

# State of Engineering for Global Development



## 2019 State of Engineering for Global Development: United States and Canada

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### Disclaimer

If you identify any programs or professors that you believe should also be included in this report, please email  
XXXX.

## EXECUTIVE SUMMARY

Engineering for Global Development (EGD) is just one name for the growing field in which technology and design are utilized to support communities around the world and improve quality of life. This report attempts to comprehensively highlight the many programs and professors dedicated to this work in the United States and Canada to be used by students interested in pursuing EGD opportunities and institutions/professors hoping to connect, collaborate, and share knowledge. The list of institutions with EGD programs was generated by.... Professors conducting graduate-level research were identified from this list of institutions and relevant conference proceedings. These lists were then reviewed by professors across the different disciplines for completeness.

Results from these activities show that 31 of institutions now offer a variety of EGD opportunities for students through curricular/co-curricular programs and research. Of these 31 institutions:

- 3 offer EGD-related Bachelor's Degrees
- 4 offer EGD-related masters/PhD degrees
- 14 offer EGD-related minors/certificates/specializations
- 29 offer EGD-related courses
- 21 offer EGD-related research opportunities
- 21 offer EGD-related experiential opportunities

The programs included in this report range in size, sector of interest, and opportunities available. In addition to these programs, 157 professors across 65 institutions conduct EGD related research.

This report highlights the many opportunities available for students to conduct research, complete coursework, receive degrees, and participate in experiential opportunities at institutions across the United States and Canada in Engineering for Global Development (EGD). The number of programs is continuing to grow and is gathering pace. These opportunities not only prepare students for future careers in EGD, but also allow students to develop engineering design, teamwork, and project management skills [3]. EGD teaching in universities is becoming more complex and nuanced, in line with most North American universities, shifting from a dependency to a collaborative approach in their relationships and partnerships with developing communities and economies. Engineering practice and engineering education are showing similar trends.

There remain several opportunities for curricular EGD program growth and development in the United States and Canada. Of the 30 institutions included in this report, only five currently offer bachelors or masters degrees in related fields. Additionally, many institutions offer introductory and capstone classes, but lack vertical integration within their EGD programs leading to curricular gaps for students in their second and third year. Institutions with EGD programs have the opportunity to provide a context for engineering to teach all of the non-technical skills and competencies that engineering education is being challenged by students and industry to teach including professional and global competencies for the 21st century (CITE-ALISTAIR).

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## Definitions

**Engineering for Global Development** - Engineering for Global Development is an interdisciplinary practice that aims to improve the quality of life of underserved communities worldwide through the design and delivery of technology-based solutions combined with building of local capacity. To do this effectively, practitioners must integrate their technical training with an understanding of economics and business, social science and politics to benefit people living in poverty. Engineering Education programs that support this definition are found at many institutions throughout North America, while their aims and goals may be broader, or defined differently - such as global engineering, humanitarian engineering, engineering for international development or development design etc. this report includes those programs that E4C has identified as supporting this underlying principle.

**Curricular Programs** - These programs are created by universities, often in connection with one or more NGO partners, and have some curricular component, although they may include co curricular components as well. Programs in this area vary in depth from entire departments to just course offerings.

**Co-curricular Programs** - These are programs that are housed at universities but do not have a curricular component, such as volunteer organizations, alternative spring breaks, Greek life, and other programs that are designed to provide service opportunities for students. Some alternative breaks and service learning opportunities have some level of instruction/reflective practice built into the model, but many do not.

**Experiential Opportunities** - Experiential opportunities take place outside of a traditional classroom setting including fieldwork, internships, immersions, and study abroad.

**Research** - For this report, programs that offer both undergraduate and graduate level research opportunities are highlighted in the summary table.

| Institutions/ Location                           | Program Name(s)  | Under-grad | Grad | Minor | Courses | Research | Experiential Opportunities |
|--|--|------------|------|-------|---------|----------|----------------------------|
| Arizona State University<br>AZ, USA              | Global Resolve; Future of Innovation in Society                        | X          | X    | X     | X       | X        | X                          |
| Brigham Young University<br>UT, USA              | Design Exploration   |            |      |       |         | X        |                            |
| Colorado School of Mines<br>CO, USA              | Humanitarian Engineering   |            | X    | X     | X       | X        | X                          |
| Colorado State University<br>CO, USA             | Water and International Development track                              |            |      | X     | X       |          |                            |
| Duke University<br>NC, USA                       | Global Development Engineering Certificate                             |            |      | X     | X       |          | X                          |
| Engineering Change Lab<br>Canada                 | Global Engineering Certificate   |            |      | X     | X       |          | X                          |
| George Fox University<br>OR, USA                 | Servant Engineering Program  |            |      |       | X       | X        |                            |
| LeHigh University<br>PA, USA                     | Creative Inquiry & Mountaintop Initiative - Inquiry to Impact Projects |            |      |       | X       |          |                            |
| Lipscomb University<br>TN, USA                   | The Peugeot Center for Engineering Service in Developing Communities   |            |      |       | X       | X        | X                          |
| Metro State University,<br>Denver<br>CO, USA     | Sustainable Systems Engineering Major                                  | X          |      |       | X       |          |                            |
| Michigan Tech<br>Michigan, USA                   | D80—Prosperity by Design   |            |      | X     | X       | X        | X                          |
| Massachusetts Institute of Technology<br>MA, USA | D-Lab  |            |      |       | X       | X        | X                          |
| Ohio State University<br>OH, USA                 | Humanitarian Engineering Center  |            |      | X     | X       | X        | X                          |
| Oregon State University<br>OR, USA               | Humanitarian Engineering Program                                       |            |      | X     | X       | X        | X                          |
| Penn State University<br>PA, USA                 | Humanitarian Engineering and Social Entrepreneurship (HESE)            |            |      | X     | X       | X        | X                          |
| Purdue University<br>IN, USA                     | EPICS/GEPP   |            |      | X     | X       | X        | X                          |

