



**End of Year Report:
Engineers Without
Borders University of
California**

2016-2017

**May 5, 2016
Bourns College of Engineering University of California,
Riverside 900 University Avenue Riverside,
CA 92521**

Dear BCOE Awards Committee:

I would like to preface this letter with a brief overview of Engineers Without Borders (EWB)-USA. EWB is a non-profit organization strives to aid both domestic and international communities to help their basic human needs through cost-effective, sustainable projects. The founder of EWB, Dr. Bernard Amadei, created EWB to “connect a developing community that has a specific infrastructure need to engineer who can partner with the community to design a sustainable solution” (EWB-USA). This academic year, the UCR board and members aimed to help two different communities from the world. EWB from the professional chapter handed off the Tanzania Project to us last summer and we have made much progress since then. We partnered with OSDO (Orphans and Social Development Organization) and Abraham Nywage to help the students from Ukwega secondary school to attain easier access to water. The project teams are working on building a solar powered pump to supply water since the school is located near to the river. Aaron Aalinga and Hau Chen from our project teams have been creating a microcontroller for pump remote control, pH sensor and metal sensor to detect water quality. Our plan is to continue working on filtration systems to implement in pump system, and then raise money to buy the water tank, pump, PVC piping, and solar cells after. I am proud to say this project is wrapping up after tediously working on the calculations, building all the sensors, and looking for funding, and hoping the next year can complete this project by the end of fall. We have also been collaborating with Claudia Chaves, a MSE grad student, to gain funding for building biogas systems in Poccoci, Costa Rica. So far, we have turned in an application to the Buckminster Challenge and have been working to finish the Six Sigma sheet for the system. We would like to find more members and more funding to enable us to complete this project by next year. We have also worked on creating workshops in the popular programs such as Matlab, Solidworks, and Comsol with the help of clubs such as IEEE, BMES, and ASME. The officer this year brought this club back onto its feet and shined with projects and program tutorials. I can truly say that I am proud of the events that were hosted by EWB at UCR this year, and I see great promise for the years to come.

**Sincerely,
Vijaypriya Ganesan
President 2016-2017
Engineers Without Borders**

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Club History

Engineers Without Borders at UC Riverside was founded in 2008 by Breanna Bornemann. Although there were successful events in the past, transferred records of events have not been maintained until the previous academic year under the presidency of Nolan Fan. Based on previous officer information, we know that several events occurred between 2010 and 2013. In 2010 and 2011, EWB at UCR partnered with its sister chapters, Cal Poly Pomona Student and Inland Empire Professional, to travel to San Lorenzo, Guatemala to design and construct a water tank and water distribution system. In 2011, EWB helped construct the first prototype of a thermal solar collector that won a \$15,000 grant at the EPA P3 (People, Prosperity, and the Planet) Design Competition. EWB also worked with AIChE to design and construct a solar cooker and start the desalination project. At the 2011 BCOE Banquet, EWB received the Most Improved Organization award. Involvement with BCOE faculty and its academic advisor, Dr. Kawai Tam allowed for a wide variety of professional development events, which helped stabilize the chapter as a whole. Membership increased, and we were awarded the Best T-shirt Design at the 2014 BCOE Banquet. From 2015 – 2016 EWB at UCR, in conjunction with Tau Beta Pi (TBP), built a compost toilet as well as designed and built a sustainable gazebo area in UCR's parking lot 30. During this time, EWB focused on the international project in Bohol, Philippines. After a typhoon hit the island Bohol, new and sustainable methods became necessary to rebuild homes that were destroyed. EWB at UCR worked with the Husk-to-Home design team to successfully develop a particle board that would be used as sustainable building material. Today, EWB at UCR has maintained this stable infrastructure and continued its growth as a multidisciplinary and prominent organization in BCOE and EWB-USA. This year, the focus of the organization was to develop our projects and collaborations with other organizations, while maintaining the same level of professional development, social, fundraiser, and outreach events that were displayed in the previous year. This year, EWB has grown to include two more international projects. The Tanzania Project, initially brought to us by Pedro Piqueras, consists of building a solar water pump system for a school in Tanzania. The school children currently must travel over 300 meters downhill to retrieve water for themselves and their classmates. This pump will allow the children to better access to water without leaving the school. The project includes creation of a solar panel and pump. The next international project is the Costa Rica Project, which consists of the creation and implementation of biodigestion tanks for rural families. A biodigester provides clean fuel sources without emissions of harmful particulate matter. The biogas system can also provide valuable fertilizer for rural farmers to use. The project is spearheaded by Claudia Chavez, a Ph.D. candidate, and her organization, Biogas Pococi. So far, biogas systems have helped over 35 families in rural Costa Rica. EWB at UCR has also implemented various smaller projects, such as the water quality project and the air quality system. These projects encourage members to get involved and gain experience. EWB has always been a multidisciplinary organization and many steps were taken to foster relationships with engineering majors and organizations. To foster these relationships, EWB has taken steps to collaborate more with organization such as AIChE, SWE, and SHPE. Large events, such as the Lockheed Martin information session and the Los Angeles Sanitation District information session, were collaborations with SHPE and AIChE. We at EWB at UCR hope to continue growing and continue our work in other countries.

Club Information

EWB-USA Address

Engineers Without Borders USA

1031 33rd Street, Ste 210

Denver, Colorado 80205

Telephone: 303-772-2723

Fax: 303-772-2699

Website: <http://www.ewb-usa.org/>

Email: communications@ewb-usa.org

EWB-LA Professional Chapter

Name: Jared Deck

Website: <http://www.ewb-la.org/>

EWB at UCR Student Chapter

Website: <http://ewbatucr.weebly.com/>

Email: ewbatucr@gmail.com

Club Advisor

Name: Kawai Tam

Position: Lecturer

Telephone: 951-827-2498

Fax: 951-827-5696

Email: ktam@engr.ucr.edu Signature of approval: _____

Membership

Total student members in 2016-2017: 168

Graduating members: 9

Active members: 20

Funding (Estimate)

Bourns College of Engineering: \$1,000

ASUCR: \$1,148

Fundraising: \$463

Donations/Competitions: \$30,000

Officers

2016-2017 EWB Board

President	Vijaypriya Ganesan
Vice President of Club Affairs	Mark Hsu
Vice President of Professional Development	Wing (Riko) Ngan
Treasurer	Noah Rotter
Secretary	Manik Sethi
Social/Fundraiser Chair	Amanda Coale
Webmaster	Haasith Sanka
Microbial Fuel-Cell Project Leader	Aaron Vega Aliaga
Solar Cell Project Leader	Hau-Hsueh Chen
Outreach	Tamara Mustafa

