PROGRAMS/PROJECTS DESCRIPTION

ENGINEERING
We hosted two hands-on workshops to introduce attendees to basic circuit construction and troubleshooting broken equipment, as well as to spread interest in the EWH Summer Institute.
(1) Workshop I (December 8, 2015, 25 attendees) – The focus of this workshop was resistors, capacitors, and transistors. Participants assembled a double LED blinker circuit on a breadboard based on a given circuit diagram (Appendix 1) and learned to use soldering equipment to finalize their designs.
(2) Workshop II (January 29, 2016, 42 attendees) – Electrical engineer Dr. Shakiba gave an interactive lesson on diagnosing electrical component failure. Attendees learned to find broken electrical components using a multimeter and applied their newly acquired knowledge to a power supply (Appendix 2).
(3) Medical equipment acquisition – To build realistic training modules, we launched an initiative to request donations of unused or malfunctioning equipment from local hospitals. These modules will simulate scenarios that students may encounter when confronted with broken medical equipment. We have written a donation request letter (Appendix 3) and have started contacting local hospitals.
(4) Volunteering with Ghana Medical Help - We have partnered with Ghana Medical Help (GMH) (http://www.ghanamedicalhelp.com/), a non-profit that provides medical equipment to hospitals in Ghana. By providing opportunities for our members to volunteer with GMH, we hope to draw from their considerable experience in equipment specification, needs assessment, and fundraising. Every year, they host a packing party where they organize and pack donated medical equipment for shipment.

EDUCATION
We organized two initiatives under our Education pillar this year.
(1) EWH Summer Institute (SI) information session (November 26th 2015, 25 attendees) – Two of our members (Sandra Fiset and Justina Hwang) gave a presentation introducing EWH and the SI. Justina (2015 SI Rwanda participant) spoke about her experience in Rwanda as a biomedical technician. She provided examples of equipment repair she performed, and described how the program was a great opportunity to practice her troubleshooting and problem solving skills (Appendix 4).
(2) Collaboration with Let’s Talk Science to build educational kits for high school students - As part of UofT’s Engineering Strategies & Practice design (APS112) course, a calorimetry kit was designed with Let’s Talk Science (LTS) Canada (Appendix 5). In this kit, students measure the energy released from the combustion of different types of food to learn about nutrition content. Students learn about the global health challenge of malnutrition in low- and middle-income countries. We have recruited a team of student volunteers to help build and test the kits, as well as facilitate workshops in classrooms across the city through LTS’ extensive high school outreach network (http://www.letstalkscience.ca/).

INNOVATION
We had two main initiatives under our Innovation pillar this year.
(1) Vaccine carrier design team recruitment – A multidisciplinary student team was recruited to oversee the development and commercialization of the Vaccine Carrier Project we initiated in 2014 (Appendix 6). In addition, we have developed partnerships with two organizations – the Entrepreneurship Hatchery (https://hatchery.engineering.utoronto.ca/) and Enactus (http://www.enactus.ca/) to mentor our Innovation design team. These partnerships are expected to accelerate project development and validation in anticipation of field testing in summer 2017.
(2) EWH Ideathon (February 28, 2016, 30 attendees) - An ideathon is similar to a hackathon; however, the focus is on ideas, not hacks. This event was an opportunity for students to work in interdisciplinary teams, apply the insights gained from our Symposium (which took place the week before) and generate
innovative solutions to global health issues. The diversity of attendees was phenomenal, composed of graduate and undergraduate students from the Faculties of Engineering, Medicine, Arts, Science, Business, and Global Affairs (Appendix 7).

**EWHUofT 2016 SYMPOSIUM**
The 2nd annual EWH Symposium took place on February 22nd 2016 at the UofT William Doo Auditorium (Appendix 8). The theme of this year’s event was “Engineers as Global Health Interdisciplinary Team Players”, and had a strong focus on the role of engineers and the importance of interdisciplinary collaboration for tackling global health problems. The Symposium attracted 110 attendees from a variety of fields including engineering, global affairs, pharmacy, public health, and nursing. Please see our program brochure for speaker biographies, panel discussion topics and poster session abstracts. A summary of the live tweets posted by all our attendees using the #2016EWHS hashtag can be found at [http://sfy.co/f1IYs](http://sfy.co/f1IYs).

