This course provides an overview of occupations in engineering and related technologies. It is designed to familiarize students with the educational requirements, employment opportunities, and nature of their responsibilities as scientists and engineers. This course is an introduction to the engineering profession and various processes used by engineers and technologists. The course explores different branches of engineering, functions of an engineer, and characteristics of the industries in which engineers work. This course is designed for the student who is exploring career opportunities in engineering technologies.
1. Upon successful completion of ENGR 101, the student will be able to demonstrate knowledge of careers in the Engineering Profession, fields of study within Engineering and the Engineering technology systems.

COURSE OBJECTIVES:
1. Compare and select different branches of engineering or technology based on a student's individual aptitudes.
2. Interpret and compare the educational degree requirements of engineering and technology degree majors in the university CSU/UC system.
3. Outline and explain the educational path and requirements for successful employment in a number of chosen areas of engineering or technology and describe the functions they perform for their industry.
4. Identify, modify, and present a typical engineering drawing using basic tools.
5. Create a simple project with graphics and computations that are based on a given data set.
6. Create, edit, and format a simple document with multiple images and text blocks in order to imitate a typical engineering report.
7. Analyze a simple engineering problem, describe a method for solving it, generate the solution, and present the results using technology.

COURSE CONTENT:

LECTURE CONTENT:
A. History of Engineering and Technology
   1. Engineering developments by field
   2. Global developments in structure and mechanism design in relation to historical movements and economic conditions
B. Scope of Engineering
   1. Functions of engineering in society
   2. Major engineering fields
      a. Computer Engineering
      b. Mechanical engineering
      c. Electrical and computer science engineering
      d. Civil and architectural engineering
      e. Chemical and material science engineering
      f. Environmental Engineering
      g. Biomedical Engineering
      h. Industrial Engineering
      i. Systems Engineering
   3. High growth potential engineering markets
   4. Engineering and technical organizations
C. Statistical Profiles of Majors, Degrees and Employment in Engineering
   1. University engineering programs
   2. Engineering work experience and internships
D. Engineering Problem Solving and Computer Tools
   1. Analytic and creative problem solving
   2. Word Processing and spreadsheet techniques used in design with graphic presentation
E. Communication of Technical Concepts to Engineering Professionals and the General Public
   1. Written and oral communication of technical ideas and scientific concepts for engineers and the general public
F. Engineering Design and the Ethics of Engineering
   1. Recycling and energy reduction studies
G. Teamwork Skills, Problem Solving, and Professional Development
   1. Individual and/or group project completion with focus on one or more engineering fields
   2. Analyzing a real world engineering problem and presenting conclusions in a professional report.
METHODS OF INSTRUCTION:
   A. Lecture:

INSTRUCTIONAL TECHNIQUES:
   A. Lecture/Discussion
   B. Collaborative Group Learning
   C. Article Handouts
   D. Multimedia Presentations
   E. Web Enhanced
   F. Homework Assignments
   G. Group or Individual Projects
   H. Problem Solving and Technology Sessions
      I. Hands on experiments involving various teaching equipment for engineering.
   J. Guest speakers

COURSE ASSIGNMENTS:
   Reading Assignments
      A. Textbook
      B. Published Articles
      C. Case Studies

   Out-of-class Assignments
      A. Textbook or Online Homework Assignments
      B. Projects
      C. Problem solving applications requiring critical thinking

   Writing Assignments
      A. Projects
      B. Reports
      C. Exam questions which require written explanation of a topic or a conce

METHODS OF STUDENT EVALUATION:
Midterm Exam
Final Exam
Short Quizzes
Written Assignments
Essay Examinations
Objective Examinations
Report
Projects (ind/group)
Problem Solving Exercises
Oral Presentations
Skills Demonstration

Demonstration of Critical Thinking:
A minimum of 3 exams or projects to be given.
A comprehensive final exam to be given.
All exams are to be proctored, on campus exams.
**Required Writing, Problem Solving, Skills Demonstration:**

A minimum of 3 exams or projects to be given.

A comprehensive final exam to be given.

All exams are to be proctored, on campus exams.

**TEXTS, READINGS, AND RESOURCES:**

**TextBooks:**

**Other:**
1. Hands-on Engineering Modules Apparatus; Such as kits to explore a variety of engineering concepts

**LIBRARY:**

Adequate library resources include: Print Materials

**Comments:**

**Attachments:**

Attached Files