2017-2018 EWB Board

President	Manik Sethi
Vice President	Noah Rotter
Treasurer	Ryan Wu
Secretary	David Garcia-Viramontes
Fundraiser	Tamara Mustafa
Social	Stephanie Kim
Head Project Leader	Aaron Aliaga
Costa Rica Project Leader	Amani Sastry
Solar Cell Project Leader	Jourdan Joyner
Water Quality	Cassandra Simas
microcontroller	Hau Chen
Outreach/Robotics	Kushagra Singh Sachan

Club Goals

Goals:

- 1. Increase project events for members, where they can learn hands on.**
- 2. Teach members Matlab, Solidworks, and Comsol.**
- 3. Provide more opportunities for networking.**

Our Plan to achieve our Goals:

1. Goal 1:

a) Partnered OSDO foundation, a NGO in Tanzania, to start an EWB project

- i) build a solar cell water pump for Ukwega village, Tanzania**
- ii) create hands on engineering project for UCR engineers**
- iii) write grants to receive money**

b) Partner with Ph.D candidate Claudia Chaves to start Costa Rica Biogas Project

- i) build a solar cell water pump for Ukwega village, Tanzania**
- ii) create hands on engineering project for UCR engineers**
- iii) write grants to receive money**

c) Invited professors and current graduate students to share advice on getting into graduate school.

d) partner with ASME do run Matlab tutorials

e) partner with AMSE and IEEE to run Solidworks tutorials

f) partner with BMES to run Comsol workshops

2. Goal 2:

a) partner with ASME do run Matlab tutorials

b) partner with AMSE and IEEE to run Solidworks tutorials

c) partner with BMES to run Comsol workshops

3. Goal 3:

a) hosted Grad Panel with multiple PhD students from different engineering fields to provide graduate school information

b) invited LA Sanitation District to talk to students about their work

6. Calendar of Events and Activities

Spreadsheet of organized events by Engineers Without Borders		
Date	Event	Description
Summer 2016	Summer Orientation	Tabled for incoming students, showed them what EWB is and does
10/3/16	First General Meeting	We had EWB alumni Pedro Piqueras come and describe his journey in Tanzania as well as inform the members about an exciting new project
10/10/16	EWB Project Presentations	Project Leaders discussed each of their projects in depth and had members ask questions as well as sign up for these projects
10/10/2016	Tanzania Project Meet	This is our first project meet for Tanzania, which people just come and meet each other in the group. We also give a brief description about what EWB is.
10/17/16	Resume Workshop	had stations of different professional activities such as resume, cover letter, LinkedIn, Elevator speech, and mock interviews
10/17/16	Introduction to microcontrollers	Basic tutorial such as the blink function in Arduino
10/21/16	Introduction to microcontrollers	Use Serial monitor to output messages and store values into variables
10/24/16	Introduction to microcontrollers	Use Arduino software to control the brightness and frequency of LED
10/31/16	Introduction to microcontrollers	Measuring the voltage allows for calibration to occur in system
11/3/16	EWB Getaway fundraiser	: EWB members and officers attended the fundraiser and bought food that supports EWB
11/4/16	Introduction to microcontrollers	learning how to work with different sensors allow for a wider application of micro control systems
11/7/16	EWB Graduate Panel	The event included multiple graduate students and professors sitting in a panel at the front of the room
11/7/16	Introduction to microcontrollers	Asked everyone to choose a project that they would be interested
11/08/2016	Tanzania Project Meet	This is our first date where we starting to understand how pump work. We did a research on what design of pump should we work on that would benefit Tanzania more.
11/14/16	Introduction to microcontrollers	They designed their project based on already available tutorials online. Submitted a part list to order in parts.

11/18/16	Introduction to microcontrollers	Different from previous tutorials, as everyone was working on their own project
11/21/16	Project Presentation	Project leaders and members presented their findings and progress in their projects to other EWB members in the meeting.
11/22/2016	Tanzania Project Meet	: In this meeting, we continuing doing research on different types of pump that would work better in Tanzania
12/05/2016	Tanzania Project Meet	This is our last project meet before the end of fall quarter. In this quarter we discuss what we are doing for next quarter and what each member should research on over the winter break.
01/17/2016	Tanzania Project Meet	This is our first Tanzania Project Meet in Winter break. During this meeting, we started to discuss about the design of the water pump. We talk about many different factors that would affect the design of the water pump
1/20/17	Introduction to microcontrollers	Calibrated sensors and interface system using Arduino Serial monitor
1/23/17	Biogas Project Meeting	EWB hosted Claudia Chavez, a Costa Rica project which consists of going to Costa Rica and helping them create Biogas systems in villages and houses.
1/27/ 2017	Biogas Project Meeting	During this project meet, we continuing working on the design of the water pump.
01/31/2017	Introduction to microcontrollers	Optimized circuit by experimenting with different setups on breadboard
1/31/17	LASD	Employees from LA Sanitation came to a joint EWB and AiCHE meeting and informed us about their company
2/3/17	Introduction to microcontrollers	Members learned how to work with an actual pcb prototype board.
2/4/2017	Matlab Tutorials	ASME officers taught matlab to both ASME and EWB members
2/ 6/2017	Project Meeting	Inform members on current updates listed above. Details pertaining to the accounts created were also discussed
2/7/17	Introduction to microcontrollers	Members were introduced to solidworks, and how to extrude and cut in the software. Then convert file to STL to 3d print.
2/10/17	Introduction to microcontrollers	Members used mounting techniques of boards to secure onto prototype design.
2/13/2017	Project Meeting	On March 8th, there will be a trip to the EWB LA chapter to find more recruits for the project.

