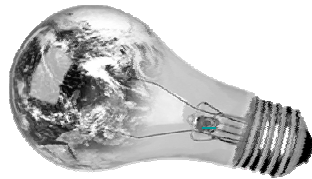


# Engineers for a Sustainable World Cornell University Chapter



Engineering College Council  
April 15, 2004

*Bright ideas for a better world...*

1

## ESW at Cornell

### ESW Course (CEE 402)

- Engineering-based group projects with underserved communities
- Service-learning

### ESW-Cornell

- Speakers
- Shorter-term activities (community service, social)
- General meetings

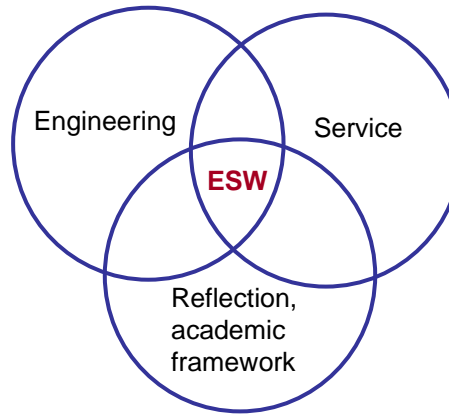


2

# The ESW Course (CEE 402)

*Past offerings*

Engineering-based, group community service projects in cooperation with partner community orgs. and in an academic environment



2 credits per semester

3

## Course Projects

### LOCAL

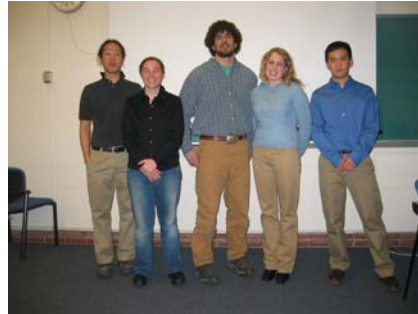
1. Assistive technologies to make the library accessible for people with low vision (S03)
2. Etna, NY nature preserve bridge design and construction (F03)
3. Vegetable oil as an alternative fuel for vehicles with diesel engines (F03, S04)

### INTERNATIONAL

4. Software tool for designing water supply systems in Honduras (S03,F03,S04)
5. Community education of earthquake risk in Turkey (F03)
6. Design & testing of solar ovens for use in developing countries (S04)
7. Rainwater management in the U.S. Virgin Islands (S04)

4

## Project Teams



1. Students (2-10)
2. Project supervisor (faculty or practicing engineer)
3. Partner community organization representative

5



## Assistive Technologies



### OBJECTIVE

To make the Tompkins County Public Library more accessible to residents with low vision by implementing assistive technologies and making navigational enhancements

### PARTICIPANTS

Supervisor: Jim Ferwerda, Exp. Psych., Computer Graphics  
Finger Lakes Independence Center  
Tompkins County Public Library

### KEY ACCOMPLISHMENTS

Researched, selected, bought, and installed computer work station with low vision software at TCPL





## Etna Nature Preserve Bridge

### OBJECTIVE

Locate, design, and build bridge over a creek in a nature preserve in Etna

### PARTICIPANTS

Supervisor: Tim Bond, CEE  
Finger Lakes Land Trust



## Vegetable Oil Powered Vehicles



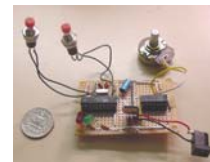
vegetable octane

### OBJECTIVES

- Automate diesel-vegetable oil switch
- Plan system to collect, filter, distribute vegetable oil
- Develop method to filter oil
- Identify other possible uses of oil (biodiesel)

### PARTNER COMMUNITY ORGANIZATION

Supervisor: Norman Scott, BEE  
LiquidSOLAR



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## EQ Risk Education in Turkey

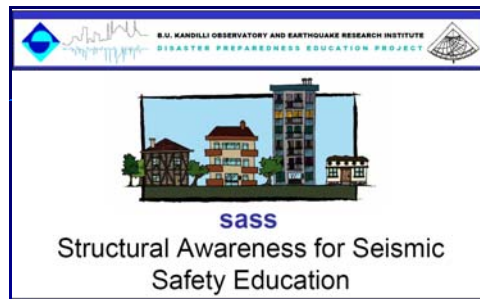
### OBJECTIVE

Improve materials for community education of earthquake risk in Turkey

### PARTNER COMMUNITY ORGANIZATION

Supervisor: Rebekah Green, CEE

Afete Hazrlık Eitim Projesi / Disaster Preparedness Education Project



## Solar Oven Testing

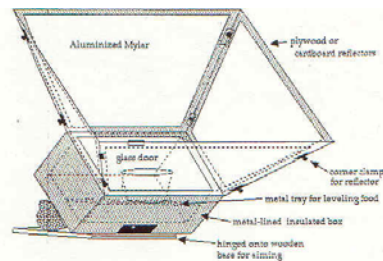
### OBJECTIVES

Empirically test solar oven design parameters to determine effect on oven performance

### PARTNER COMMUNITY ORGANIZATION

Supervisor: Tim Bond, CEE

S.T.E.V.E.N. Foundation



10

# USVI Stormwater Management

## OBJECTIVES

Identify low-cost, effective way to reduce stormwater runoff from individual home sites on the U.S.V.I. (to reduce erosion & sedimentation).

