



## January 1, 2014 – Request for Proposals **Senior Capstone Proposal Program**

### **Deadlines:**

- January 23, 2015:  
Single page proposals and single concept slide due.
- January 29, 2015:  
Three minute pitch. Time determined randomly and schedule will be posted.
- February 20, 2015:  
Full formal proposals due.
- April 10, 2015:  
Full formal project reports due.

### **Description of the Program:**

The Senior Capstone Proposal Program seeks to support projects that will, broadly, advance the capabilities and infrastructure of the laboratory facilities within the Department of Chemical Engineering at the University of Utah and further the department's missions. Proposals may focus on one or several of the following areas:

- **Characterization of New Equipment**– Recently purchased equipment for the laboratory is often in need of characterization and project development. This program encourages proposals involving recently purchased equipment that develop SOPs, characterize EHS risks, validate manufacturer claims, and develop and test new potential projects for CH EN 4903 or other chemical engineering courses.
- **Addition of New Equipment** – Novel experimental apparatuses that effectively demonstrate core chemical engineering concepts are highly valued by this program. Such projects may range anywhere from the development of new analytical techniques and equipment to creation of small-scale models of industrial processing equipment. Projects proposed in this category should be able to reasonably deliver new experimental apparatuses and demonstrate their use on some project that could be used to benefit the target groups listed below.
- **Improvement of the Capabilities of Existing Equipment** – Work that develops significantly novel projects using existing equipment or that adds new measurement or control capabilities to existing equipment are encouraged. Projects in this category should adequately demonstrate the new capabilities and their value to the projects laboratory.
- **Research Use of the Projects Laboratory** – Proposals that use the projects lab to conduct novel research for the department's research program are also valued by this program. If you work as an undergraduate researcher, you are encouraged to propose projects that may facilitate the objectives of your faculty supervisor. The majority of the work in this category should be conducted within the Projects Laboratory and have some significant connection to the general goals of this program. Proposed work should also contribute something novel to the undergraduate researcher's research project and not merely be a continuation of ongoing work.
- **Industrial Partnerships** – Proposals that strengthen ties between industry and the Projects Laboratory are strongly encouraged. Researchers in this category should work with local companies to develop a project that is valuable to the company, comparable in difficulty to other Projects Lab projects, incorporates department lab facilities, and is manageable within the given time, staff, and resource constraints of this program. Additional resources donated by industrial partners do not count against the project's total allowable cost.



**Target Groups:** For each of the above categories the intended direct beneficiaries may be within one or several of the following groups:

- **Students in CH EN 1705**, the freshman design laboratory. Please talk to Dr. Butterfield if you have questions about what this group may find valuable.
- **Students in CH EN 4903**, the first semester of Projects Laboratory. Proposals that target this group should draw on your experience in 4903 to determine what new capabilities would be valuable to next year's students.
- **K-12 Students.** Our department has developed a robust community engagement program and is continually looking for new, enlightening, and entertaining teaching modules. A successful proposal for this group should develop, demonstrate, and publish online a new and effective teaching module. To see an example of existing modules and what they require, see the department's outreach web site ([http://www.che.utah.edu/outreach/teaching\\_modules](http://www.che.utah.edu/outreach/teaching_modules)).
- **Professors & Student Researchers.** Undergraduates involved in ongoing research programs with department faculty may speak with their faculty or graduate student supervisors to determine what needs may be addressed within their proposal.
- **Outside Companies.** Development of ties between industry and the Department of Chemical Engineering are of particular interest to this program. Partnerships with industry may be created through projects that address a commercial research need, or by developing capabilities and projects in our teaching laboratories that aid in training students in core chemical engineering concepts that are of expressed importance to these potential employers.

**Proposal Budget:**

Each proposal should request no more than \$200 in funds. In special cases, when the proposed project is of extraordinary worth to the projects laboratory, more funds may be allocated with approval of the Lab Committee. If you feel you have a proposal of such value, a short justification for additional funds should be included as a footnote in your single-page proposal. In the past, industry partners have supplied funds beyond the \$200 limit; these arrangements are welcome but should be discussed with the instructor before approaching the industrial partner.

**Personnel:**

*Senior Team Members:* Each proposal must account for three senior team members. After the first round of proposal selection, based on the single page proposal and concept slide, approximated one-third of the proposals will be approved to continue to the next round. The instructor will create teams around the successful proposals and their authors. You are, however, encouraged to include the team members you would most like to work with in the header of your single-page proposals. If your project is not selected, you may request to be on a certain project and that request will be used in team creation. Though only one student in each team will be the author of the chosen proposal that does not mean that team member should be the team leader. Projects roles between senior members should be worked through after team creation and described in the full proposal.

*Employees:* You will review resumes and hire students from CH EN 1705 to aid you with your project. These students will use your concept slides to determine on which projects they will request to work. Senior teams will review resumes, consider project requests, and then submit a list of 1705 students they wish to hire to the professor. Hiring will happen in rounds with the order determined by the concept slide and single page proposal scores. In your proposal you must account for at least 4 (but no more than 8) "employees" from CH EN 1705. In your full proposal you must clearly state how you will use these employees to accomplish your objectives.



**Facilities:**

Use of lab space and existing laboratory equipment are valuable resources. For many pieces of equipment we may only have one team working with it per project period. As such, odds of having a successful proposal may be increased by proposing work using equipment that is in low demand, or developing new equipment.

**Environment, Health, & Safety:**

No proposal will be funded that has not properly accounted for environment health and safety (EHS) concerns. EHS concerns with your project should be summarized in your single page proposal and concept slide. EHS concerns and how they will be mitigated should be described in detail in your full proposal.

In judging proposals, potential benefits will be weighed against their costs in dollars, facility use, and personnel, as well as against their EHS risks. Proposals that deliver the most for the associated risks and department investment will be favored.

**Proposal Formats:**

An example single page proposal, concept slide, and full proposal may be found on the projects lab web site: [http://www.che.utah.edu/projects\\_lab/handbook](http://www.che.utah.edu/projects_lab/handbook). Applicants should use these templates and follow the writing guidelines discussed in CH EN 4903 and outlined in the style guide in the Lab Handbook.

**Proposal Assessment:**

Assessment of all aspects of the proposals may be found on the CH EN 4905 Canvas site. These rubrics should be used as guides when composing your single page proposal, concept slide, pitch, and formal proposal.