2/14/2017	Tanzania Project Meet	During this event, we get information back from Tanzania about the site that we will be building our water pump at
2/14/17	Introduction to microcontrollers	Adding LCD displays to various projects allowed for continual improvement and “finishing touches”.
2/21/17	Introduction to microcontrollers	using HC-05 modules, one was able to output data read by sensor system onto mobile device
2/21/2017	Matlab Tutorials	ASME officers taught matlab to both ASME and EWB members
2/21/17	Chick Fil-A Fundraiser	Fundraise for EWB by selling Chick Fil-A at nooners
2/23/17	Introduction to microcontrollers	Using NRF modules, the range was tested
2/27/2017	Biogas Project Meeting	BFI Fuller Challenge was discussed as a possible source of funding.
2/28/17	Introduction to microcontrollers	Eagle is a software that is similar to fritzing where routing wires is necessary to create board design.
2/28/2017	Matlab Tutorials	ASME officers taught matlab to both ASME and EWB members
3/14/17	Chick Fil-A Fundraiser	Fundraise for EWB by selling Chick Fil-A at nooners
3/06/17	Biogas Project Update	More plans were made for the LA trip: PowerPoint, ride accommodations, as well as Biogas CR Fundraising Dinner arrangements.
3/7/17	Introduction to microcontrollers	Learn how to extract the sketch and board file from Eagle to get them printed at manufacturing plant.
3/9/17	Introduction to microcontrollers	Brainstorm ideas, concepts such as robotics outreach, drone, and raspberry pi computer
3/13/17	Biogas Project Update	Fundraising opportunities and team events were planned.
3/27/17	Costa Rica Project Meet	An event reminder was brought up to the members regarding the Costa Rica food event.
4/3/17	Costa Rica Project Update	Microcontrollers team were working on their project proposal with pictures. Applications for grant money were prepared.
4/18/17	Project Update Presentation	The project leaders created powerpoints and demonstrations about each of their projects
4/11/17	Introduction to microcontrollers	Learned how to wire up L298n motor controller and Arduino
4/14/17	Introduction to microcontrollers	Used gyroscope/accelerometer and ultrasonic sensor to develop a smart drone
4/16/17	prepare for GCAP meeting	We discussed what the NGO we collaborate with have made progress in Tanzania. We also found funding for the main parts

4/21/17	Introduction to microcontrollers	finish with testing on breadboard and start moving onto final design
4/28/17	Introduction to microcontrollers	learned the basics of using source code such as from github or bitbucket.
4/30/17	Tanzania Project Meet	We assigned parts to members to fill out portions of the proposal. We filled out the budget and decided we need around \$8,000.

Treasurer's Report

Engineers Without Borders - UC Riverside

Financial Balance - 2016-2017 School Year

October 2016 - Current Day

Transaction Description	Payment, Fee, Withdrawal (-)	Deposit, Credit (+)
Transfer to the ASUCR account		\$1,098.00
Rollover		\$3,023.00
Dean's Funding		\$2,000.00
Chapter fee	\$1,000.00	
Food	\$135.80	\$200.00
Professional Development	\$154.86	
Project Supplies		\$300.00
Printing		\$48.00
Nooners	\$200.00	\$250.00
Officer Polos	\$250.00	\$250.00
Membership dues		\$440.00
T-Shirts	\$300.00	\$320.00

Initial Balance at Start of School Year: (+) \$3,023.00

ASUCR Funding: (+) \$1,098.00

Dean's Funding: (+) \$2000.00

Total EWB Membership Fees: (+) \$440.00

Total Fundraiser Money: (+) \$50.00

Total Spending Amount /Reimbursement: (-) \$1,859.86

Total: \$4751.14

*****International Project funding is managed by CEE Dept. under the supervision of Dr. Kawai Tam*****

Activities in Detail

Activities in Details EWB at UCR hosted many events during the 2016-2017 academic year. Below we have provided our prominent professional development, leadership development, academic development, outreach/community service, and club development activities information.

Professional Development Activities

The objectives of the listed professional development events were hosted for members and students to develop the skills and knowledge of engineer students to ensure that they are well rounded and prepared for the real world job market. The professional development activities include workshops, seminars, and guest speakers.

1. Resume Writing and other Professional Dev. Speaker (October 17, 2016)
2. Graduate School Panel (October 26, 2016)
3. LASD(January 31,2017)

Name of Activity: Resume Writing and other Professional Dev.

Date of Activity: 10-17-16

Purpose of Activity: To help members and nonmembers gain insight and progress in professional activities such as resume writing and LinkedIn accounts.

History of Activity: Historically EWB has held professional development activities to help our members.

Number of Participants:

Students: 31

Male: 20

Female: 11

Club members: 17

Professional members:

Teachers:

Parents:

Cost of Activity: \$42.11

Description of the activity: We had stations of different professional activities such as resume, cover letter, LinkedIn, Elevator speech, and mock interviews. We had graduate student Chitra Asokan help us man the cover letter station.

Evaluation of the activity: The event was a success. Multiple people needed help from all years of college. We could have improved on setting up the stations on time and making them more presentable.

Name of Activity: EWB Graduate Panel

Date of Activity: 11-7-16

Purpose of Activity: To introduce graduate students and professors to members of EWB in an involved discussion.

History of Activity: We have done grad panels for a couple years.

Number of Participants: 51

Students: 48

Male: 31

Female: 20

Club members: 17

Professional members:

Teachers: 3

Parents:

Cost of Activity: \$57.51

Description of the activity: The event included multiple graduate students and professors sitting in a panel at the front of the room. Students asked questions to the panel and the panel responded and this lead into multiple other questions.

Evaluation of the activity: The activity was a success. The members got a lot of advice from the graduate panel. The improvements could have been better planning on our part to set up the room.

Name of Activity: Los Angeles Sanitation District Information Session

Date of Activity: 1-31-17

Purpose of Activity: To present members with the opportunity to interact with employees from LA Sanitation District.

History of Activity: This is the first meeting ever with LA Sanitation District. There have been previous meetings with companies.

Number of Participants: 17

Students: 17

Male: 8

Female: 9

Club members: 7

Professional members:

Teachers:

Parents:

Cost of Activity: \$42.05

Description of the activity: Employees from LA Sanitation came to a joint EWB and AiCHE meeting and informed us about their company as well as their employee and intern policies. They also informed us on how to better apply for their company.

Evaluation of the activity: The event went well there was a fair amount of people at the event and the presenters were well prepared and engaging.

General meeting and Project Presentations

Name of Activity: First General Meeting

Date of Activity: 10-3-16

Purpose of Activity: Learn about EWB and EWB's projects by attending this meeting.

History of Activity: We have an intro meeting every quarter to introduce any new members to our officers, goals, and projects for that quarter.

Number of Participants: 83

Students: 83

Male: 46

Female: 37

Club members: 19

Professional members:

Teachers:

Parents:

Cost of Activity: \$19.78

Description of the activity: We had EWB alumni Pedro Piqueras come and describe his journey in Tanzania as well as inform the members about an exciting new project.

Evaluation of the activity: We had a great meeting about our projects and goals and had lots of members ask us questions.

Name of Activity: EWB Project Presentations

Date of Activity: 10-10-16

Purpose of Activity: To further inform members and officers about the expansive amount of project we have and to give updates on their progress

History of Activity: We have project meeting to inform and incentivize members on our projects

Number of Participants:

Students: 45

Male: 28

Female: 17

Club members: 15

Professional members:

Teachers:

Parents:

Cost of Activity: \$41.04

Description of the activity: Project Leaders discussed each of their projects in depth and had members as questions as well as sign up for these projects.

Evaluation of the activity: The event went well. All the members were involved and enthusiastic about the projects and their goals.