| Institutions/ Location                      | Program Name   | Under-grad | Grad | Minor | Courses | Research | Experiential Opportunities |
|---|--|------------|------|-------|---------|----------|----------------------------|
| Santa Clara University<br>CA, USA           | Frugal Innovation Hub  |            |      |       | X       | X        | X                          |
| SMU Lyle School of Engineering<br>TX, USA   | Hunter and Stephanie Hunt Institute for Engineering + Humanity                                       |            |      |       |         | X        |                            |
| Stanford Institute of Design<br>CA, USA     | d.school   |            |      |       | X       | X        |                            |
| University of California<br>CA, USA         | Blum Center for Developing Economies;<br>Development Impact Lab;<br>CITRIS                           |            |      |       | X       | X        |                            |
| University of Colorado, Boulder<br>CO, USA  | Mortenson Center in Global Engineering; ICT4D  |            |      | X     | X       | X        | X                          |
| University of Dayton<br>OH, USA             | Engineers in Humanitarian Opportunities of Service Learning (ETHOS)                                  |            |      |       | X       | X        | X                          |
| University of Michigan,<br>MI, USA          | Center for Socially Engaged Design;<br>Global Health Design Institute;<br>STEM-Africa; Michigan ICTD |            |      |       | X       | X        | X                          |
| University of Nebraska<br>NE, USA           | Water for Food Institute   |            | X    |       | X       | X        | X                          |
| University of Oklahoma<br>OK, USA           | Water Technologies for Emerging Regions (WaTER) Center   |            |      | X     | X       | X        | X                          |
| University of Pittsburgh<br>PA, USA         | International Capstone   |            |      |       | X       |          |                            |
| University of Texas, Austin<br>TX, USA      | Humanitarian Engineering Certificate   |            |      | X     | X       |          |                            |
| University of Toronto<br>ON, Canada         | Center for Global Engineering  |            |      | X     | X       | X        | X                          |
| University of Western Ontario<br>ON, Canada | International Development with Structural or Environmental Engineering                               |            |      |       | X       |          | X                          |
| Villanova University<br>PA, USA             | Sustainable Engineering for International Development Initiative                                     |            | X    |       | X       |          | X                          |
| York University<br>ON, Canada               | Engineering & International Development Studies  | X          |      |       | X       |          | X                          |

## Program Descriptions

### [Blum Center for Developing Economies](#), University of California, Berkeley, CA, USA

**Graduate:** Designated Emphasis in Development Engineering; 2 core classes: Design, Evaluate, and Scale Development Technologies, Development Engineering Research and Practice Seminar; 3 elective thematic modules: Problem Identification and Project Design, Evaluation Techniques and Methods for Measuring Social Impact, Development Technologies

**External collaborations:** NSF: Innovations at the Nexus of Food, Energy, and Water Systems, USAID

### [Center for Global Engineering](#), University of Toronto, ON, CA

**Undergraduate:** Global Engineering Certificate; courses; Global Engineering capstone; research projects

**Graduate:** Global Engineering Certificate; courses; research projects

**Research:** paid summer opportunities for undergraduates;

**Experiential opportunity:** Paul Cadario Doctoral Fellowship in Global Engineering, Metcalfe Family Graduate Fellowship for Sustainable Energy Research

**External collaborations:** BRAC, World Vision, Seeds of Peace, Tokyo Tech, Bloorview Research Institute, Winds of Change, Vietnam National Institute for Science and Technology Policy and Strategy Studies, University of Dhaka

### [Center for Socially Engaged Design](#), University of Michigan, MI, USA

**Undergraduate:** Campus courses, field courses, workshops, and online modules for socially-engaged design.

**Graduate:** MS in Design Science with tracks available in (1) Global Health Design, (2) Sustainable Design and Systems Evaluation, and (3) Socially Engaged Design.

### [Center for Information Technology Research in the Interest of Society \(CITRIS\)](#), University of California, CA, USA

**Research:** Research centers at UC Berkeley, Davis, Merced, and Santa Cruz campuses

### [Creative Inquiry & Mountaintop Initiative: Inquiry to Impact Projects](#), LeHigh University, PA, USA

**Undergraduate/Graduate:** Semester-long group projects to create impact; Global Social Impact Fellowship Program.

### [D80: Prosperity by Design](#), Michigan Tech, MI, USA

**Undergraduate:** Humanitarian Engineering Minor; Peace Corps Fellows Program

**Research:** Open Sustainability Technology research group

**Experiential opportunity:** Conferences, idesign, field work opportunities

**External collaborations:** EWB-USA

### [Design Exploration](#), Brigham Young University, UT, USA

**Research:** A research lab in the Mechanical Engineering department at BYU. Research focuses on design for development, optimization, and product reconfiguration.

