

PROGRAMS OF CIVIL, COMPUTER, ELECTRICAL,
GEOMATICS, MECHANICAL AND OCEAN ENGINEERING

EGN 1002 - FUNDAMENTALS OF ENGINEERING

Catalog Data: 3 Credits. Engineering survival skills: orientation, professionalism, planning, problem solving, creative thinking, software and calculator techniques, time and project management, teaming skills, engineering disciplines, report writing and technical communications.

Pre/Co-requisites: None

Textbooks: (These may vary by instructor)

Course Objectives:

The primary objective of this course is to present an opportunity for the students to participate first hand in engineering-oriented problem solving activity. Further objectives include giving the students an opportunity to work on interdisciplinary teams, to present a variety of software tools that are used later in the various engineering curricula, to understand ethical implications of engineering and to communicate ideas in writing as well as with PowerPoint presentations. Finally, the students should achieve an understanding of the various disciplines in the engineering profession.

Course Learning Outcomes: (numbers in parentheses indicate correlation of the outcome with the appropriate ABET program outcomes 1-7)

1. The students will learn the engineering profession, its past and current contribution to society as well as its future challenges. Students will also become familiarized with different disciplines. (4)
2. The students will learn techniques of time management, strategies in technical communication, and the systematic approach to ethical and safety considerations. Students will acquire skills for life-long learning. (3,4,7)
3. The students will be able to access pertinent literature through information networks, be able to read technical literature critically and form and express their own opinion. (3,7)
4. Students will learn a problem-solving heuristic, a systematic approach that helps guide them through the solution process, including the application of mathematics in engineering problem solving to generate alternative solution pathways. (1,2,6)
5. Students will experience team dynamics and practice their creativity through design projects and competitions. (2,5)

Topics Covered:

1. Engineering Fundamentals: Field of Engineering, Historical Perspective.
2. Engineering Ethics and Professional Responsibility.
3. Communication - Written, Oral and Graphical.
4. Mathematical Problem Solving and Computer Application.
5. Statistics and Error Analysis.

6. Problem Solving: Concepts and Strategies.
7. Project Planning, Design Implementation and Evaluation.
8. Team Dynamics, Practice and Competitions.

Course Schedule: 2 class periods per week (50 minutes per period), and 1 class period per week (1 hour-50 minute period)

Design Content: This course will have a series of design projects. At least one design credit will be associated with the course.

Laboratory Content: The laboratory session of this course is used for design project preparation.

Updated, 5/18