Name of Activity: Project Presentation

Date of Activity: 11-21-16

Purpose of Activity: To introduce our members to our projects and gain support.

History of Activity: EWB has had project meeting for many years since we always have a few projects.

Number of Participants: 26

Students: 26

Male: 12

Female: 14

Club members: 12

Professional members:

Teachers:

Parents:

Cost of Activity: \$43.21

Description of the activity: Project leaders and members presented their findings and progress in their projects to other EWB members in the meeting.

Evaluation of the activity: The activity was a partial success. The projects all made progress and presented reasonable findings. The presenters could improve their speaking skills.

Name of Activity: Biogas Project Meeting

Date of Activity: 1/23/17

Purpose of Activity: To introduce Claudia Chavez, the graduate student, to the members as well as her project, the Costa Rica Biogas project.

History of Activity: This meeting is the first of its kind because Claudia Chavez has never spoken at an EWB meeting before. IT is similar to other project meeting however.

Number of Participants:

Students: 41

Male: 21

Female: 20

Club members: 12

Professional members:1

Teachers:

Parents:

Cost of Activity: \$44.06

Description of the activity: EWB hosted Claudia Chavez, a Costa Rica project which consists of going to Costa Rica and helping them create Biogas systems in villages and houses.

Evaluation of the activity: The activity was a success. Many people showed up and participated in Claudia's presentation. Also, the project meetings still go on today, as members contribute to the creation of a system and explore methods to improve it.

Name of Activity: Project Update Presentation

Date of Activity: 4-18-17

Purpose of Activity: To introduce our projects to members and update everyone on the progress our project has made.

History of Activity: Project meetings have been done before. They happen every year and at least once a quarter.

Number of Participants: 22

Students: 22

Male: 12

Female: 10

Club members: 9

Professional members:

Teachers:

Parents:

Cost of Activity: \$42.11

Description of the activity: The project leaders created powerpoints and demonstrations about each of their projects. Demonstrations included air and water quality sensors, VR, Drone creation, and information on Tanzania and Costa Rica projects.

Evaluation of the activity: This activity was a success. Every project meeting is a success due to our lucrative projects. Members were able to interact with the projects and gain interest with them.

Project Meetings

Our projects were to progress in either the Tanzania Project or Costa Rica Project. Project leaders branched off members to work on different agendas.

Name of Activity: Tanzania Project Meet		
Date of Activity: Oct/10/2016		
Purpose of Activity: To work on the development of the water pump that will be send to Tanzania		
History of Activity: First ever meeting on Tanzania Project Meeting		
Number of Participants: 10		
Students: 10	Male: 6	Female: 4
Club members: 10	Professional members: 0	
Teachers: 0	Parents: 0	
Cost of Activity: \$0		
Description of the activity: This is our first project meet for Tanzania, which people just come and meet each other in the group. We also give a brief description about what EWB is.		
Evaluation of the activity: This meeting went pretty consider that it is our first ever Tanzania Project Meet. It provides a great chance for people to get to know who they are going to work with for the next year.		

Name of Activity: Introduction to microcontrollers		
Date of Activity: 10/17/16		
Purpose of Activity: Introduce People to Arduino and various software. In order to make sensor systems		
History of Activity: Group has made circuits to monitor the various parameters in construction of Microbial Fuel cell		
Number of Participants: 7		
Students: 7	Male: 4	Female: 3
Club members: 7	Professional members: 0	
Teachers: 0	Parents: 0	
Cost of Activity: N/A		
Description of the activity: Basic tutorial such as the blink function in Arduino		
Evaluation of the activity: need more materials so everyone has ability to participate. Everyone learned basic HIGH LOW commands.		

Name of Activity: Introduction to microcontrollers

Date of Activity: 10/21/16

Purpose of Activity: Begin instruction on Serial monitor

History of Activity: Group has learned to use syntax such as HIGH or LOW

Number of Participants: 5

Students: 5

Male: 2

Female: 3

Club members: 5

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: N/A

Description of the activity: Use Serial monitor to output messages and store values into variables

Evaluation of the activity: Need spare computers for those who do not have one. Majority learned some aspect of utilizing the serial monitor.

Name of Activity: Introduction to microcontrollers

Date of Activity: 10/24/16

Purpose of Activity: Begin instruction on using LED

History of Activity: Group has learned how to utilize and apply the Serial monitor.

Number of Participants: 8

Students: 8

Male: 5

Female: 3

Club members: 8

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: N/A

Description of the activity: Use Arduino software to control the brightness and frequency of LED

Evaluation of the activity: Need spare parts, such as resistors. Everyone seem to really enjoy this activity.

Name of Activity: Introduction to microcontrollers

Date of Activity: 10/24/16

Purpose of Activity: Begin instruction on potentiometers

History of Activity: Group has learned to utilize LED's and adjust settings in code

Number of Participants: 6

Students: 6

Male: 4

Female: 2

Club members: 6

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: N/A

Description of the activity: Potentiometers are variable resistors which allow for manipulation of power to given load

Evaluation of the activity: Need more parts. The latter half of the event ended up being an explanation on why potentiometers are important,

Name of Activity: Introduction to microcontrollers

Date of Activity: 10/31/16

Purpose of Activity: Begin instruction on using voltage sensors

History of Activity: Voltage sensors allow for electronic systems to be measured

Number of Participants: 7

Students: 7

Male: 5

Female: 2

Club members: 7

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: N/A

Description of the activity: Measuring the voltage allows for calibration to occur in system

Evaluation of the activity: Need more parts. Made custom voltage sensors. In example sensor reading solar panel. Sensor reading Microbial Fuel cell potential.

Name of Activity: Introduction to microcontrollers

Date of Activity: 11/4/16

Purpose of Activity: Begin instruction of different sensors to arduino

History of Activity: Using the basic knowledge of voltage sensor, same skills will applied to new sensors

Number of Participants: 8

Students: 8

Male: 6

Female: 2

Club members: 8

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: N/A

Description of the activity: learning how to work with different sensors allow for a wider application of micro control systems

Evaluation of the activity: Need more parts. Should have different sensors available. It would add to the learning experience.

Name of Activity: Introduction to microcontrollers

Date of Activity: 11/7/16

Purpose of Activity: Begin exploring different application

History of Activity: several application such as water quality, air quality, soil quality, robotics, solar water pump, RF communication

Number of Participants: 5

Students: 5

Male: 3

Female: 2

Club members: 5

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: N/A

Description of the activity: Asked everyone to choose a project that they would be interested

Evaluation of the activity: Should be more open, doesn't necessarily need to be environmental and chemical engineering based projects.

