EEE 101 Introduction to Engineering Design (2) [F,S]

Course (Catalog) Description:
Introduction to electrical engineering design; teaming; engineering profession; computer models; communication skills; design of electrical systems.
Lecture, Lab. Required

Prerequisite:
High school algebra, computing, and physics courses or equivalents

Textbook:

Supplemental Materials:
The Infinity Technology Kit

Coordinator:
Stephen M. Phillips

Course Objectives:
1. To discover the excitement and creativity in the practice of electrical engineering.
2. To learn to work in a team environment, using engineering models and design methods, to address engineering design problems in electrical based disciplines.
3. To learn to improve technical communication skills by writing and speaking about the design work being undertaken

Course Outcomes:
Primary Course Topics (and Outcomes)
1. Students will have an working knowledge of various subdisciplines in Electrical engineering
2. Students be have knowledge of engineering design concepts
3. Students will be able to use engineering models
4. Students will have knowledge of ethics in relation to engineering
5. Students will have knowledge of elementary computer skills
6. Students will have knowledge of basic teamwork skills
7. Students will develop project management skills
8. Students will have basic ability to apply tools to the design process
9. Students will have basic skills in technical presentations

Course Topics:
*Engineering Concepts*
- Engineering Design Process:
  o Determining needs and expectations for an engineering product
  o Generating alternative concepts
Selecting design alternatives

- Engineering Models:
  - Development of Models
  - Application of Models

**Engineering Tools**
- Developing computing skills
- Developing other technology skills
- Developing project management techniques and processes

**Engineering Projects**
- Application of tools and concepts to the design process
- Secondary Course Topics
- Writing a professional technical proposal

**Computer Usage:**
Excel, Matlab, introductory microprogramming

**Laboratory Experiments:**
2 major design projects in teams of 3 students using microprocessor based platform kits for class. Platforms will consist of a programmable logic board, an analog/digital unit, an rf communications unit, a motor drive system, and a breadboard. Students will select design projects for certain applications: Sensor control, robotic unit, audio analysis, etc.

**Assessment:**
Through homeworks, quizzes, tests, project and final exam.
Distribution of Weights: Homeworks: up to 15%, Quizzes: up to 15%, Tests: up to 20%, Project: up to 25%, Final exam: up to 25%

**Course Contribution to Engineering Science and Design:**
EEE 101 contributes to engineering science through creating a basic understanding of various areas of electrical engineering. Students work in teams, formulate problems, develop critical thinking needed for problem solving. These skills are used for the entire curriculum and after the students graduate.

**Course Relationship to Program Outcomes:**
Students work in teams (outcome d) and learn to communicate effectively (g). Students learn ethics (f), and contemporary issues (j) in Electrical Engineering disciplines. They learn to formulate and solve engineering problems (e) using science and engineering principles (a) and analyze data (b) with modern tools (k).

Person preparing this description and date of preparation: Stephen M. Phillips, 4/2/08.