

Date March 2006

- I.** Course Name: Engineering Design I
Course Prefix and Number: ESC 210
Credit Hours and Contact Hours: 1 credit hour – 2 contact hours
Course Description:

This course is the first part of a two course sequence in engineering design. It involves the paper design and analysis of a mechanical system whose major component is associated with robotics. The students will work in teams. Team members will include engineering and technology majors reflecting a real life industry setting. Prerequisites: Permission of instructor.

II. COURSE OUTCOMES AND OBJECTIVES

Student Learning Outcomes

Upon completion of the course the student will be able to:

- Understand the engineering design procedure.
- Apply the principles of engineering to real-life engineering design problems.
- Work on an intricate engineering design problem from its conceptual stage to its paper design stage.

Relationship to Academic Programs and Curriculum

This course is primarily a required course for the A.S. in Engineering Science program. Other students from other programs may also take the course if they have the appropriate background.

Competencies Addressed in this Course

<u>Competency:</u>	<u>Taught</u>	<u>Practiced</u>	<u>Not Addressed</u>
Writing		*	
Oral Communication		*	
Reading		*	
Mathematics	*		
Computer Literacy	*		
Professional Competency	*		
Problem Solving	*		
Ethics and Values		*	
Citizenship			*
Global Concerns			*
Information Resources		*	

III. PROCEDURES

Course Materials

No textbook is required for this course. Instructor notes are the main source of information for the course content.

Each student is required to have a calculator (a minimum of TI-83 or equivalent).

All the necessary equipment to carry out the experiments listed for this course is provided by the department.

A course website is maintained on the internet for lecture schedule, test solutions, and other supplemental learning material.

Methods of Instruction

This course is entirely a lab course and it does not have a formal lecture component. The students apply the knowledge that they learned in previous courses to carry out a design and analysis process. The instructor acts as a coach in clarifying the various concepts to the students, in answering questions, and in providing overall guidance.

Assessment Measures

The assessment methods for this course are based on the homework, project, and test results of the students.

Methods of Evaluation

The students are evaluated based on homework and the final project. Final project involves an oral presentation and a written report.

Student performance during class discussions is observed and noted. The results are employed to determine the final letter grade in borderline cases between two letter grades.

IV. COURSE OUTLINE

Fundamentals of Engineering Design
Various Mechanical Components
Bearings
Belt and Chain Drives
Gears
Clutches and Brakes
Mechanisms
Electric Motors