### [Development Impact Lab](#), University of California, Berkeley, CA, USA

**Research:** Opportunities for undergraduates and graduates through the Blum Center for Developing Economies and the Center for Effective Global Action (CEGA)

### [D-Lab](#), Massachusetts Institute of Technology, MA, USA

**Undergraduate/Graduate:** 20+ undergraduate and graduate courses; social entrepreneurship fellowships  
**Research:** Field research, graduate-level research partnerships  
**Experiential opportunity:** Design and innovation summits, workshops, fieldwork

**D.school, Stanford Institute of Design, CA, USA**

**Undergraduate/graduate:** design center; innovation center; executive education; undergraduate and graduate courses

**Research:** Research and innovation center

**External collaborations:** Rare International, Shonaquip, Fenix International, Proximity Designs, Miraclefeet, Project Health Children / Sanku, Off Grid Electric / Zola, EarthEnable, d.light, Noora Health, D-Rev, Burro, Lifebox, Ecofiltro, SmileTrain, ReSurge International

**Engineering & International Development Studies, York University, ON, CA**

**Undergraduate:** BEng + BA five-year program in Engineering & International Development Studies; optional International Internship Program

**Experiential opportunity:** International Internship Program

**Engineering Projects in Community Service (EPICS), Purdue University, IN, USA**

**Undergraduate:** Long term, collaborative service-learning design course

**Engineers in Technical Humanitarian Opportunities of Service Learning (ETHOS), University of Dayton, OH, USA**

**Undergraduate/Graduate:** 3-credit ETHOS course

**Experiential opportunity:** 10-week international immersions; 10-day breakout trips; semesters of service; local immersions; ETHOS Club

**Frugal Innovation Hub, Santa Clara University, California, USA**

**Undergraduate:** Senior design projects, faculty led research projects

**Experiential opportunity:** Exchange program with Hamburg University of Technology

**External collaborations:** Engineering World Health, Hamburg University of Technology, IEEE

**Global Development Engineering Certificate, Duke University, NC, USA**

**Undergraduate:** Certificate in Global Development in Engineering; undergraduate-level EGD courses; engineering capstone in (1) Sustainable Design and Global Community, (2) Energy and Environmental Design, (3) Design for the Developing World.

**External collaborations:** Engineers in Action, Bringing Hope to the Family, the Duke Global Health Institute, the Duke Lemur Center

**Global Engineering Certificate, Engineering Change Lab, Canada**

**Undergraduate:** A certificate in Global Engineering available through the Engineering Change Lab for students enrolled in Memorial University of Newfoundland and University of British Columbia.

**Global Engineering Programs and Partnerships (GEPP), Purdue University, IN, USA**

**Undergraduate:** Global Engineering Studies Minor, 2 core classes, 2-3 global engineering experiences; Engineering Study Abroad, 12 credits of foreign language, domestic internship or research experience, 3 credits of cultural orientation, 1 semester of study abroad

**Research:** Innovation for International Development Lab

**External collaborations:** Universidad de Nariño, Pasto, Colombia, Universidad de los Andes, Bogotá, Colombia, Universidad Pontificia Javeriana, Cali, Colombia, University of the West Cape, South Africa,



American University of the Caribbean, Haiti, Kwame Nkrumah University of Science and Technology, Ghana, Purdue University, Penn State University, Colorado School of Mines

[Global Health Design Initiative](#), University of Michigan, MI, USA

**Undergraduate:** Multidisciplinary Design: Global Health Design Minor

**Experiential opportunities:** Internships, research, and international projects.

[Global Resolve](#), Arizona State University, AZ, USA

**Experiential opportunity:** Undergraduate students work on co-curricular projects in collaboration with international universities, residents of rural villages, local governments, financial institutions, and nongovernmental organizations (NGOs) on various EGD projects.

**External collaborations:** Ashesi University, CEESD Ghana, Esperanca, IIT Delhi, National Peace Corps Association, University of the West Indies, ASME, Groningen University, Tribhuvan University, Penn State, Aprotech, Monterrey Tech, Kumasi Polytechnic, The University of Trinidad and Tobago, Jaipur Food, Sunbridge Salon, Andes Libres, SCOPE, Namuna Biomass, WaterIsLife, Kwame Nkrumah University of Science and Technology Ghana.

[Humanitarian Engineering](#), Colorado School of Mines, CO, USA

**Undergraduate:** Engineering for Community Development Minor; Leadership in Social Responsibility Minor; 14 undergraduate courses; research; service learning and internships; and undergraduate scholarships.

**Graduate:** MS in Humanitarian Engineering and Science; MS in Humanitarian Engineering: Humanitarian Geophysics.

**Experiential opportunity:** Mines without Borders; Habitat for Humanity; Project Cure; and other internships.

**External collaborations:** Universidad Nacional de Colombia; Uniminuto (Colombia); Pontificia Universidad Catolica de Peru.

