

Project Summary

Problem

Service courses offered by electrical and computer engineering departments fail to interest or motivate students and often do not meet their primary objective of enabling students to use principles of electrical systems in their chosen discipline.

Objectives

1. To produce educational materials for a service course that motivates students by presenting the content of electrical systems in the context of mechanical engineering.
2. To measure the outcomes of students in this course and compare them with the outcomes of students from a traditional service course.
3. To nationally disseminate the educational materials and information from 1 and 2.

Methods

Effective delivery and modern technology will be combined in constructing a supportive learning environment that enables a variety of student learning styles. We will test whether and to what extent these methods, when coupled with rigorous standards and high expectations, result in improved student outcomes.

Motivating students and engaging their interest is the one element vital for the success of any course and is, unfortunately, the element too often lacking in these service courses. This problem will be addressed by presenting topics in electrical systems from the viewpoint and in the context of the discipline being served. To demonstrate the effectiveness of this idea, we propose a pilot project to develop material for a course in electrical systems to be offered to mechanical engineering students. The study of electrical systems will be embedded into major components of mechanical engineering, thus allowing students to construct a knowledge of electrical systems that is well integrated with their existing base of knowledge.

Delivery features include: studio format; a variety of active learning strategies; and Web-based learning and assessment tools including Just-in-Time Teaching (JiTT), ConcepTests, multimedia simulations, and hypertext informational documents.

A review board of nationally-recognized experts in engineering education and assessment will assist in reviewing the educational materials developed, provide information for their continuous improvement, and assure that the materials developed can serve as a model for the development of service courses in electrical systems.

Dissemination will be through journal articles, conference presentations, and faculty workshops. *McGraw-Hill, Inc.* is interested in publishing the results of this project.