

ICEE 1010: Integrated Collaborative Engineering I

This course is required for all Engineering majors.

Course Coordinator:

Rick Williams

Catalog Description:

Introduces engineering profession and basic tools and concepts of engineering. Team taught, providing immersive and hands-on experience in engineering practice areas, including graphics, professional practice, environmental issues, systems thinking, and basics concepts in machinery, controls, digital circuits, and data analysis.

Course Structure:

Four 50-minute lecture and two (2)-hour laboratory/recitation session per week (six credits)

Prerequisites:

None.

Required Texts:

1. *Introduction to Graphics Communications for Engineers, 3rd edition*, Bertoline, McGraw-Hill, 2006.
2. *Introduction to Solid Modeling using SolidWorks 2006*, Howard & Musto, McGraw-Hill, 2007.
3. *ICEE 1010 Integrated Collaborative Engineering I*, E-Source, Prentice Hall, 2006

Newspaper Articles from (you do not need to subscribe to these):

1. *USA Today*
2. *The New York Times*
3. *The Raleigh News and Observer*
4. *The Greenville Daily Reflector*

Course Outcomes:

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

- Describe the engineering profession and its major disciplines including professional practice, registration and ethics
- Research and present a historical engineering project
- Make a technical presentation of a student team design project
- Demonstrate knowledge of project management in the engineering design process
- Demonstrate knowledge of teamwork in the engineering design process
- Demonstrate proficiency in Office suite software and use spreadsheets to solve engineering problems and analyze data
- Demonstrate knowledge of the basic components and operation of a mechanical system
- Demonstrate knowledge of the basic components and operation of an electrical system
- Describe the systematic approach for solving well defined engineering problems
- Demonstrate practical application of pre-calculus mathematics to engineering problem solving
- Understand the role of engineering graphics as a communications tool
- Understand how graphic models and other modern tools are used in the engineering design process

- Create part models with solid modeling software
- Create sketches, by hand and with CAD software, incorporating multiple views, auxiliary views, and sections views
- Create assembly models and assembly drawings with solid modeling software
- Understand standard dimensioning and tolerancing practices
- Understand the basic requirements of engineering working drawings

Lecture Topics:

- Engineering Graphics (10 classes)
- Professional Practice (12 classes)
- Problem Solving (12 classes)
- Electrical Fundamentals (8 classes)
- Mechanical Fundamentals (8 classes)
- Review and Exams (6 classes)

Laboratory/Recitation Topics:

Laboratory Topics:

- Solid Modeling (10 sessions)
- Spreadsheets (4 sessions)
- Robot Project (10 sessions)
- Mechanical Labs (2 sessions)
- Electrical Labs (2 sessions)

Relevant Program Outcomes:

Graduates of the Engineering program will demonstrate

- a) an ability to apply knowledge of mathematics, science, and engineering.
- b) an ability to design and conduct experiments, as well as to analyze and interpret data.
- c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- d) an ability to function on multi-disciplinary teams.
- e) an ability to identify, formulate, and solve engineering problems.
- f) an understanding of professional and ethical responsibility.
- g) an ability to communicate effectively.
- j) a knowledge of contemporary issues.
- k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Professional Component Content:

Math/Science: 0; Engineering: 6 credits; General Education: 0

Assessment Requirements:

Student Work Samples

- Case study on engineering failure (Outcome f)
- Robot design presentation (Outcome g)
- Solid modeling portfolio (Outcome k)

Student Course Survey

Last Review:

September 10, 2006 by Rick Williams