Name of Activity: Tanzania Project Meet

Date of Activity: 11/08/2016

Purpose of Activity: To work on the development of the water pump that will be send to Tanzania

History of Activity: This has been an ongoing project

Number of Participants: 10

Students: 10

Male: 6

Female: 4

Club members: 10

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: \$0

Description of the activity: This is our first date where we starting to understand how pump work. We did a research on what design of pump should we work on that would benefit Tanzania more.

Evaluation of the activity: Nothing much have we done during this meet, but it is a great start to research on what we need to work on for the next couple weeks

Name of Activity: Introduction to microcontrollers

Date of Activity: 11/14/16

Purpose of Activity: Begin building circuits on fritzing software for project design

History of Activity: Using their knowledge of building circuits/coding with arduino. Built basic design on software

Number of Participants: 7

Students: 7

Male:5

Female: 2

Club members: 7

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: N/A

Description of the activity: They designed their project based on already available tutorials online. Submitted a part list to order in parts.

Evaluation of the activity: Learning Fritzing took some time, but they got the hang of it. Should do an in depth tutorial.

Name of Activity: Introduction to microcontrollers

Date of Activity: 11/18/16

Purpose of Activity: Construct micro control projects from fritzing diagrams

History of Activity: With their prior knowledge people were able to construct microcontrol systems

Number of Participants: 6

Students: 6

Male:4

Female: 2

Club members:

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: N/A

Description of the activity: Different from previous tutorials, as everyone was working on their own project

Evaluation of the activity: Was a bit more challenging, as everyone was on a different page

Name of Activity: Tanzania Project Meet

Date of Activity: 11/22/2016

Purpose of Activity: Working on water pump that will be send to Tanzania

History of Activity: This has been an ongoing project

Number of Participants: 10

Students: 10

Male: 6

Female: 4

Club members: 10

Professional members:

Teachers:

Parents:

Cost of Activity: \$0

Description of the activity: In this meeting, we continuing doing research on different types of pump that would work better in Tanzania

Evaluation of the activity: This is a great meet because we finally decide what types of pump that we can work on

Name of Activity: Tanzania Project Meet

Date of Activity: 12/05/2016

Purpose of Activity: Working on water pump that will be send to Tanzania

History of Activity: This has been an ongoing project

Number of Participants:

Students: 10

Male:

Female:

Club members: 10

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: \$0

Description of the activity: This is our last project meet before the end of fall quarter. In this quarter we discuss what we are doing for next quarter and what each member should research on over the winter break.

Evaluation of the activity: This is a great project meet because it gives each member's something to do over the break to set our winter quarter off strong

Name of Activity: Tanzania Project Meet

Date of Activity: 01/17/2016

Purpose of Activity: Working on water pump that will be send to Tanzania

History of Activity: This has been an ongoing project

Number of Participants: 10

Students: 10

Male: 6

Female: 4

Club members: 10

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: \$0

Description of the activity: This is our first Tanzania Project Meet in Winter break. During this meeting, we started to discuss about the design of the water pump. We talk about many different factors that would affect the design of the water pump

Evaluation of the activity: This is a great first meeting because we exchange knowledge that we learn over the break and keep everyone on the same page

Name of Activity: Introduction to microcontrollers

Date of Activity: 1/31/17

Purpose of Activity: Review projects coming back from week break

History of Activity: Made progress by testing out circuit on prototype board

Number of Participants: 8

Students: 8

Male:5

Female: 3

Club members: 8

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: N/A

Description of the activity: Optimized circuit by experimenting with different setups on breadboard

Evaluation of the activity: Need more breadboards, but overall everyone got used to the layout of breadboard

Name of Activity: Introduction to microcontrollers

Date of Activity: 2/3/17

Purpose of Activity: Moved to design circuit onto PCB board

History of Activity: Breadboards should never be used in final product, that is why a lot of testing and implementation onto pcb is necessary

Number of Participants: 10

Students: 10

Male:7

Female: 3

Club members:10

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: N/A

Description of the activity: Members learned how to work with an actual pcb prototype board.

Evaluation of the activity: Need more boards, however everyone learned in some way or another how to solder leads from circuit onto pcb

Name of Activity: Project Meeting

Date of Activity: February 6th, 2017

Purpose of Activity: The meeting was to inform about the grant writing, GoFundMe, appointed positions, and estimated date to travel to Costa Rica (August 2 - 14).

History of Activity: EWB has had project meeting for many years since we always have a few projects.

Number of Participants: 9

Students: 9

Male: 5

Female: 4

Club members: 4

Professional members:

Teachers:

Parents:

Cost of Activity: \$0

Description of the activity: Inform members on current updates listed above. Details pertaining to the accounts created were also discussed.

Evaluation of the activity: There was still more positions needed to be filled so the meeting was partially successful.

Name of Activity: Tanzania Project Meet

Date of Activity: 02/14/2017

Purpose of Activity: Working on water pump that will be send to Tanzania

History of Activity: This has been an ongoing project

Number of Participants: 10

Students: 10

Male: 6

Female: 4

Club members: 10

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: \$0

Description of the activity: During this event, we get information back from Tanzania about the site that we will be building our water pump at. We discuss about potential issues about our pump and working on improve it.

Evaluation of the activity: This is a great meeting because we finally get response from Tanzania about where we going to build our water pump.

Name of Activity: Introduction to microcontrollers

Date of Activity: 2/14/17

Purpose of Activity: Used LCD to display information visually instead of Serial Monitor

History of Activity: Learning how to use tools such LCD provide for a more useful user interface

Number of Participants: 9

Students:9

Male:7

Female: 2

Club members:9

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: N/A

Description of the activity: Adding LCD displays to various projects allowed for continual improvement and “finishing touches”.

Evaluation of the activity: More LCD’s are needed in order to have enough for all the projects

Name of Activity: Introduction to microcontrollers

Date of Activity: 2/21/17

Purpose of Activity: Began incorporating bluetooth and other forms of communication between user and device

History of Activity: Visual is not the only form, but sending information to mobile devices is also crucial

Number of Participants: 11

Students:11

Male:7

Female: 4

Club members:11

Professional members: 0

Teachers: 0

Parents: 0

Cost of Activity: N/A

Description of the activity: using HC-05 modules, one was able to output data read by sensor system onto mobile device

Evaluation of the activity: Really exciting activity, have to get more modules.

Name of Activity: Project Update

Date of Activity: 3-13-17

Purpose of Activity: Fundraising dinner arrangements and suggestions were discussed. Planning for a group photo was arranged as well as a Chifirjo day to become more culturally interconnected with Costa Rica.

History of Activity: EWB has had project meeting for many years since we always have a few projects.