[Humanitarian Engineering](#), Oregon State University, OR, USA

**Undergraduate:** Humanitarian Engineering Minor; campus courses; field courses

**Research:** Undergraduate and graduate research opportunities for students in a variety of majors

**Experiential opportunity:** Evans Family Graduate Fellowship

[Humanitarian Engineering Center](#), Ohio State University, OH, USA

**Undergraduate/Graduate:** Humanitarian Engineering Minor, 6 courses (grad/undergrad-level)

**Research:** Graduate and faculty research in humanitarian engineering-related topics

**Experiential opportunity:** Domestic and international projects, 8 humanitarian engineering student organizations.

**External collaborations:** Universidad de Nariño, Pasto, Colombia, Universidad de los Andes, Bogotá, Colombia, Universidad Pontificia Javeriana, Cali, Colombia, University of the West Cape, South Africa, American University of the Caribbean, Haiti, Kwame Nkrumah University of Science and Technology, Ghana, Purdue University, Penn State University, Colorado School of Mines

[Humanitarian Engineering Certificate](#), University of Texas at Austin, TX, USA

**Undergraduate:** 18 credit hours, Required Humanitarian Engineering Seminar; 4 credits of humanitarian engineering project courses

**External collaborations:** IHE-Delft

[Humanitarian Engineering and Social Entrepreneurship \(HESE\)](#), Penn State University, PA, USA

**Undergraduate/Graduate:** 5 courses; Certificate in Engineering and Community Engagement; Entrepreneurship & Innovation (ENTI) minor

**Research:** Opportunities

**Experiential opportunity:** 3-weeks of fieldwork as part of HESE certificate program

**External collaborations:** Universidad de Nariño, Pasto, Colombia, Universidad de los Andes, Bogotá, Colombia, Universidad Pontificia Javeriana, Cali, Colombia, University of the West Cape, South Africa, American University of the Caribbean, Haiti, Kwame Nkrumah University of Science and Technology, Ghana, Purdue University, Penn State University, Colorado School of Mines

**Hunter and Stephanie Hunt Institute for Engineering and Humanity, SMU Lyle School of Engineering, TX, USA**

**Research:** Research and Innovation Center partnered with leaders in business, academia, NGOs and governments

**External collaborations:** Dwell Earth, EWB-SMU

**ICTD, Atlas Institute, University of Colorado-Boulder, CO, USA**

**Graduate:** Information and Communication Technology for Development (ICTD) track of the Technology, Media & Society MS program; field-based practicum, courses

**International Capstone, University of Pittsburgh, PA, USA**

**Undergraduate:** international capstone option for Civil Engineering students

**External collaborations:** EWB-USA

**International Development with Structural or Environmental Engineering, University of Western Ontario, ON, CA**

**Undergraduate:** four undergraduate courses: international development for engineers, appropriate technologies for international development, advanced topics in international development for engineers, special topics in international development

**Experiential opportunity:** Summer Community Development Placement and Design Project

**Michigan ICTD, University of Michigan, MI, USA**

**Experiential opportunity:** Seminar series, workshops

**Research:** Topics include ICT in the global south, ICT in low-income communities in the U.S, politics, social media, etc.

**Mortenson Center in Global Engineering, University of Colorado at Boulder, CO, USA**

**Undergraduate:** Global Engineering Minor; Engineering for Developing Communities specialization for environmental engineering students

**Graduate:** Graduate Certificate in Engineering for Developing Communities; 3 courses; 2-6 month international practicum placement with host agency; professional M.S. in Environmental Engineering or Civil Engineering with an emphasis in Engineering for Developing Communities

**Research:** Research center in global engineering

**Experiential opportunity:** 2-6 month international placement with host agency

**External collaborations:** USAID, IRC WASH, Bridges to Prosperity, Millennium Water Alliance, Emory University, IBM Research

**Servant Engineering Program, George Fox University, OR, USA**

**Undergraduate:** Courses; summer research projects

**External collaborations:** Engineers in Action, Bringing Hope to the Family, the Duke Global Health Institute, the Duke Lemur Center

[Social Innovations Group](#), School of Information, University of Michigan, MI, USA

[STEM-Africa](#), University of Michigan, MI, USA

**Experiential opportunity:** Conferences, SEED grants, early-career faculty support, and research opportunities for science, technology, engineering, and mathematics projects in Africa

[Sustainable Engineering for International Development Initiative](#), Villanova University, PA, USA

**Graduate:** MSc in Sustainable Engineering (30 credit program)

**Experiential opportunities:** undergraduate/graduate 1-2 week field immersion projects over fall, winter, and spring breaks; 8-week summer internships; year of service

**External collaborations:** UNICEF, Water for Wasala, Nova Mobile Health, Chepo Bayano Mission, Wells for Relief, Profugo, Catholic Relief Services, Golden West Humanitarian Foundation, Caramanico Foundation School

[Sustainable Systems Engineering](#), Metro State University, CO, USA

**Undergraduate:** A BS program applying systems engineering to sustainable development.

[The Future of Innovation in Society](#), Arizona State University, AZ, USA

**Graduate:** Global Technology and Development MS; Innovation in Global Development PhD; graduate-level certificates in (1) Responsible Innovation in Science, Engineering and Technology and (2) Global Development and Innovation.

