CVEN 4834-003 / EVEN 4830-001
Water and Sanitation in Developing Countries

Department of Civil, Environmental, and Architectural Engineering
University of Colorado, Spring, 2017

Professor: Dr. Karl G. Linden
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Office Hours: Monday 1:00-2:00 PM; Tuesday 9:30-11 AM. ECES 103A or by appointment
Class Time: Monday, Wednesday 3:00 – 4:15 PM, ECCR 108
Text Mihelcic et al., *Field Guide to Environmental Engineering for Development Workers* ASCE Press, 2009
References will be provided on the D2L class site and/or via email
Current technical journals and reports, web resources

Course Description
Environmental Engineering typically focuses on solutions to pollution for the most industrialized countries. We often end up engineering solutions to problems that were created by our modern society. These solutions are typically energy intensive highly engineered processes. The premise of this class is that more appropriate approaches to remediation can be developed and implemented. Also – problems that exist in lesser-industrialized countries often demand completely alternative solutions to those developed for industrialized societies.

This course will explore environmental pollution issues specific to lesser industrialized countries and solutions that have been developed to tackle these problems. It will also explore ecological approaches to pollution remediation and sustainability in industrialized nations. Students will understand the fundamentals behind effective remediation processes and develop/design appropriate solutions for specific international problems. Students will be able to design various household and community based systems for treating water and wastewater. Students will develop presentation and analysis skills around problems important to developing countries.

Course Requirements
Course will include lectures, discussions and presentations. Evaluations will be based on class discussion participation, quizzes, homework, presentations, a journal article review, and debate presentation and Laboratory project and presentation.

Grading:

Participation	10%
Quizzes	10%
Mini Literature Review	15%
Homework	20%
Laboratory Projects	25%
Issue Debates	20%

Classes: Classes will be seminar in format, based on assigned readings, interactive lectures and student-led discussions with occasional guest lectures, project assignment presentations.

Participation: Students are expected to come to class prepared for the topic being presented. Preparation will include assigned reading and personal research. Participation is expected by all in the form of informed opinions, constructive critiques, and wild ideas.

Quizzes: Short quizzes will be given almost every week to test your comprehension of the technical material and information in the reading assignments and previous classes.

Technology Literature Review: Each student will be responsible for investigating one technology and writing up a mini review (~2-3 pages + tables of information) on the topic, responding to specific questions. The technology will be assigned to you. The review should summarize the literature on a topic relevant to small systems, with an extensive references section. More details will be provided when the assignment is handed out.

Homework: Homework will be assigned regularly and will consist of short writing assignments, projects, and problems to respond to. Details will be provided with each assignment. Homework will also include leading a mini discussion on 1 publication relating to the topics in the class lectures. These papers will be read by the class and the lead student will give a 10 minute overview of the papers main points and then lead a 10 min discussion.

Laboratory Project: 3 Laboratories will be performed this semester. Details will be handed out in the first 2 weeks of class.

Final Project: Students will be broken up into groups and assigned a topic on a controversial issue around water and sanitation interventions. On a specific day in class, each topic will be debated in a forum with two opposing sides. Audience will judge who had the best argument. Each team will write up their argument into a brief with supporting literature, to hand in. More details provided with the assignment.

SCHEDULE
[Separate Handout]

University Policies

Academic Honesty The rules for completing the problem sets and exams are given in the Grading section. I encourage discussion of the problem sets because I want you to help each other to learn the material; however, you must produce your own work. Don't fool yourself into thinking that you have learned the material by relying on others. For me to accept your exams, you must follow the academic honesty rules of the University and sign the Honor Code pledge. Violations of academic honesty will be dealt with according to University policy [http://www.colorado.edu/policies/acadinteg.html].

Disability If you qualify for accommodations because of a disability, please submit to me a letter from Disability Services in a timely manner so that your needs may be addressed. Disability Services determines accommodations based on documented disabilities. You can contact Disability Services at (303) 492 8671. Their office is in Willard 322. Their web site is http://www.colorado.edu/disabilityservices.

Religious Obligations The University of Colorado requires teaching faculty to make every effort to accommodate all students who, because of religious obligations, have conflicts with scheduled exams, assignments, or other required attendance, provided the students notify faculty well in advance of the scheduled conflict. Whenever possible, students should notify faculty at least two weeks in advance of the conflict to request special accommodation. For more details on this policy, see http://www.colorado.edu/policies/fac_relig.html.

Classroom Behavior The University of Colorado states that students and faculty each have responsibility for maintaining an appropriate learning environment. Students who fail to adhere to behavioral standards may be subject to discipline. Faculty have the professional responsibility to treat students with understanding, dignity and respect, to guide classroom discussion and to set reasonable limits on the manner in which students express opinions. For more details, see http://www.colorado.edu/policies/classbehavior.html.

Sexual Harassment The University of Colorado Policy on Sexual Harassment applies to all students, staff and faculty. Sexual harassment is unwelcome sexual attention. It can involve intimidation, threats, coercion, or promises, or create an environment that is hostile or offensive. Harassment may occur between members of the same or opposite gender and between any combination of members in the campus community: students, faculty, staff, and administrators. Harassment can occur anywhere on campus, including the classroom, the workplace, or a residence hall. Any student, staff or faculty member who believes s/he has been sexually harassed should contact the Office of Sexual Harassment (OSH) at 303-492-2127 or the Office of Judicial Affairs at 303-492-5550. Information about the OSH and the campus resources available to assist individuals who believe they have been sexually harassed can be obtained at http://www.colorado.edu/odh/.

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Questionnaire

Name:_____

Department/Major:_____

Year: Sophomore Junior Senior Other_____

Email Address:_____

1. What do you see yourself doing over the next 5 years and how will this course help you?

2. What courses have you taken related to Environmental Engineering?

3. What subjects would you like to see covered in this class/ are of interest to you.

I have read and understand the course syllabus.

Signed _____ Date _____

Please return this page to Professor Linden in class