics; Excercises with the Basic Stamp	Lab 10
12	Microcontroller Basics continued; Microcontroller Open-ended Team Project	Lab 11
13	Constructing digital circuits; PWM; EEPROM; Work on project	Lab 12
14-15	Work on project	Lab 13- 15
16	<b>Final Oral Presentation and Report</b>	<b>Finals Week</b>

**Procedures and standards of quality in the solution of problems**

Programming assignments (except the final project) are to be done during the laboratory hour. Emphasis is on a well-organized and logical presentation of all problem solutions. You **MUST** attend all lab sessions unless you have completed the lab assignment. Your *name* and the *run-date* must appear on all program outputs that are turned in. The final report should be submitted with an appropriate report cover. All pages (including the appendices) must be numbered. The report should be typed in WORD, 10-12 PITCH font.

**Late Assignment Policy**

At the end of each test session submit your files via e-mail on SacCT; create a backup of your files in your folder on voyager. A **90% penalty** will be applied to each test that is turned in late (this means late work is discouraged).

**N.B. The final report cannot be turned in late.**

**CLASS/LAB SCHEDULE:**

There are two 50 minute lectures per week and one 2hr. 45 minute lab per week.

The final exam will be in the form of a group presentation to the class and is to be accompanied by a technical report submitted to the instructor.

---

**STUDENTS WITH DISABILITIES**

"If you have a disability and require accommodations, you need to provide disability documentation to SSWD, Lassen Hall 1008,(916) 278-6955. Please discuss your accommodation needs with me early in the semester."

---

**ACADEMIC HONESTY**

The policy and procedures stated by the University will be applied in this course.  
See details at <http://www.csus.edu/umannual/student/UMA00150.htm>

Submission of solutions provided in the Author's solution manual is considered as plagiarism.  
See details at <http://library.csus.edu/content2.asp?pageID=353>

Students found to be in violation of these principles and policies will receive a failing grade for the assignment or the course.

---

**PROFESSIONAL COMPONENT:**

This is a technical course