**Undergraduate:** BA/BS in Innovation in Society; Innovation in Society Minor; and Innovation for Impact Certificate.

**Research:** The following research centers at ASU are associated with these programs: Risk Innovation Lab; Center for Energy and Society; Center for Smart Cities and Regions; and Center for Innovation, Development and Society.

[The Peugeot Center for Engineering Service in Developing Communities](#), Lipscomb University, TN, USA

**Experiential opportunities:** International engineering-focused service trips

**External collaborations:** Adicay (Asociacion para el Desarrollo Integral Comun) in Guatemala; HOI, Predisan, Little Hands Big Hearts in Honduras; Village of Hope in Ghana

[Water and International Development track \(Civil & Environmental Engr.\)](#), Colorado State University, CO, USA

**Graduate:** Certificate in Water and International Development available for MS/PhD in Civil or Environmental Engineering

[Water for Food Institute](#), University of Nebraska, Nebraska, USA

**Graduate:** Double Masters degrees focused on water and food challenges (partnered with IHE-Delft)

**Research:** student opportunities

**Experiential opportunity:** workshops; annual conference; seminar series; summer field course for graduate students and academics/professionals, student scholarships

**External collaborations:** IHE-Delft

[Water Technologies for Emerging Regions \(WaTER\) Center](#), University of Oklahoma, OK, USA

**Undergraduate:** minor in Water and Sanitation for Health and Sustainable Development; 18 credit hours; 3-week international trip

**Research:** WaTER Center

**Experiential opportunity:** 3-week international trip

**External collaborations:** Sooners Without Borders

## The State of EGD Research

Faculty included in this section conduct current, graduate-level, EGD-related research at higher-educational institutions in the United States and Canada. Included in the definition of researchers conducting EGD work are engineers, computer scientists, architects, and urban planners. **We recognize that this list may not be comprehensive and will naturally change overtime, please contact us at [info@engineeringforchange.org](mailto:info@engineeringforchange.org) if you know of a faculty member who is missing from this list.** *Last date updated: September 2019*

| Mechanical, Industrial, and Systems Engineering |                             |                            |                                      |                            |                                    |
|---|-----------------------------|----------------------------|--------------------------------------|----------------------------|------------------------------------|
| Faculty   | Institution                 | Sectors                    | Faculty                              | Institution                | Sectors                            |
| <a href="#">Agogino, Alice</a>                  | UC Berkeley                 | General                    | <a href="#">Mattson, Christopher</a> | Brigham Young Univ.        | Water, Energy                      |
| <a href="#">Austin-Breneman, Jesse</a>          | Univ. of Michigan           | General                    | <a href="#">McComb, Chris</a>        | Penn State Univ.           | Health                             |
| <a href="#">Bilton, Amy</a>                     | Univ. of Toronto            | Water, Energy, Agriculture | <a href="#">Mehta, Khanjan</a>       | Penn State Univ.           | ICT, Agriculture, Health           |
|   |                             |                            |                                      |                            |                                    |
| <a href="#">Brown, Aaron</a>                    | Metro State Univ. of Denver | Energy, Water              | <a href="#">Menold, Jessica</a>      | Penn State Univ.           | Health                             |
| <a href="#">Bryden, Mark</a>                    | Iowa State Univ.            | Energy                     | <a href="#">Modi, Vijay</a>          | Columbia Univ.             | Energy                             |
| <a href="#">Chan, Timothy C.Y.</a>              | Univ. of Toronto            | Health                     | <a href="#">Olivetti, Elsa</a>       | MIT                        | Energy                             |
| <a href="#">Clarke-Sather, Abigail</a>          | Univ. of Minnesota          | Health                     | <a href="#">Rogers, Bradley</a>      | Arizona State Univ.        | Energy                             |
| <a href="#">Fox, Mark</a>                       | Univ. of Toronto            | ICT                        | <a href="#">Sharp, Kendra</a>        | Oregon State Univ.         | Energy, Water, Agriculture         |
| <a href="#">Frey, Dan</a>                       | MIT                         | General                    | <a href="#">Sienko, Kathleen</a>     | Univ. of Michigan          | Health                             |
| <a href="#">Gershenson, John</a>                | Penn State Univ.            | Health                     | <a href="#">Telenko, Cassandra</a>   | Georgia Tech Univ.         | Energy                             |
| <a href="#">Henderson, Mark</a>                 | Arizona State Univ.         | Water                      | <a href="#">Thomas, Evan</a>         | Univ. of Colorado, Boulder | Energy, ICT                        |
| <a href="#">Johnson, Nate</a>                   | Arizona State Univ.         | Energy                     | <a href="#">Winter, Amos</a>         | MIT                        | Energy, Agriculture, Water, Health |
| <a href="#">Lucena, Juan</a>                    | Colorado School of Mines    | General                    | <a href="#">Yih, Yuehwern</a>        | Purdue                     | Health                             |
| <a href="#">MacCarty, Nordica</a>               | Oregon State Univ.          | Energy, Water, ICT         |                                      |                            |                                    |

