INTRODUCTION TO ENGINEERING

Catalog Description
ENGR 120 INTRODUCTION TO ENGINEERING (1-4-3) (F/S). Critical thinking design-oriented engineering experiences that introduce the professions of civil, electrical/computer, mechanical and materials science and engineering. Professional skill development including teamwork, computer based tools, oral and written communication, advisement.

Prerequisites
MATH 147 OR (MATH 143 AND MATH 144)

Course Web Site
http://blackboard.boisestate.edu

Detailed Course Description
Engineering 120 is an introduction to the profession of engineering and the various disciplines included in the field of engineering. It is intended to provide students with broad exposure to the vast opportunities available to engineers, ranging from entry-level positions offered to engineers with varied educational backgrounds to those requiring a degree in a specific engineering discipline. Through a series of lectures and hands-on projects, students gain greater insights into the activities and tasks that engineers encounter in their jobs. For many of the class projects, students will work in teams to design, analyze, and implement solutions to several different engineering problems. This course will provide students with the following experiences:

• The creativity, challenge, and fun of the engineering profession.
• First-hand experience with tools and techniques used by engineers for problem solving and communication.
• The opportunity to work closely with fellow students on multi-disciplinary teams to solve engineering problems.
• Additional opportunities include:
  • An ability to demonstrate critical thinking and problem solving skills to identify, analyze, and solve engineering problems.
  • An ability to design a system or component of a process to meet desired specifications and needs.
  • An ability to communicate effectively, in both oral and written formats.
  • An awareness of opportunities for greater involvement in the College of Engineering.
  • Recognition and development of skills necessary to successfully complete an engineering degree.
  • An understanding of the professional and ethical responsibilities of engineers.
  • Knowledge of contemporary issues in the field of engineering.
  • Recognition of the need for and ability to engage in life-long learning.
COURSE OBJECTIVES
At the end of the course, students will be able to:

- Identify engineering opportunities, by engineering discipline.
- Apply knowledge from calculus, chemistry, and physics to describe and analyze simple engineering problems.
- Design and conduct experiments and develop prototypes per given specifications to solve engineering problems while working as part of a multi-disciplinary team.
- Gather, evaluate, and present engineering data using Microsoft Excel.
- Prepare and deliver oral and written reports to evaluate and summarize engineering problem solving exercises.

This course supports the following ABET outcomes:

b an ability to design and conduct experiments, as well as to analyze and interpret data
d an ability to function on multi-disciplinary teams
f an ability to understand professional and ethical responsibility
g an ability to communicate effectively
h the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

GRADING
Written and Oral Reports 50%  A = 90 – 100
Short Assignments 40%  B = 80 – 90
Group Evaluation 10%  C = 70 – 80
                                     D = 60 – 70
                                     F < 60

LATE ASSIGNMENTS
The due date and time for assignments will be specified by the course instructors. Assignments turned in after the specified due date and time will be considered late. Students will receive a minimum 10% reduction in their grade for late assignments, with additional penalties applicable per the instructors’ discretion. Assignments will NOT be accepted 1 week after the specified due date.
ATTENDANCE

Students are expected to attend all classes, both lectures and labs. Attendance is particularly critical given the amount of group work done in class. Please plan ahead with your instructor and your group if you know you need to be absent. In the case of an unexpected event, notify your instructor, by email, as soon as possible (preferably before class!).

Points will be deducted from your final grade for unexcused absences as follows:
- If you are 15 minutes late, two (2) percentage points will be deducted from your final grade.
- If you are over 1 hour late it will be considered an unexcused absence.
- An unexcused absence will result in a deduction of five (5) percentage points from your final grade.
- Two unexcused absences will result in a deduction of ten (10) percentage points from your final grade.

GROUP DYNAMICS

A significant amount of group work is done in this class. It will be most useful to you and your group mates to exchange contact information (email & phone numbers) so you are able to communicate outside of class. All members of the group are expected to contribute equally to each project.

CLASS POLICIES

It is assumed that all students are familiar with BSU's "Student Code of Conduct" and agree to abide by its principles. All students should familiarize themselves with this document that can be found on the web:

http://www2.boisestate.edu/studentconduct

Any incidence of academic dishonesty (e.g. cheating, plagiarism, theft) or un-collegial or illegal activities will not be tolerated and will be addressed within the procedures outlined in BSU's code of conduct.
ENGINEERING DESIGN PROCESS / SERVICE LEARNING

Unit Overview
This unit will provide you “real-world” experience with the engineering design process as you design, develop, prototype, test, build and deliver a solution to a community-based problem. Success with these types of projects has been demonstrated at other universities around the country. Every effort has been made to select projects that are manageable in the allotted time.

The projects that have been selected are those for which a solution is not widely available. Through application of the engineering design process, you will work towards solving the problem you have been assigned.

Unit Objectives
This service learning unit will provide you with the following experiences:

• Discover the creativity, challenge, and rewards in solving an engineering problem.
• Apply critical thinking and problem solving skills using the engineering design process, to identify, analyze, and solve a real-world problem from the community.
• Practice the skills necessary to be a successful engineer including:
  o working on a multi-disciplinary team
  o communication within your team, with your instructor, with your client, with community partners, and with industry experts
  o project management skills
• The opportunity to contribute to the community in a meaningful way.
• The opportunity to better understand yourself, including your strengths and weaknesses, by reflecting upon these experiences