Course Change Proposal
Form A

<table>
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<tr>
<th>Academic Group (College): Engineering and Computer Science</th>
<th>Academic Organization (Department): Mechanical Engineering</th>
<th>Date: March 6, 2009</th>
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<tbody>
<tr>
<td>Type of Course Proposal:</td>
<td>Department Chair: Sue Holl</td>
<td>Submitted by: Estelle Eke</td>
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<tr>
<td>New ___ Change <em>X</em>_ Deletion ___</td>
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<td>Does this course fulfill a requirement for single-subject or multiple subject credential students? Yes ___ No <em>X</em>__</td>
<td>For Catalog Copy: Yes <em>X</em>_ No ___</td>
<td>Semester Effective: Fall <em>X</em>_ Spring __, 2009</td>
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<td>CCE (Extension): Yes ___ No ___</td>
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This course replaces experimental course Subject Area (prefix) and Catalog Nbr (course number): __________

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.

Yes _X__ No ___

Change from:
Subject Area (prefix) & Catalog Nbr (course no.): ME 175
Title: Computer Applications in Mechanical Engineering
Units: 3

Change to:
Subject Area (prefix) & Catalog Nbr (course no.): ME 105
Title: Introduction to Technical Problem Solving
Units: 3

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/umanual/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 _X__ No

Corequisite:
Enforced at Registration: Yes ___ No ___

Graded: Letter _X__ Credit/No Credit
Instructor Approval Required? Yes ___ No _X___

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 _X___ 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 _X___
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.

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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 _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.

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**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**

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<th>Department Chair:</th>
<th>3/20/09</th>
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<tr>
<td>College Dean or Associate Dean:</td>
<td>3/23/09</td>
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**CPSP (for school personnel courses ONLY)**

**Associate Vice President**

**and Dean for Academic Programs**

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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.

9/10/2008
ME 105: Introduction to Technical Problem Solving

Fall 2009

Instructor: Estelle Eke
Email: 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**

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

**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.
Week | Topic | Labs
--- | --- | ---
1 | Introduction to the Computing Environment (SacCT, UNIX, Voyager, MATLAB) | Lab1
2 | Introduction to Technical Problem Solving | Lab 2
2 | Entering Commands in the Interactive Mode | 
2 | Solving Systems of Equations: Cramer’s Method; Gauss’ Method | 
3 | Introduction to m-files | Lab 3
3 | Polynomials | 
4 | Input/Output (formatted and unformatted) | Lab 4
4 | Data files: .xls, .dat | 
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; Exercises 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 | Final Oral Presentation and Report | Finals

**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/umanual/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