

Cabrillo College
Engineering Department
Proposed Engineering Abroad Program

Background:

Abroad programs have been integral to the social science and languages educational programs for many years, and have been getting increasingly popular among engineering programs. The goal of the engineering abroad programs has been to provide opportunities for engineering students to have cultural experiences in other countries while developing their engineering expertise. There are two types of programs: the “community service” type and the “experiential” type.

The community service-type program involves taking engineering students to another country, where they live and work on an engineering project such as developing a water filtration system for a community. Organizations which run this type of program are Engineers without Borders (EWB), Engineers for a Sustainable World (ESW), and Habitat for Humanity. Many universities have EWB and ESW student chapters and at least twenty of my past students alums have been involved with one of these organizations at their transfer universities. Madison Area Technical College (MATC), a community college in Madison, Wisconsin, has such a program called Study Abroad Capacity Building where students work on solar installations for hot water and biofuels for cooking. In January 2013, I joined the MATC group with ten faculty members from colleges throughout the US. It was an amazing experience for both the students and faculty to be a part to sustainable engineering solutions to help others in the developing world.

The experiential-type program involves taking engineering students to another country, where they live and tour various engineering facilities (those run by the native country and those run by the US). SJSU has such a program called Global Technology Initiative (GTI) where students travel to another country to experience engineering. In January 2010 I joined the GTI group (with two of my alums who transferred to SJSU) to India for a two-week experience. It was an amazing experience for engineering students to see what engineering is like abroad.

A number of departments at Cabrillo offer abroad programs wherein students take the equivalent of a Cabrillo course (such as Spanish 1) at an educational institution in another country and receive college credit. The engineering abroad program that the Engineering Department will sponsor will not be a course offered in another country, but rather be a community service-type or an experiential-type engineering abroad program. It is important that Cabrillo engineering students take their required engineering course at Cabrillo where the courses satisfy the transfer requirements to universities.

In addition, Cabrillo abroad courses (such as Spanish 1) are open to anyone and, typically, (due to the expense associated with the course) the majority of the students enrolled in the study abroad courses are not Cabrillo students with academic goals, but rather community folks who can afford such an expense. The engineering abroad program will be specifically for Cabrillo engineering students and will require certain engineering core courses as prerequisites. The students need to be somewhat along in their course curriculum and already gained some engineering expertise, so that they can contribute to and get more out of the abroad program.

Cabrillo’s Engineering Abroad Program:

We are very excited to tell you that the Engineering Department at Cabrillo will be the first community college in California to offer an engineering abroad program. Our first program will be a community-service program to Guatemala December 30, 2013 - January 13, 2014.

We will be working with the villagers of Vuelta Grande, just outside of Antigua, on a rainwater catchment system to provide non-potable water for the village and the electrification of their school and homes using solar panels. We are working through a non-profit, Dream Volunteers located in Redwood City who has run many service trips of students and families to Guatemala and other countries, so we will be in good hands. The project will be a community project in that we will work with the young adults and adults of the village on the installation. We will also bring with us lots of small hands-on engineering projects to work on with the school children to expose them to engineering.

Since so many engineering students at Cabrillo were interested in the program, we had a application and interview process in the spring and 10 engineering students, 1 peer leader, and 3 alternate have been selected. Since this is our first year, we wanted to limited it to ten students. Karl Ewald, one of our new engineering instructors, will oversee the engineering project, while Jo-Ann Panzardi, Department Chair and instructor will coordinates the logistics of the program. This fall the students, Karl, and Jo-Ann are meeting every Friday, 1:30 – 3:30 pm to prepare for the abroad experience including designing and testing the system that we will install in Guatemala. The benefits of this program to students are numerous; and they are listed below.

Budget:

Because we felt that it was important that the students have financial commitment to the program, the students cover their flight and medical insurance which amounts to ~\$900. The Engineering Department is fund raising to cover the \$1,900/student land portion of the experience which includes home stays, meals, transportation, cultural events, project materials, etc...

11 students @ \$1,900.....	\$20,900
2 faculty members @\$1,900 (land portion) + \$900 (flight and insurance).....	\$5,600
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Total:	\$26,500

Benefits to Engineering Students and Our Community:

Many Cabrillo engineering students return to Santa Cruz to work in government and private practice. They bring back to the community the knowledge that they gain on an engineering abroad experience such as this one.

- Increase Awareness of Real World Problems
- Experience Engineering as a Helping Profession; Motivation to Help a Community
- Connect Theory to Practice
- Learn how to Build Sustainability in Design
- Build Confidence in Ability to Make a Difference
- Develop Professional Skills: Teamwork, Communication, Leadership, Project Management
- Gain Knowledge that Benefits Santa Cruz County: alternative energy and water solutions
- Understand Responsibilities in Civic Engagement and Citizenship
- Increase Global Awareness and Understanding of the Global Marketplace