CEE 98 Engineers Without Borders

Facilitators: Tyler Waterman (Primary Facilitator) tswater@berkeley.edu
Section 1: Anne Robertson annerobertson@berkeley.edu
Section 2: Shannon Nakamura shannak@berkeley.edu
Instructor of Record: Professor Kara Nelson
Lecture: Wednesday 6:00 - 7:00 290 HMMB (for now…)
Section 1 (Panama): Thursday 7:00 - 8:30 212 O'Brien
Section 2 (Peru): Monday 5:00 - 6:30 544 Davis
Units: 2
Office Hours: Office Hours will be held Friday 9-10 in the Davis Computer Lab (Davis 345)

Course Description:

This course addresses all aspects of design, analysis, construction, sustainability and finances of water distribution and purification systems in developing countries. It begins with an examination of fundamental design tools such as AutoCAD, and the capabilities and limitations that exist in development engineering. Water flow and distribution will be evaluated across the entire system, and students will learn how to conduct water quality testing. The construction as well as the operations and maintenance of the system will be studied. Fundraising and economic concerns will also be considered. Students will work in teams to design, build and implement a functioning water distribution system for one of two EWB Projects.

Class Structure:

Students are required to attend a core lecture which focuses on skill building, the basics of development engineering, along with project based in-class work. The lecture will be accompanied by a section of their choice - either Panama or Peru. Members must attend both the lecture and their chosen section to receive credit for their work in EWB. These sections will focus on applying the material learned in lecture to the specific projects associated with Panama and Peru providing practical, real world practice for development engineering while helping our communities.

Prerequisites: None! All majors are welcome and encouraged to apply.

Grading and Expectations:

- **Attendance (20%):** more than 2 unexcused *lecture* absences will result in a no pass
- **Final Project (20%):** final project; details shared in class
- **Homework (15%)**: There are 4 short assignments during the semester, some of which may be completed in class. Assignments are due online at the beginning of class, but can be submitted up to Friday of the week due at midnight, for ¾ points.
- **Section Participation (30%)**: Determined by the Panama and Peru Project Leads based on your outside work and participation. The project leads may assign additional homework or tasks, which should be completed as instructed.
- **Technical Expertise (15%)**: For the class, you are required to complete a set number of hours of outside work to develop your technical expertise in a given area. This requirement can be filled in many ways, including EWB workshops, campus workshops and the like. A short writeup is necessary. See details on bcourses.

One Unit Option: Instructor permission required. Lecture, homework, and final project not required. Technical Expertise hours and associated write up are still required, along with consistent section attendence.

Collaboration:
Students are encouraged to discuss course material. However, any graded material must be their own work unless otherwise noted. If you are having difficulty with the material, please come to office hours.

Texts:
All readings can be found on bcourses. We will be mainly using the Rural Water Supply Manual, produced by the World Bank, for our readings. Readings are intended to be supplementary to the course and provide additional background and serve as a reference. Specifics are detailed in the schedule. Reading optional.

Schedule: All assignments listed on date due.

Week	Lecture Date	Course Material	Assignments
1	1/24	Intro to EWB	
2	1/31	Intro AutoCAD	
3	2/7	Community Education	Reading: WASH section 4, skim PEACE water treatment section 3.1 - 3.6
4	2/14	Grant Writing and Finances	HW 1: Autocad Activity 1 ***OR*** Education Material Design
5	2/21	Water Resources and Demand Analysis	Reading: RWS Ch 3 (not F), Ch 6, skim Ch 8 A-B
6	2/28	Surveying; Community and Site Data	HW 2: Water Resources
7	3/7	Water Quality and Best Use Lecture	HW 3: Community and Water Demand Data Analytics Reading: RWS Ch 10, skim Ch 5
8	3/14	Water Storage, Flow and Distribution	Reading: RWS Ch 12 and 13
9	3/21	Operations and Construction	HW 4: Water Quality and Distribution Reading: Ch 9
10	4/2	Project Work	Project Update 1
11	4/9	Project Work	Project Update 2
12	4/16	Project Work	Project Update 3
13	4/23	Final Presentations	Final Presentations Technical Expertise