Design stormwater management system for test site on St. John

## PARTNER COMMUNITY ORGANIZATION

Supervisor: Ruth Richardson, CEE

Univ. of Virgin Islands Cooperative Extension



# Project Selection Criteria

Potential significance to community

Academic content

Project partner commitment

Student safety

# Course Meetings

## 1-hour class

Project management  
International development  
Community participation

## 2-hour section

Work on projects



# Course Requirements

## INDIVIDUAL

1. Personal goals
2. Reflections
3. Peer evaluation
4. Participation!

## TEAM

1. Roles and responsibilities assignment
2. Weekly reports
3. Design notebook
4. Proposal and proposal presentation
5. End-of-semester report and presentation

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# Expected Benefits

## To Partner Community Organization

- Access to state-of-the-art technical knowledge
- Enthusiastic, knowledgeable help from students & project supervisor
- Potential joint funding opportunities

## To Project Supervisor

- Apply engineering skills to help communities in need
- Inspire the next generation of engineering leaders

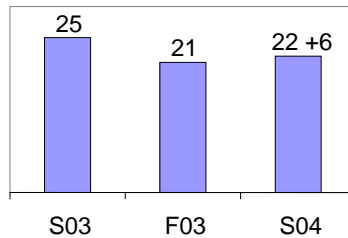
## To Students

- Real-life, start-to-finish engineering research & design experience
- Project mgmt., technical, organizational, & communication skills
- Public service experience
- Personal interactions with faculty, community, other engineers
- Improved awareness of civic responsibility

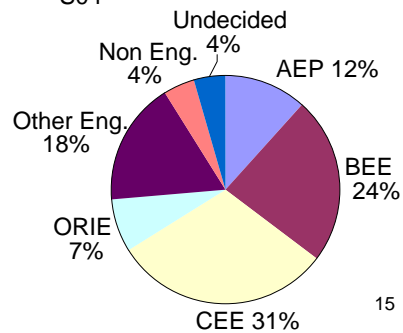
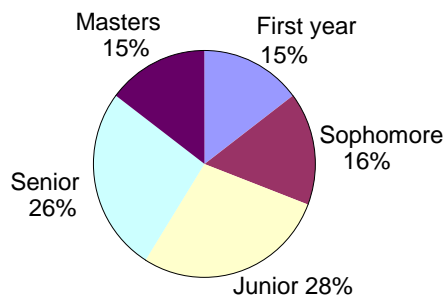
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## Who is Taking the Course?

55% Women  
3% URM



9 Engr. depts.



## EWF Course Changes for F04

- Co-instructor: Dr. Park Doing,  
Post-doc in Bovay Program in Engineering Ethics
- 3 credits, two 50-min. classes
- Expanded topics:
 

Project mgmt.	International dvlpmt.
Team dynamics	Community participation
Politics of technology	Ethics
- Projects stay the same
- FAE or approved elective in almost all depts.

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# EWF in the News

CORNELL ENGINEERING MAGAZINE

## Making a World of Difference

A new Cornell-based organization challenges students to apply their engineering skills to improving the quality of life in developing communities.

By Kenny Berkowitz '01

Months away from finishing her master of engineering degree, Regina Clewlow was wondering what to do after graduation. For a while, she'd thought seriously about joining the Peace Corps — she had enjoyed previous public service experiences, volunteering at soup kitchens in junior high, managing a recycling program in high school, and serving on the Cornell Engineering Council.



Then in the Engineering Council had a role.

## Globe Trotters

Organization connects students to the world

BY KENNY BERKOWITZ '01  
 A group of Cornell students is helping to improve the quality of life in developing communities through their shared passion for engineering and public service. The group, called the Globe Trotters, is a new organization that connects students to the world through their shared passion for engineering and public service. The group, called the Globe Trotters, is a new organization that connects students to the world through their shared passion for engineering and public service.

Ithaca Times 9/17/03



INSIDE THIS ISSUE: ACCESSIBLE CU supports free computer lab at the Southside Community Center. PREVENTABLE 14,000+ deaths of Third World children die needlessly each year.

Volume 35 Number 1 August 14, 2003

## CU's Engineers Without Frontiers brings hope, water to a needy world

By Ken Becker

In the packed winter soil of Limpopo, South Africa, spruce, eucalyptus and poplar are waiting for the first summer rain to come. In September, water flows from the sky and quickly is sucked up by the soil, filling the land dry again when winter sets in. But Shavien Brothman, a graduate student in Cornell's School of Civil and Environmental Engineering, is working to find a solution. He is spending the month of this summer designing and building a water storage tank and installing it. Instead of putting pencil to paper in their classrooms, CU's Engineers Without Frontiers students are working to help people in need around the world.



## The Post-Standard

Engineers Without Frontiers sends students to help abroad

Monday, October 13, 2003

## Thanks to CU project, L-VIS is in the library

L-VIS stands for "low vision workstation at Tompkins Center for Computer Graphics, the Tompkins Independence Center, L-VIS provides better access to the range of databases and the Internet."



The new workstation was