Number of Participants: 9

Students: 9

Male: 4

Female: 5

Club members: 5

Professional members:

Teachers:

Parents:

Cost of Activity: \$0

Description of the activity: Fundraising opportunities and team events were planned.

Evaluation of the activity: Students were very hopeful for future planning and progression of the project.

Name of Activity: Costa Rica Project Meet

Date of Activity: 3-27-17

Purpose of Activity: Fundraising venues were narrowed down to a tally in restaurants. Locations confirmations are pending.

History of Activity: EWB has had project meeting for many years since we always have a few projects.

Number of Participants: 8

Students: 8

Male: 4

Female: 4

Club members: 4

Professional members:

Teachers:

Parents:

Cost of Activity: \$0

Description of the activity: An event reminder was brought up to the members regarding the Costa Rica food event.

Evaluation of the activity: Event was facilitated with ease.

Name of Activity: Costa Rica Project Update

Date of Activity: 4-3-17

Purpose of Activity: Arrangements for the following week were made. This includes project tasks to be completed and finalization of teams.

History of Activity: EWB has had project meeting for many years since we always have a few projects.

Number of Participants: 9

Students: 9

Male: 4

Female: 5

Club members: 5

Professional members:

Teachers:

Parents:

Cost of Activity: \$44

Description of the activity: Microcontrollers team were working on their project proposal with pictures. Applications for grant money were prepared.

Evaluation of the activity: Several newcomers attended the Biogas meeting and new volunteer positions were filled.

Name of Activity: Introduction to microcontrollers
Date of Activity: 4/11/17
Purpose of Activity: Use microcontrollers to construct robots
History of Activity: use simple motor controllers L298n and Arduino to control speed of robot.
Number of Participants: 10

Students:10	Male:6	Female: 4
Club members:10	Professional members: 0	
Teachers: 0	Parents: 0	

Cost of Activity: N/A
Description of the activity: Learned how to wire up L298n motor controller and Arduino
Evaluation of the activity: need more modules and testing motors. Able to build different models of robot

Name of Activity: Introduction to microcontrollers
Date of Activity: 4/14/17
Purpose of Activity: Develop a drone
History of Activity: Building a drone has a lot of application, one is able to do aerial reconnaissance
Number of Participants: 7

Students:7	Male:5	Female: 2
Club members:7	Professional members: 0	
Teachers: 0	Parents: 0	

Cost of Activity: N/A
Description of the activity: Used gyroscope/accelerometer and ultrasonic sensor to develop a smart drone
Evaluation of the activity: Still needs to be worked on, sensors could then be attached

Name of Activity: Tanzania Project Meet
Date of Activity: 4/16/17
Purpose of Activity: prepare for GCAP meeting
History of Activity:
Number of Participants:

Students: 5	Male: 2	Female: 2
Club members: 5	Professional members: 0	
Teachers: 0	Parents: 0	

Cost of Activity: \$0
Description of the activity:
We discussed what the NGO we collaborate with have made progress in Tanzania. We also found funding for the main parts: Solar panels, pump, and PVC piping from ASUCR and Dean's funding. The meeting was adjourned after assigning people to fill out proposal, fill out USDAF, and talk to peace corps.

Evaluation of the activity: The meet went really well for we discussed everything that was assigned in the meeting. We could have advertised and had a better turnout.

Tutorials

We collaborated with

- 1)ASME for Matlab tutorials
- 2)IEEE and ASME for Solidworks tutorials
- 3)BMES for COMSOL workshops

Name of Activity: Matlab Tutorials

Date of Activity: 2/4/2017

Purpose of Activity: To teach members of ASME and EWB Matlab programming

History of Activity: First of its kind

Number of Participants: 11

Students: 11

Male: 5

Female: 6

Club members: 4

Professional members:

Teachers:

Parents:

Cost of Activity: \$12.51

Description of the activity: ASME officers taught matlab to both ASME and EWB members.

Evaluation of the activity: The activity went well. The tutor was knowledgeable and able to teach. There could have been more member involvement, however it was a success overall.

Name of Activity: Matlab Tutorials

Date of Activity: 2/21/2017

Purpose of Activity: To teach members of ASME and EWB Matlab programming

History of Activity: First of its kind

Number of Participants: 10

Students: 10

Male: 5

Female: 5

Club members: 3

Professional members:

Teachers:

Parents:

Cost of Activity: \$12.51

Description of the activity: ASME officers taught matlab to both ASME and EWB members.

Evaluation of the activity: The activity went well. The tutor was knowledgeable and able to teach. There could have been more member involvement, however it was a success overall.

Name of Activity: Matlab Tutorials

Date of Activity: 2/28/2017

Purpose of Activity: To teach members of ASME and EWB Matlab programming

History of Activity: First of its kind

Number of Participants: 9

Students: 9

Male: 4

Female: 5

Club members: 4

Professional members:

Teachers:

Parents:

Cost of Activity: \$12.51

Description of the activity: ASME officers taught matlab to both ASME and EWB members.

Evaluation of the activity: The activity went well. The tutor was knowledgeable and able to teach. There could have been more member involvement, however it was a success overall.

Name of Activity: Matlab Tutorials

Date of Activity: 3/6/2017

Purpose of Activity: To teach members of ASME and EWB Matlab programming

History of Activity: First of its kind

Number of Participants: 10

Students: 10

Male: 5

Female: 5

Club members: 3

Professional members:

Teachers:

Parents:

Cost of Activity: \$12.51

Description of the activity: ASME officers taught matlab to both ASME and EWB members.

Evaluation of the activity: The activity went well. The tutor was knowledgeable and able to teach. There could have been more member involvement, however it was a success overall.

Name of Activity: Solidworks Tutorial

Date of Activity: Week 3

Purpose of Activity: To explore and introduce Solidworks

History of Activity: This is a recurring training event.

Number of Participants: 18

Students: 18

Male: 10

Female: 8

Club members: 6

Professional members:

Teachers:

Parents:

Cost of Activity: \$0

Description of the activity: The basics of modeling and advanced modeling were introduced to students. 3D modeling is a highly beneficial skill to possess as an engineer. We built two components (pictured below).

Evaluation of the activity: There was a high attendance of students which shows a great interest

Name of Activity: Solidworks Tutorial

Date of Activity: Week 5

Purpose of Activity: To explore and introduce Solidworks

History of Activity: This is a recurring training event.

Number of Participants: 9

Students: 9

Male: 5

Female: 4

Club members: 4

Professional members:

Teachers:

Parents:

Cost of Activity: \$0

Description of the activity: As an extension of the week 3 training, a custom model of a component was modeled.

Evaluation of the activity: There was a dip in the attendance number but we did have some attendance. There were still several student eager to learn and extend upon this skillset.