## Electrical Engineering, Computer Science, and Information Science

| Faculty                                 | Institution                  | Sectors                   | Faculty                              | Institution          | Sectors                           |
|---|------------------------------|---------------------------|--------------------------------------|----------------------|-----------------------------------|
| <a href="#">Aitchison, J Stewart</a>    | Univ. of Toronto             | ICT, Health               | <a href="#">Guha, Shion</a>          | Marquette Univ.      | ICT                               |
| <a href="#">Ahmed, Ishtiaque</a>        | Univ. of Toronto             | ICT                       | <a href="#">Heimerl, Kurtis</a>      | Univ. of Washington  | ICT                               |
| <a href="#">Anderson, Richard</a>       | Univ. of Washington          | ICT, Health               | <a href="#">Hosman, Laura</a>        | Arizona State Univ.  | ICT, Energy                       |
| <a href="#">Bar, Francois</a>           | Univ. of Southern California | ICT                       | <a href="#">Johri, Aditya</a>        | George Mason Univ.   | ICT                               |
| <a href="#">Belding, Elizabeth</a>      | Univ. of Santa Barbara       | ICT                       | <a href="#">Khan, Emdad</a>          | Southern Univ.       | ICT                               |
| <a href="#">Berger, Paul</a>            | Ohio State Univ.             | Energy                    | <a href="#">Kolko, Beth</a>          | Univ. of Washington  | ICT                               |
| <a href="#">Best, Mike</a>              | Georgia Tech Univ.           | ICT                       | <a href="#">Kumar, Neha</a>          | Georgia Tech Univ.   | ICT                               |
| <a href="#">Blumenstock, Joshua</a>     | UC Berkeley                  | ICT                       | <a href="#">Lobell, David</a>        | Stanford Univ.       | ICT, Agriculture, Health, Habitat |
| <a href="#">Brewer, Eric</a>            | UC Berkeley                  | ICT, Energy               | <a href="#">Maitland, Carleen</a>    | Penn State Univ.     | ICT                               |
| <a href="#">Burke, Marshall</a>         | Stanford Univ.               | ICT, Habitat, Agriculture | <a href="#">Meng, Amanda</a>         | Georgia Tech Univ.   | ICT                               |
| <a href="#">Burrell, Jenna</a>          | UC Berkeley                  | ICT                       | <a href="#">Nakasone, Eduardo</a>    | Michigan State Univ. | ICT                               |
| <a href="#">Chakraborty, Sunandan</a>   | Indiana Univ.                | ICT                       | <a href="#">Nardi, Bonnie</a>        | UC Irvine            | ICT                               |
| <a href="#">Chen, George</a>            | Carnegie Mellon              | ICT, Health, Agriculture  | <a href="#">Naseem, Mustafa</a>      | Univ. of Michigan    | ICT, Health                       |
| <a href="#">Daniels, Malcolm</a>        | Univ. of Dayton              | Energy                    | <a href="#">Ogan, Amy</a>            | Carnegie Mellon      | ICT                               |
| <a href="#">Dell, Nicola</a>            | Cornell Univ.                | ICT                       | <a href="#">Pal, Joyojeet</a>        | Univ. of Michigan    | ICT                               |
| <a href="#">Dye, Michaelanne</a>        | Georgia Tech Univ.           | ICT                       | <a href="#">Parikh, Tapan</a>        | Cornell Univ.        | ICT, agriculture, health          |
| <a href="#">Ermon, Stefano</a>          | Stanford Univ.               | ICT                       | <a href="#">Passino, Kevin</a>       | Ohio State Univ.     | Health                            |
| <a href="#">Fletcher, Rich</a>          | MIT                          | ICT, Health, Agriculture  | <a href="#">Pearce, Joshua M.</a>    | Michigan Tech        | ICT, Energy, Habitat              |
| <a href="#">Frias-Martinez, Vanessa</a> | Univ. of Maryland            | ICT                       | <a href="#">Raghavan, Barath</a>     | UC Berkeley          | ICT                               |
| <a href="#">Gomez, Ricardo</a>          | Univ. of Washington          | ICT                       | <a href="#">Rahmani, Ashiyan Ian</a> | Univ. of Hawaii      | ICT                               |
| <a href="#">Grzeslo, Jenna</a>          | SUNY New Paltz               | ICT                       | <a href="#">Rajan, Siddharth</a>     | Ohio State Univ.     | Energy, Water                     |

## Electrical Engineering, Computer Science, and Information Science *cont.*

| Faculty                              | Institution                     | Sectors                  | Faculty                             | Institution            | Sectors |
|--------------------------------------|---------------------------------|--------------------------|-------------------------------------|------------------------|---------|
| <a href="#">Savage, Saiph</a>        | West Virginia Univ.             | ICT                      | <a href="#">Vashistha, Aditya</a>   | Univ. of Washington    | ICT     |
| <a href="#">Saxenian, AnnaLee</a>    | UC Berkeley                     | ICT                      | <a href="#">Veinot, Tiffany</a>     | Univ. of Michigan      | ICT     |
| <a href="#">Sharmin, Moushumi</a>    | Western Washington Univ.        | ICT, Health              | <a href="#">Vigil-Hayes, Morgan</a> | Northern Arizona Univ. | ICT     |
| <a href="#">Subramanian, Lakshmi</a> | New York Univ.                  | ICT                      | <a href="#">Wyche, Susan</a>        | Michigan State Univ.   | ICT     |
| <a href="#">Taneja, Jay</a>          | Univ. of Massachusetts, Amherst | Energy, ICT              | <a href="#">Zarinni, Fatima</a>     | New York Univ.         | ICT     |
| <a href="#">Toyama, Kentaro</a>      | Univ. of Michigan               | ICT, Health, Agriculture | <a href="#">Zheng, Yuan</a>         | Ohio State Univ.       | ICT     |
| <a href="#">Vannini, Sara</a>        | Univ. of Washington             | ICT                      |                                     |                        |         |