**FUTURE ACTIVITIES**
We are partnering with the UofT chapter of Engineers Without Borders (EWB) to host a university-wide Global Engineering Week in 2016-2017 with seminars and classroom outreach. We are also collaborating with the Graduate Students Alliance for Global Health (GSAGH) for student-led lecture series to enable co-mingling of engineering students with global health policy students.

**ORGANIZATIONAL ACTIVITIES**

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**CHAPTER STRUCTURE AND STATISTICS**
Our chapter is organized into three main focus areas: Engineering, Innovation and Education. The executive board is composed of 16 officers that meet on a monthly basis to organize group activities. The three focus area teams also meet every two weeks to organize their specific events. In addition, the organizing committee for our flagship event, the EWH Symposium, is composed of 18 officers who meet once a month and then twice a week for the month preceding the Symposium (Appendix 9).

We communicate to our membership through multiple channels, including a monthly e-mail newsletter, Facebook ([www.facebook.com/groups/EWHUofT/](http://www.facebook.com/groups/EWHUofT/), 111 members), Twitter (@EWHUofT, 132 followers), Instagram (@ewhuoft, 27 followers), and our website. Through social media, we provide helpful educational resources such as online courses, videos, research papers, and World Bank statistical data. Our website ([http://ewhuoft.sa.utoronto.ca](http://ewhuoft.sa.utoronto.ca)) is the information hub, where we actively blog about past events and where more information can be found regarding our chapter and organizational structure. We currently have a total of 250 EWHUofT chapter members.

**FUNDRAISING APPROACHES**
We received external sponsorship (totaling $1550) and internal grant funding (totaling $5950) from UofT sources (Appendix 10). Additionally, we were able to secure a travel grant scholarship ($1000) exclusively for UofT students applying for the Summer Institute program via the Clinical Engineering Society of Ontario (CESO). We also received a UofT Centre for Community Partnerships grant ($950) for building and deploying the Education team’s calorimetry kit in Toronto high schools.

**OTHER CHAPTER ACTIVITIES**
We participated in the UofT AIDS Awareness Week by organizing an interactive AIDS info session and questionnaire, with prizes given out to knowledgeable participants. We hosted an EWHUofT student booth at the UofT Annual AIDS Gala. EWHUofT members attended Ghana Medical Help’s Gala for Ghana fundraising event (Appendix 11). Our Engineering co-director, Charles Yoon, is involved in a UofT research collaboration with the Canadian Medical and Biological Engineering Society focused on summarizing medical equipment donation practices across Canada with the aim of establishing good donation practices. We are also hosting a booth to teach kids about “Superpowers 1010: Learn the "power" of electrical circuits” at the day long Science Rendezvous event on May 7th 2016.
Appendix 1. December 8, 2015 Engineering Workshop I. At this event, we learned all about resistors, capacitors, and transistors and spent most of the time being hands-on and learning how to assemble a double LED blinker circuit on a breadboard based on a given circuit diagram.
Appendix 2. January 29, 2016 Engineering Workshop II. We invited Dr. Shakiba (UofT engineering alumni) for an interactive lecture on assessing electrical circuit components. Members were able to learn how to identify non-functioning electrical components using a multimeter and were guided through the step-by-step process of diagnosing a power supply.
Appendix 3. Donation request letter for unused or malfunctioning medical equipment being sent to local Toronto hospitals (full version attached as a PDF document to submission).
Appendix 5. Collaboration with Let’s Talk Science to make educational kits for high school students - As part of a 1st year UofT engineering design course last year, a food calorimetry kit was designed for Let’s Talk Science Canada (http://www.letstalkscience.ca/). This kit is currently being built by an EWHUofT student team for deployment in Toronto high schools in September 2016. Full report on design specification for this kit is attached as a PDF document to submission.
Appendix 6. Vaccine carrier design team recruitment. A multidisciplinary student team was recruited to oversee the development and commercialization of the Vaccine Carrier Project initiated in 2014 by EWHUofT.
We kicked off the day with an inspiring and informative panel composed of members from Health Mission Outreach, World Spine Care, and Engineers Without Borders. During the panel, it became clear just how important creating solutions collaboratively on the ground is to success.