Assessment of Goals

Goal 1: Increase project events for members, where they can learn hands on.

- 1. built water pump for Ukwega village, Tanzania**
- 2. made pH sensor, metal sensor for water quality and microcontroller for project**
- 3. working on obtaining solar cells and bigger water pump**
- 4. writing six-sigma for Costa Rica Project**
- 5. working on more funding**
- 6. working on water filters**
- 7. wrote Buckminster, USDAF and GCAP funding**

Goal 2: Teach members Matlab, Solidworks, and Comsol.

- 1. ran Matlab tutorials with ASME**
- 2. ran Solidworks with ASME and IEEE**
- 3. planned to run Comsol workshops with BMES**

Goal 3: Provide more opportunities for networking.

- 1. Invited professors and current graduate students to share advice on getting into graduate school.**
- 2. hosted Grad Panel with multiple PhD students from different engineering fields to provide graduate school information**
- 3. invited LA Sanitation District to talk to students about their work**

Conclusion

The events that were created by EWB at UCR during the 2016-2017 academic year have been extremely successful. These goals include increasing professional development events for members, providing more opportunities for club development and growing as a chapter by participating in conferences. Overall, the 2016-2017 officers performed their tasks adequately, and the quality of their work can be seen in the EWB events that were held during the academic year. Our membership has increased dramatically since previous years. EWB-USA focuses on International Projects and fosters creative leaders within their organization. The professionalism and growth of our chapter has continued since the 2015-2016 academic year due to the hard work and efforts of the officers from the last two years. EWB at UCR is unique compared to other EWB chapters because it emphasizes not only our projects, but our outreach events and professional development events. In our efforts to grow stronger relationships with other EWB Chapters and the BCOE Community, we have done our best to reach out to these groups for both guidance and partnerships.

This year we had many events, with a focus on workshops and projects. Our active members attended at least one social, fundraiser, outreach, or project event and attended an adequate amount of general club meetings. This has improved since the previous year.

Organization collaboration was the biggest success for the 2016-2017 academic year. We successfully hosted the many events with Aiche, ASME, IEEE, and BMES. We hope to continue this event to foster collaboration with the BCOE community. Our organization also hosted several professional development and social events with other BCOE and UCR organizations. It was an honor and a privilege to work with other organizations and collaborate with IEEE, ASME, AIChE and BMES.

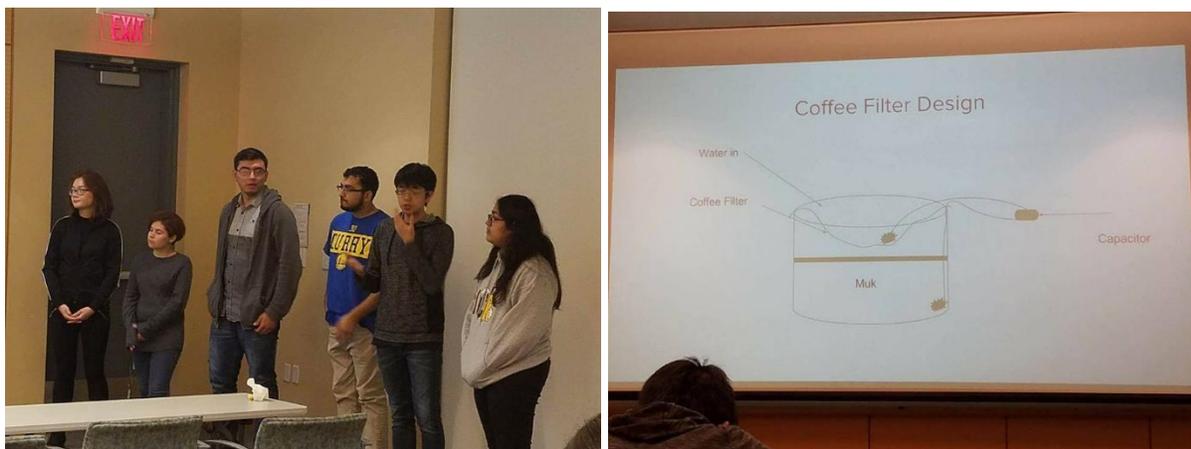
EWB is a non-profit organization that opens up excellent opportunities for BCOE students to work with communities in both international and domestic settings. Our overarching objective was to foster an atmosphere that encourages more of the BCOE community to go beyond the borders of academia and Riverside activities. Thank you for setting aside time to read this comprehensive report of EWB at UCR in 2016-2017. We hope you will strongly consider EWB at UCR for an award at the BCOE Banquet.

Appendix Pictures:

1st general meeting

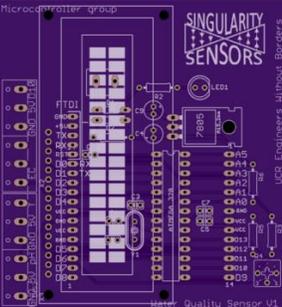
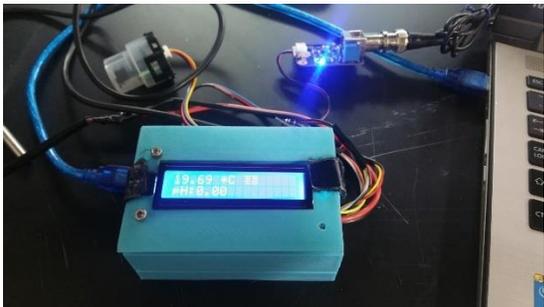
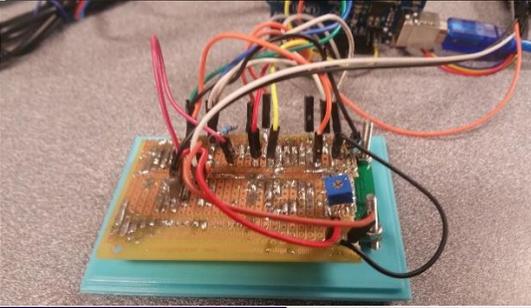
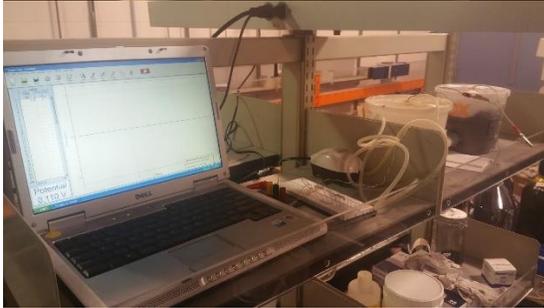
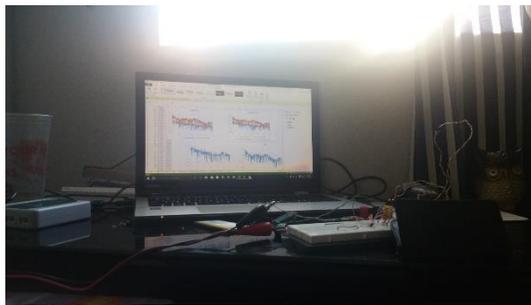


