

Course No.: ENGR 151

Course Title: Engineering Practices I

Course Description

ENGR 151 Engineering Practices I is an introductory, general engineering course that will provide first year engineering students (or other students interested in pursuing a degree in engineering) with an overview of the engineering profession and the fundamental tools necessary for practicing engineering. The various engineering disciplines will be explored, with an emphasis on Alaska-specific engineering projects, opportunities, and degrees available UAA and UAF. The basic skills required of engineers will be comprise the majority of the course content, including an introduction to analytical problem solving and the design process, descriptive geometry and presentation of engineering calculations, engineering mechanics, electrical circuits, thermodynamics, fluid mechanics, data analysis through graphing, and the use of spreadsheets.

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

Provides an overview of the engineering profession and the fundamental tools for practicing engineering. Presents the basic skills required of engineers including an introduction to analytical problem solving and the design process, descriptive geometry and presentation of engineering calculations, engineering mechanics, electrical circuits, thermodynamics, and data analysis through graphing.

Prerequisite: MATH 107 and 108 through any UA campus; or MATH A109 through UAA.



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
Referred to: _____			_____ Withdrawn
Date: _____			

Course title: Engineering Practices I Course subject & no.: ENGR 151

Lecture hours per week: 1 hour per credit Credits: 3 Grading mode: Letter Grade
Lab hours per week: 2 hours per credit

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

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

ENGR 151 Engineering Practices I is an introductory, general engineering course that will provide first year engineering students (or other students interested in pursuing a degree in engineering) with an overview of the engineering profession and the fundamental tools necessary for practicing engineering.

ENGR 151 is intended to provide students will a solid foundation for continuing their studies in any engineering discipline. This is accomplished by providing lectures, homework assignments, and in-class problems devoted to developing the student's ability to analyze and solve problems. 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 151 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
Introduction to the Engineering Profession, Engineering Degree Offerings throughout UA	3	
Techniques for Success for Engineering Students, includes presentation of calculations	3	
Engineering Analysis and Design	3	
Dimensions and Units	3	
Engineering Mechanics	4.5	
Electrical Circuits	3	
Chemistry and Thermodynamics	4.5	
Fluid Mechanics	3	
Graphing Techniques	4.5	
Data Analysis and Graphing Using Spreadsheets	4.5	
Engineering Ethics	1.5	
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:

Student assignments and exams will be evaluated not only for the correct answers, but also based upon the methods of analysis applied and presentation of the results.

30% - Assignments.

There will be an average of one assignment per week. Assignments will give students the opportunity to practice solving problems and presenting their calculations in a clear and concise manner on engineering paper. Some of the assignments will require students to research historical or current engineering projects and to present their findings in report format. Others may require the student to use computer spreadsheets.

40% - Exams. Two 1.5 hour exams will be given in class. The exams will consist of short answer, multiple choice, and analytical problems that must be worked using a calculator.

30% - Final Exam. The final exam for the course will cover all material covered in class. The exam will test the student's ability to apply problem solving skills developed during the course.

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 and supplies:

- Engineering Drawing Packet. Includes engineering calculation paper and mechanical drawing supplies.
- *Introduction to Engineering Analysis, Third Edition*, Kirk D. Hagen, ISBN-10: 0-13-601772-X; Pearson Prentice Hall, 2009.
- *Engineering with Excel, Third Edition*, Ronald W. Larsen, ISBN-10: 0-13-601775-4; Pearson Prentice Hall, 2009.

Recommended texts:

- *NCEES Fundamentals of Engineering Supplied-Reference Handbook*, NCEES. Also available online at: http://www.ncees.org/exams/study_materials/fe_handbook/index.php

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

none

Approvals in the order needed:

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

Print Form