Next was a fun and fast-paced workshop with Hadi Salah, co-founder of Hacking Health and Manager of Health Ecosystem Partnerships at MaRS. In this workshop, we were encouraged to put Canadian healthcare innovation on the map and learned techniques on how to drive creation of innovative healthcare solutions.

The teams worked hard in the afternoon to solve the world’s toughest global health issues. Fuelled by pizza that was sponsored by the Hatchery (UofT incubator), the solutions our multidisciplinary teams came up with were thought-provoking, unique and inspiring. Our extremely well-versed judging panel was so impressed with the calibre of work our students demonstrated in just a few hours.

Our winning team, HealthBridge, is now developing a business plan and prototype under the Hatchery that will be submitted to the EWH Design competition.

Appendix 7. February 28, 2016 Ideathon (“Ideas Hackathon”) event. Executive summary given out to teams one week before event is attached as a PDF document to submission.
Appendix 8. February 22, 2016 EWHUofT Symposium. Symposium brochure is attached as a PDF document to submission.
Appendix 9. 2015-2016 EWHUofT executive team members (top) and 2016 EWHUofT Symposium organizing committee (bottom).
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<tr>
<th>External Sponsorship Companies</th>
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<tr>
<td>Engineering World Health</td>
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<td>Centre for Commercialization of Regenerative Medicine</td>
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<td>The Printing House</td>
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<td>Javelin</td>
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<td>Internal Sponsorship from University of Toronto</td>
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<td>Institute of Biomaterials and Biomedical Engineering</td>
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<td>Mechanical and Industrial Engineering</td>
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<td>Engineering Alumni Association</td>
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<td>You're Next Career Network</td>
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<td>Student Initiative Fund</td>
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<td>Total 2015-2016 Funding Secured</td>
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**Appendix 10.** 2015-2016 EWHUofT funding sources.
Appendix 11. Gala for Ghana black-tie fundraising event with collaborators Ghana Medical Help with a special invitation given to EWH UofT executive team. Chris Hadfield (top panel), a prominent Canadian astronaut who lived on the International Space Station, was the guest of honor at this event and gave out his signed autobiography.
Appendix 12. EWHUofT booth at the 2015 World AIDS Day Gala at Hart House at University of Toronto.
Service Abroad Program
ENGINEERING WORLD HEALTH
SUMMER INSTITUTE INFO SESSION
Tuesday, November 24, 2015 6pm
Red Seminar Room (2nd Floor)
The Donnelly Centre (CCEB)
160 College St.
Toronto, ON M5S 3E1

Saving Equipment is Saving Lives
Are you interested in applying your technical skills to save lives?

Come find out how to participate in an incredible summer program where you can help fix medical devices in Nicaragua, Rwanda, or Tanzania. You will repair old machines that don’t work anymore and put them right back into the field to help those who need it most.

All UofT students are welcome!

www.facebook.com/groups/EWHUofT EWHUofT twitter.

Building global health one circuit at a time

Engineering Training Workshop
December 8, 2015
Tuesday, 4–6:30pm
Room HA403
Haultain Building
170 College St. Rear
Toronto, ON M5S 3E3

The first event of the learn-and-build series is here! We will be providing an introductory course on circuits, giving you an opportunity to do some hands-on electronic building. We will cover how to read circuit diagrams, identify and learn the function of basic electronic components, and get a taste of integrating components onto a circuit board. Non-engineering students are welcome as well!

Spots are limited, be sure to register at our website:
EWHUofT.sa.utoronto.ca to reserve your spot!

www.facebook.com/groups/EWHUofT EWHUofT twitter.

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Appendix 13. Advertisement material for our events this year including the EWH Summer Institute information session, Engineering Training Workshop 1 and Workshop 2, EWH Symposium and EWH Ideathon.
EWH CHAPTER FEEDBACK.

It would be really awesome to have a teleconference meeting with the heads of all the EWH Chapters around the world. Perhaps we can use this to discuss an annual theme, facilitate collaboration between Chapters or just update each other on local chapter activities.

Thanks!

EWHUofT