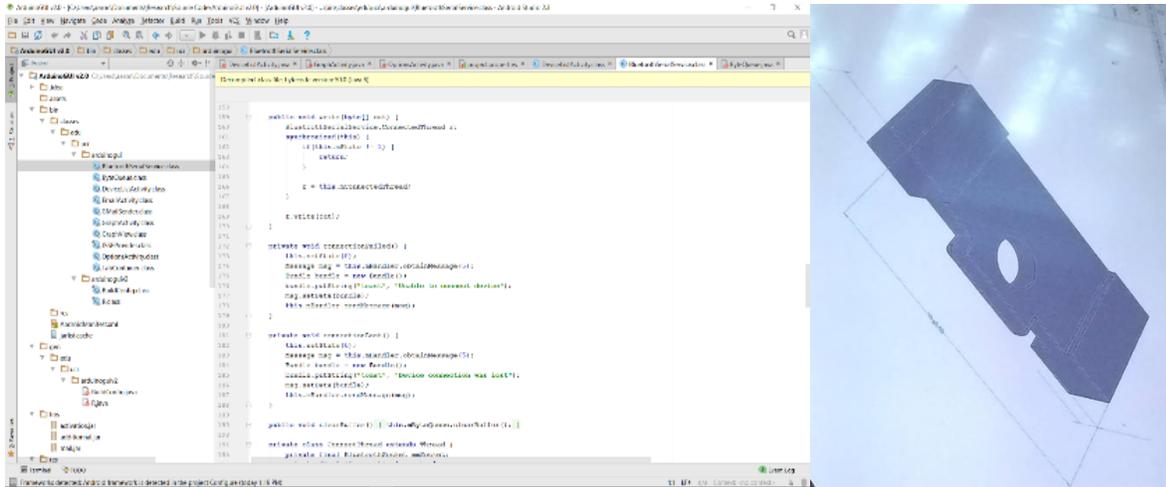
Project Presentation 2





Microcontroller group:





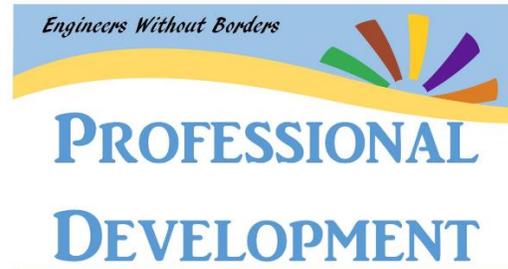
Flyers

EWB's First General Meeting

Monday, October 3rd
Time - 5:00pm
Where - Chung 205/206

- Learn about upcoming projects
- Volunteering opportunities
- Meet this year's EWB officers
- PIZZA will be provided

Questions? Email us at
ewbatucr@gmail.com



Come learn about

Resume Writing
Mock Interviews
Cover Letters
Linkedin Profiles
Elevator Pitches

With
Chithra Asokan
Ph.D Student

Where: Chung 205/206
When: 10/17 5pm

EWB GETAWAY CAFE FUNDRAISER



WHEN

**Thursday Nov.3
6-10pm**

WHERE

Getaway Cafe

Join EWB for some great food and company at the Getaway Café. Get to know our new officers and learn about our projects!

GRADUATE PANEL

PRESENTED BY ENGINEERS WITHOUT BORDERS

- Graduate students and professors from a variety of majors
- Opportunity to ask professors and grad students questions
 - Refreshments and food will be provided

Graduate Students

Joe Michael Allen
Computer Science

Brittney McKenzie
Bioengineering

Heather Salvador
Mechanical Engineering

Yibo Jiang
Chemical and Environmental Engineering

Alireza Khanaki
Material Science & Engineering

Professors

Jiasi Chen
Assistant Professor,
Computer Science
Engineering

William Grover
Assistant Professor,
Bioengineering &
Undergraduate Advisor

Ian Wheeldon
Assistant Professor,
Chemical and
Environmental Engineering

Where

Chung 205/206



When

Monday November
7th 5-6pm

Engineers Without Borders

Project Session

Meet up with Project Teams or learn about a project if you are not involved yet!

**Husk-to-Home Project
Tanzania Project
Solar Cell Project
Microbial Fuel Cell Project**

*Free
Donuts*



When

Nov. 21st 5pm

Where

Chung 205/206

ewbatucr@gmail.com



Where

Chung 205/206



When

Monday January
23rd 6-7pm

BIOGAS PROJECT

PRESENTED BY CLAUDIA CHAVEZ & ENGINEERS WITHOUT BORDERS

Looking for an internship or volunteer opportunity?
Do you want experience abroad?
Interested in Biofuels and Energy?

Come see graduate student Claudia Chavez speak on her Biogas project to help farmers in Costa Rica. There are volunteer and internship opportunities to work with Claudia Chavez.

Sheets to sign up for Claudia's project will be available at the meeting.

There will also be free pizza.

Engineers Without Borders presents:



Help support EWB!
Come to the nooners blue tents
to get sandwiches straight from
Chick-fil-a!

\$5.00 per sandwich



Time:
Tue 3/14
11-2 pm

LA SANITATION DISTRICT

PRESENTED BY ENGINEERS WITHOUT BORDERS

Do you want to learn more about the LASD?

Then join EWB for our LASD information session!
EWB will be hosting a representative from the Los Angeles Sanitation District. They will be discussing their operations and giving out information on their facilities.

Do not miss this opportunity! Food will be provided.



Where:
Chung 205/203

When:
Jan 31st 1-2pm

Z

Engineers Without Borders

Project Session

Meet up with Project Teams or learn about a project if you are not involved yet!

Tanzania Project
Costa Rica Project
Air Quality
Water Quality and Filtration Project

Free
Pizza



When
April 18 at 6pm
Where
Chung 205/206

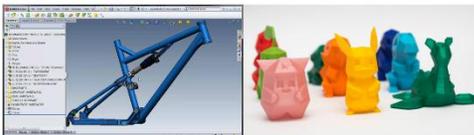


ewbatucr@gmail.com

<http://ewbatucr.weebly.com/ewb-ucr.html>

SOLIDWORKS WORKSHOP

Weeks 3, 4, 5, 6, 8
Monday 6PM - 7:30PM
Orbach Science Library Creat'R Space
Room 140



Design your own 3D print!

Get prepared for senior design projects!

