EE-4901
EE Design Project 1

Curricular Designation:  CpE: required  EE: required

Catalog Description:
The first semester of a program of study in which a group of students work on an engineering design project in consultation with a faculty member. (Senior project ready as defined by major substitutes for prerequisites) Credits: 2.0 Lec-Rec-Lab: (0-1-3) Semesters Offered: Fall Restrictions: May not be enrolled in one of the following Class(es): Freshman, Junior, Sophomore Co-requisites: EE 4900 Pre-requisites: (EE 3301 or EE 3305 or EE 3173) and (EE 3175 or EE 3130) and (EE 3900 or EE 3305 or EE 3970 or EE 3301)

Note: This course is followed by EE4910 (3 credits). A single grade is given for both.

Textbooks and/or Other Required Materials:
None.

Prerequisites by Topic:
1. Completion of core EE or CpE courses for departmental majors, consistent with senior standing. Engineering majors from other departments may enroll on a multidisciplinary project and must similarly have senior standing.

2. Ability to model engineering problems and conduct experiments in the laboratory, at the level appropriate to the engineering core curriculum.

Course Objectives:
1. Apply the engineering design process and the scientific method to a large-scale project that has a modest risk.

2. Develop familiarity with documentation and written and oral communications relevant to a professional engineering career.

3. Familiarity with fundamentals of project management including planning, scheduling, and budgeting.

4. Familiarity and practice of teamwork skills, human factors in project management, and leadership on an engineering team.
Topics Covered in the execution of the project:

1. The engineering process and the scientific method applied to formulating and weighing alternative solutions to a real-world problem. This includes research, analysis, testing, and teamwork.

2. Documentation and communications, including preparation of poster and oral presentations, a comprehensive final report, and an engineering notebook.

3. Practical electronic system design, fabrication, and testing.

4. Project planning, scheduling, budgeting.

5. Human factors and leadership.

6. Meeting and time management.

7. Engineering specifications, design constraints, and standards.

8. Statistical analysis: data analysis and quantitative decision making.

9. Ethics and the professional engineering culture as it arises in the context of the project.

Relationship of Course to Program Objectives (See UPAC SOP, Tables 1 and 2):

- **EE:**
  - Outcome: c via topics: 1, 3, 7
  - Outcome: d via topics: 2, 4, 5, 6, 7, 8
  - Outcome: e via topics: 1, 7, 8
  - Outcome: g via topics: 2, 4, 5, 6, 9
  - Outcome: k via topics: 1, 3, 8

- **CpE:**
  - Outcome: c via topics: 1, 3, 7
  - Outcome: d via topics: 2, 4, 5, 6, 7, 8
  - Outcome: e via topics: 1, 7, 8
  - Outcome: g via topics: 2, 4, 5, 6, 9
  - Outcome: k via topics: 1, 3, 8
  - Outcome: l via topics: 1, 7, 8, 9

Contribution of Course to Meeting the Professional Component

- **EE:** Engineering Topics, Significant Design Experience
- **CpE:** Engineering Topics, Significant Design Experience

Class/Laboratory Schedule (note: 1 hour = 50 minutes):

Laboratory: 45 hours = 3 hours/week for 15 weeks
Recitation: 15 hours = 1 hour/week for 15 weeks

Prepared by: Dr. David H. Stone, Associate Professor, February