Category A New Course Proposal Form

Faculty: Lori Sowa

Proposal #

Course No.: ENGR 161

Course Title: Engineering Practices II

Course Description

ENGR 161 Engineering Practices II is an introductory, general engineering course that presents the basic skills required of engineers for using computers to solve problems and present results in a professional form. During the course, students will learn about computation methods and tools available to solve engineering problems. The course will provide an introduction to spreadsheets (Microsoft Excel), report presentation software (Microsoft PowerPoint), and computer programming (MATLAB). The majority of the course will be spent learning to use a computer programming language and applying this language to solve engineering problems.

Upon completion of the course, students will be able to:

- Apply computer methods to solve a wide variety of problems
- Use up-to-date computer engineering software to solve and present solutions
- Use computer software to enhance learning in other engineering and science courses
- Demonstrate professionalism in interactions with colleagues, faculty, and potential employers

Course Catalog Copy (course description as it should appear in the academic catalog):

Presents the basic skills required of engineers for using computers to solve engineering problems and presenting results in a professional form. Application of computation methods and tools for practicing engineering. Introduction to computer programming and engineering problem solving softwares including Excel and MATLAB.

Prerequisite: MATH 107; and MATH 108 or A109

University of Alaska Southeast

Administrative Use Only

Proposal # _____

CATEGORY A NEW COURSE PROPOSAL

Use for new program courses or when pre-requisites/co-requisites for an existing course affect another academic unit

Must be approved by Faculty Senate before Curriculum Committee or Graduate Committee consideration

ATTENTION: **Adobe Professional 7 is needed to save as an editable PDF.**

Curriculum/Graduate Committee Use:

_____ 1st Reading _____ Revised Date:_____ _____Tabled

_____ 2nd Reading _____ Revised Date:_____ _____Not approved

_____Withdrawn

Referred to:_____ Date:_____

Course title: Engineering Practices II

Course subject & no.: ENGR 161

Lecture hours per week: 1 hour per credit
Lab hours per week: 2 hours per credit

Credits: 3

Grading mode: Letter Grade

(To bold, strikethrough, underline, etc. go to View>Toolbars>Properties Bar)

1. Rationale (include details of prior consultation with other affected academic units):

ENGR 161 Engineering Practices II is an introductory, general engineering course that presents the basic skills required of engineers for using computers to solve problems and present results in a professional form.

The course content is consistent with the other introductory engineering courses offered at UAA and UAF so that students who transfer into these engineering programs will get credit for this course. ENGR 161 is a necessary component of the curriculum required for students to complete the certificate in Pre-Engineering at UAS.

2. Course content by topic: List main topic areas and apportion lecture and/or lab hours for each topic. Total hours must meet the minimum required hours to support the course credits (12.5 lecture hours per credit; 25 lab hours per credit). For example, a 3-credit lecture class with no lab would need 37.5 hours. Distance delivered courses should indicate the approximate number of hours for students to be involved in each topic (37.5 hours per credit for a lecture type course). For example, a 3-credit distance course with no lab would need a minimum total of 113 student hours. (If this format does not work for your topics and hours, please see alternate page 2 after signature page).

Topic	Lec Hrs	Lab Hrs
Programming Concepts for Engineers	3	
Engineering with Excel	3	
Engineering Presentations using PowerPoint	3	
Introduction to MATLAB	1.5	
Matrices. Arrays. Scalar Operations	1.5	
Built-In MATLAB Functions	1.5	
Manipulating Matrices	3	
Plotting	3	
User-defined Functions	3	
User-controlled Input and Output	3	
Logical Functions and Control Structures	3	
Matrix Algebra	3	
Symbolic Mathematics	3	
Polynomials, Functions, and Data Types	3	
You must click in the Totals boxes for final calculations to appear	**Totals**	37.5	

3. Academic or technical pre-requisite; technology required for access to course materials

pre-requisite: MATH 107 and MATH 108 at any UA campus, placement into MATH 200, or MATH A109 through UAA

4. List grading criteria that comprise a student's final grade (by percentage or points)

The exact criteria will be determined by the responsible faculty, but will likely be similar to the following:

60% - Assignments and Projects.
Assignments: There will be a number of assignments that will require students to use the spreadsheet and presentation software to solve engineering problems and to present the solutions. Theses assignments are designed to give students practice with "real-world" examples. The assignments will be evaluated by both the solution to the problem, and how clearly that solution is presented.
Projects: In order to become proficient with a new programming language, the student must practice using the software by doing exercises. There will be a number of programming projects assigned throughout the semester. These projects are intended to give the student opportunity to practice using the concepts presented in class. The student will be expected to go to the computer lab, use the programming software, and print out and hand in the results.

40% - Exams.
Two 1.5 hour exams (one midterm and one final) will be given. The exams will consist of short answer and multiple choice questions along with a programming portion that must be completed using computer software.

5. Identify (1) required texts (2) optional recommended texts for students, and (3) supplemental references and materials to be made available by the library.

Required Texts:

1. MATLAB for Engineers by Holly Moore, Prentice Hall.
2. Engineering with Excel, Third Edition, Ronald W. Larsen, ISBN-10: 0-13-601775-4; Pearson Prentice Hall, 2009.

Supplemental Websites:

1. MicroSoft Office Online website where templates and clipart can be downloaded.
2. Mathworks website at www.mathworks.com, for programs that you can download for personal use and a lot of free documentation.

6. List additional space, facilities, or supplies the University is expected to furnish for this course.

ENGR 161 will require the addition of MATLAB software licenses to the existing UAS computer laboratories on the Juneau campus.

Approvals in the order needed:

	Printed Name	Signature	Date
Initiating faculty member:	Lori Sowa	Lori A Sowa	11/18/08
Chair, academic unit:	Dr. Mike Stekoll	Michael Stekoll	11/21/08
Dean, academic unit:		Virginia Mulle	11/24/08
President, Faculty Senate:			
Chair, Curriculum or Graduate Committee:			
Provost:			

Print Form