## Environmental and Civil Engineering

| Faculty                                | Institution                | Sectors                   | Faculty                               | Institution                    | Sectors                   |
|--|----------------------------|---------------------------|---------------------------------------|--------------------------------|---------------------------|
| <a href="#">Amadei, Bernard</a>        | UC Boulder                 | General                   | <a href="#">Boehm, Alexandria</a>     | Stanford Univ.                 | Sanitation                |
| <a href="#">Anctil, Annick</a>         | Michigan State             | Energy, Habitat           | <a href="#">Brown, Joe</a>            | Georgia Tech Univ.             | Water                     |
| <a href="#">Arumugam, Sankar</a>       | NC State Univ.             | Water                     | <a href="#">Chamberlain, Jim</a>      | Univ. of Oklahoma              | Water, Sanitation         |
| <a href="#">Baker, Kelly</a>           | University of Iowa         | Water, Health, Sanitation | <a href="#">Chen, Bing</a>            | Memorial Univ. of Newfoundland | Water                     |
| <a href="#">Bareither, Christopher</a> | Colorado State Univ.       | General                   | <a href="#">Davis, Jenna</a>          | Stanford Univ.                 | Sanitation, Water         |
| <a href="#">Bartram, Jamie</a>         | Univ. of North Carolina    | Water, Health             | <a href="#">de los Reyes, Francis</a> | NC State Univ.                 | Water                     |
| <a href="#">Bills, Tierra</a>          | Wayne State Univ.          | Transport                 | <a href="#">Dorea, Caetano</a>        | Univ. of Victoria              | Water, Sanitation         |
| <a href="#">Bischel, Heather</a>       | Univ. of California, Davis | Water, Sanitation         | <a href="#">Elliot, Mark</a>          | Univ. of Alabama               | Water, Sanitation, Health |
| <a href="#">Bitsuamlak, Girma</a>      | Western Univ.              | Energy, Habitat           | <a href="#">Fisher, Michael</a>       | Univ. of North Carolina        | Water, Sanitation         |
| <a href="#">Black, Kerry</a>           | Univ. of British Columbia  | Water                     | <a href="#">Gadgil, Ashok</a>         | UC Berkeley                    | Water, Energy             |

## Environmental and Civil Engineering *cont.*

| Faculty                               | Institution                     | Sectors                       | Faculty                                | Institution                | Sectors                   |
|---------------------------------------|---------------------------------|-------------------------------|--|----------------------------|---------------------------|
| <a href="#">Gerhard, Jason</a>        | Western Univ.                   | Sanitation, Health            | <a href="#">Miranda, Mario Javier</a>  | Ohio State Univ.           | Agriculture               |
| <a href="#">Gute, David</a>           | Tufts Univ.                     | Health                        | <a href="#">Navab-Daneshmand, Tala</a> | Oregon State Univ.         | Health, Water             |
| <a href="#">Harris, Angela</a>        | NC State Univ.                  | Water, Sanitation             | <a href="#">Nelson, Kara</a>           | UC Berkeley                | Water, Sanitation         |
| <a href="#">Horvath, Arpad</a>        | UC Berkeley                     | Energy, Transportation, Water | <a href="#">Pickering, Amy</a>         | Tufts Univ.                | Health, Water             |
| <a href="#">Hossain, Anwar</a>        | Ryerson Univ.                   | Habitat                       | <a href="#">Pokhrel, Yadu</a>          | Michigan State Univ.       | Habitat, Water            |
| <a href="#">Javernick, Amy</a>        | Univ. of Colorado, Boulder      | Water, Sanitation             | <a href="#">Robinson, Claire</a>       | Western Univ.              | Water, Sanitation         |
| <a href="#">Jellison, Kristen L.</a>  | LeHigh Univ.                    | Health, Water                 | <a href="#">Sabatini, David</a>        | Univ. of Oklahoma          | Water                     |
| <a href="#">Jeuland, Marc</a>         | Duke Univ.                      | Energy, Health                | <a href="#">Salzberg, Aaron</a>        | Univ. of North Carolina    | Water, Sanitation, Energy |
| <a href="#">Kearns, Joshua</a>        | NC State Univ.                  | Water, Sanitation             | <a href="#">Schaad, David</a>          | Duke Univ.                 | Water, Health             |
| <a href="#">Knox, Robert</a>          | Univ. of Oklahoma               | Water                         | <a href="#">Schwab, Kellogg</a>        | Johns Hopkins Univ.        | Water, Health             |
| <a href="#">Kumpel, Emily</a>         | Univ. of Massachusetts, Amherst | Water, Sanitation, ICT        | <a href="#">Sengupta, Arup K.</a>      | LeHigh Univ.               | Water, Sanitation         |
| <a href="#">Lall, Upmanu</a>          | Columbia University             | Water                         | <a href="#">Stewart, Jill</a>          | Univ. of North Carolina    | Water                     |
| <a href="#">Lantagne, Daniele</a>     | Tufts                           | Water, Sanitation             | <a href="#">Straube, John</a>          | Univ. of Waterloo          | Habitat, Energy           |
| <a href="#">Linden, Karl</a>          | Univ. of Colorado, Boulder      | Water                         | <a href="#">Taylor, David</a>          | Univ. of Toronto           | Water, Sanitation         |
| <a href="#">Mellor, Jonathan</a>      | Univ. of Connecticut            | Water, Health                 | <a href="#">Thomas, Evan</a>           | Univ. of Colorado, Boulder | Water                     |
| <a href="#">Mendoza-Sanchez, Itza</a> | Texas A&M                       | Health, Sanitation            | <a href="#">Trotz, Maya</a>            | Univ. of South Florida     | Water                     |
| <a href="#">Mihelcic, James</a>       | Univ. of South Florida          | Water, Sanitation             | <a href="#">Watkins, David</a>         | Michigan Tech              | Water,                    |
| <a href="#">Milne, Ellison</a>        | Colorado State Univ.            | Health                        | <a href="#">Yanful, Ernest</a>         | Western Univ.              | Water, Sanitation         |



