

12 December 2008

TO: ECOS

FR: Robert J. Gustafson, Director, Engineering Education Innovation Center  
Robert Rhoads, Multi-disciplinary Capstone Design Program Coordinator

RE: Developing Capstone Design Proposal

We would like to enlist the expertise and interest of the ECOS members in the development of proposed projects for our multi-disciplinary capstone design program through the Engineering Education Innovation Center (EEIC). As a very brief background, the EEIC is now the home for an alternative multi-disciplinary capstone design course sequence. Most of the projects are being supported by industry partners through both fiscal support and project mentors. However, the EEIC has set an objective of also supporting projects that may be in the domain of public service or international development. These projects are often put under the umbrella of “design for the other 90%”. At this point we are not recruiting people to do the projects, we are wanting to develop number of project proposals that can be considered for next academic year and beyond. We think that the members of your organization are in a great position to help us with this. If ECOS members are interested in this, we would like to propose a process that could be accomplished during winter and the first part of spring quarter. We would be glad to meet with your group to discuss this further. This would allow us time for the projects to be considered for next year.

Following is the outline of what we think could be an effective process for getting well developed proposals. Hopefully this would give you an idea of what we are envisioning.

# Project Proposal Development Process

What is Capstone Design?

An engineering capstone project is a senior design project that exposes students to the design process in an engineering experience. The capstone course(s) are intended for students to use their academic knowledge and engineering skills in solving an engineering problem.

Suggested Steps

## 1. **Generate Ideas – (3rd & 4<sup>th</sup> Wk January)**

ECOS holds a facilitated brainstorming session

1. Brainstorming (current ECOS Projects could be included) ideas are prioritized by group
2. Students volunteer to form work groups around specific ideas (Work groups can recruit others to participate)

## 2. **Development of Ideas – (Feb)**

Student work groups do preliminary exploration and development of idea(s)

1. Is a solution already proposed?
2. Is project already being worked on?
3. Is idea competing with another project?
4. Is the problem a “perceived” vs. real problem?
5. Would the idea be a fit capstone design?

## 3. **Down Select Ideas – ( 1<sup>st</sup> week Mar)**

EEIC/ECOS Panel hears reports/presentations of work groups and helps select Ideas for formal proposal development. Likely questions would include those in 2. and things like:

1. Is project too big/small to complete in 2 quarters?
2. Implementation feasibility?
  - i. How can project be adopted upon completion?
  - ii. How can project be transferred to customer/user?
  - iii. Is there a next step after completion?
3. Are there likely sponsors?

**Presentation of Proposed Idea(s)** (Not more than 10 minutes)

1. Brief Description of Idea(s)
  - i. Identify Problem(s)
  - ii. Report on findings of Step 2.
2. Specific Suggested Design Project(s)
3. Expected Project Deliverables
  - i. Design

- ii. Physical Prototype
- iii. Written Recommended Solutions Only

The Panel with input from the ECOS members will select a limited number of ideas for formal proposal development.

**4. Developing Project Proposals (Completed by April 30, presented to EEIC and before ECOS members)**

A small number of projects will be selected for development of a formal Project Proposal that can be used by the EEIC to recruit potential funding, faculty mentors and students during for the next academic years offerings.

The final Project Proposal should include:

- 1. Define Project (SOW) – See below**
  1. Background of problem/project
  2. Description of problem
  3. Goals of project
  4. Identify deliverables at project completion (i.e. product, design, solutions, etc.)
- 2. Identify Engineering Disciplines**
  1. Multidisciplinary
  2. Single discipline
- 3. Define Funding Needs and Prospective Funders (if any)**
  1. Identify potential funders
  2. Identify funding needs (Materials, Travel, Other)

**Capstone Project Statement of Work (SOW)**

A capstone project definition will include a statement of work. A statement of work form is included at the end of this outline. The form includes a project title, background section, a description of the problem, goals for the project and deliverables at the completion of the project.

## **Project Statement of Work (SOW):**

### **Project Title**

An OSU Multi-disciplinary Capstone Design Project  
With *Company*

### **BACKGROUND:**

### **PROJECT DESCRIPTION:**

### **GOALS:**

### **PROJECT DELIVERABLES:**

### **What makes a good Capstone Project?**

- Open to student creativity and a fresh approach to solutions
- Have well-defined metric of goals and deliverables with open-ended solutions
- Support comparison of analysis to experimental results
- Provided or student-created physical prototype or hardware
- Include the effect of variability in the study
- Include consideration of realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- Have expectations at the level of a senior engineering student
- Have consistent sponsor and technical advisor commitment