## Chemical, Biological, and Agricultural Engineering

| Faculty                         | Institution          | Sectors       | Faculty                          | Institution       | Sectors                     |
|---------------------------------|----------------------|---------------|----------------------------------|-------------------|-----------------------------|
| <a href="#">Adhiraki, Umesh</a> | Michigan State Univ. | Agriculture   | <a href="#">Cheng, Yi-Ling</a>   | Univ. of Toronto  | Sanitation, Health          |
| <a href="#">Bakshi, Bhavik</a>  | Ohio State Univ.     | Water, Energy | <a href="#">Eisenhower, Dean</a> | Univ. of Nebraska | Agriculture, Habitat, Water |
| <a href="#">Chan, Arthur</a>    | Univ. of Toronto     | Health        |                                  |                   |                             |

## Urban Planning, Architecture, and Transportation

| Faculty                             | Institution      | Sectors                                    | Faculty                            | Institution             | Sectors            |
|-------------------------------------|------------------|--|------------------------------------|-------------------------|--------------------|
| <a href="#">Acey, Charisma</a>      | UC Berkeley      | Habitat, Transportation, Water, Sanitation | <a href="#">Ibrahim, Nadine</a>    | Univ. of Waterloo       | Habitat, Energy    |
| <a href="#">Badami, Madhav G.</a>   | McGill Univ.     | Transportation                             | <a href="#">Keough, Noel</a>       | Univ. of Calgary        | Habitat, Energy    |
| <a href="#">Carolini, Gabriella</a> | MIT              | Water, Habitat, Sanitation, Health         | <a href="#">Lara, Jesus</a>        | Ohio State Univ.        | Habitat            |
| <a href="#">Cowles, Sarah</a>       | Ohio State Univ. | Architecture                               | <a href="#">Thompson, Sally E.</a> | UC Berkeley             | Habitat, Water     |
| <a href="#">Crane, Randall</a>      | UCLA             | Transportation                             | <a href="#">Tsenkova, Sasha</a>    | Univ. of Calgary        | Habitat            |
| <a href="#">Defries, Ruth</a>       | Columbia Univ.   | Habitat, Agriculture,                      | <a href="#">Wendel, Delia</a>      | MIT                     | Habitat            |
| <a href="#">Hutson, Malo</a>        | Columbia Univ.   | Habitat                                    | <a href="#">Karns, Alex</a>        | Univ. of Texas - Austin | Transport          |
| <a href="#">Vance, Ulysses Sean</a> | Temple Univ.     | Habitat                                    | <a href="#">Klein, Nicholas</a>    | Cornell Univ.           | Habitat, Transport |



## References

[1] Lucero, B., & Turner, C. J. (2014). *Reframing engineering capstone design pedagogy for design with communities*. Paper presented at the American Society for Engineering Education Annual Conference and Exposition, Indianapolis, IN.

[2] Budny, D., Arjmand, S., & Sanchez, D. V. P. (2015). *Adding an international senior design component into the civil curriculum*. Paper presented at the American Society for Engineering Education Annual Conference and Exposition, Seattle, WA.

[3] Sandekian, R., Chinowsky, P., & Amadei, B. (2014). Engineering for Developing Communities at the University of Colorado Boulder: A Ten Year Retrospective. *International Journal for Service Learning in Engineering, Special Edition*, 62-77.

[4] Piacitelli, J., Doerr, M. B. E., Porter, M., & Sumka, S. (2013). Alternative break programs: From isolated enthusiasm to best practices. *Journal of Higher Education Outreach and Engagement*, 17(2), 87-101.

[1] Insert citations here in ASME format

[2] This is a table so add/remove rows if you need more/less references

[3] You can add borders to this table while you are working on it if that is easier for you to view (sorry google docs doesn't allow for bracket list numbers for some reason)

[4] More...

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