

# KAYLEANNA GIESINGER

## Environmental Engineering

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### About

I am a Masters of Environmental Studies (MES) student specializing in Sustainability Management in the School of Environment, Enterprise and Development at the University of Waterloo. I recently graduated with a Bachelors of Applied Science (BAS) specializing in Environmental Engineering from the University of Waterloo in 2020. I have a wide range of research, work and community involvement experience. My passions focus on a sustainable future through industry and education.

### Skills

- Outreach
- Communications
- Social Media
- Public Speaking
- Leadership
- MATLAB
- Microsoft Office 360
- Spectrophotometer
- Inductively Coupled Plasma (ICP)

### Education

2020 - Present	<b>Master of Environmental Studies (MES)</b> Sustainability Management
2014 - 2020	<b>Bachelor of Applied Science (BAS)</b> Environmental Engineering
2010 - 2014	<b>Secondary School Graduation Diploma</b> Lumsden High School
2014	<b>Exchange to France</b> Organisme de Séjours Educatifs Français

### Certifications

2021	<b>LEED Green Associate</b> Green Business Certification Inc.
2017	<b>Sustainable Development Goals Ambassador</b> United Nations
2012	<b>Saskatchewan Graduated Drivers Licence</b> Saskatchewan Government Insurance (SGI)

### Publications

#### Sustainable Menstruation

Farley, K., Tariq, M., Giesinger, K. (Accepted 2022). Sustainable Menstruation in Canada: bridging the gap between social and environmental menstrual issues. Northern Blood.

#### Economic Development

Giesinger, K., Wilson, J. (2021). The System of Economic Development and its Complexity. Economic Development Journal of Canada.

#### Mine Impacted Water Treatment

Holmes, A., Giesinger, K., Ye, J., Milan, E., Ngan, A., & Gu, F. (2019). A non-biological option for Se removal by photocatalytic reduction of selenate in mine-impacted water containing high concentrations of sulfate and nitrate. Canadian Land Reclamation Association (CLRA) National Conference.

#### Engineering Education

Giesinger, K., Phillips, S., Al-Hammoud, R., & Carroll, C. (2018, June). CivE Days: Enhancing Student Learning by Providing a Failure Risk Free Environment and Experiential Learning Opportunities. American Society for Engineering Education (ASEE).

Gibson, C., Giesinger, K., Al-Hammoud, R., & Brodland, W. (2018, June). Strengthening Student Knowledge Through Instructional Videos of Hands-on Activities. Canadian Engineering Education Association (CEEA-ACEG).

## Work Experience

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Sep 2020 – Apr 2021  
University of Waterloo

### Environment Faculty Teaching Assistant

- Assisted undergraduate students in the Environment and Business program with their Capstone Projects through detailed report feedback and one-on-one meetings

Sep 2018 – Apr 2020  
Frontier College

### Assistant Volunteer Coordinator

Frontier College is a non-profit organization that provides free tutoring services to children and youth in the community

- Lead seven team members in recruitment and program planning
- Management and data tracking of six tutoring programs in the community
- Maintenance of volunteer database to track and manage member involvement
- Coordination duties for recruitment events including advertisement, internal scheduling, and supervision
- Created presentations and conducted training sessions
- Improved organization presence within the Waterloo Region by writing blog and Facebook posts

Aug 2019 – Apr 2020  
The Conrad School of Entrepreneurship and Business

### Hult Prize Campus Director

Hult Prize challenges young people to solve the world's toughest issues by empowering them to make for-good for-profit businesses.

- Communication and coordination with teams, mentors, judges and volunteers
- Organized five events with over 100 participants
- Promotional material design, and social media management

May 2019 – Aug 2019  
Waterloo Institute for Sustainable Energy (WISE)

### Affordable Energy for Humanity (AE4H) Project Assistant

AE4H is a global consortium of researchers and practitioners committed to ending energy poverty through the sustainable deployment of clean technology

- Collaboratively planned conference for sustainable energy experts to tackle the energy access challenge. Including transportation for international participants, communications materials (agenda, website, advertisement materials, etc) and catering.
- Reported on the energy access challenges and solutions that were identified during the conference and their connections to complex systems
- Advertised AE4H Queen Elizabeth Scholars opportunity to undergraduate students through promotional materials and social media
- Compiled an informational database about social impact engineering in response to identified shortcomings of UW Campus communications to undergraduate students
- Supported the Sustainable UW initiative on becoming carbon neutral by 2050

Jan 2018 to Dec 2018  
University of Waterloo

### Mine Impacted Water Treatment Research Assistant

Dept. Chemical and Nanotechnology Engineering: Mine Impacted Waste Water  
Conducted selenium treat-ability study on raw mining wastewater by running a series of photocatalytic reactions

- Scaled and tested treatment process to increase reaction kinetics and volume
- Optimized photocatalytic reaction conditions within design parameters using reaction data statistics
- Modelled degradation of Selenate in mining wastewater through photocatalysis using MATLAB and ANSYS FLUENT
- Converted a stationary batch-scale reaction system to a flow-through system
- Designed and constructed a flow-through reaction system by re-outfitting an existing stationary batch-scale system
- Designed an industrial-scale continuous flow-through reactor system based on research findings
- Collected experimental data by preparing reaction samples for acid digestion and conducting ICP analysis

## Work Experience

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- Sep 2016 - Jun 2018  
University of Waterloo
- Engineering Education Research Assistant**
- Dept. of Civil and Environmental Engineering: Engineering Education
- Wrote paper for publication at the American Society of Engineering Education conference on student learning through hands-on activities
  - Analyzed and documented research related to engineering education through online surveys, class grades and reflection reports
  - Designed activities and wrote grants to improve Civil, Environmental and Geological Engineering curriculum with design team
- May 2017 - Aug 2017  
University of Waterloo
- Field Research Assistant**
- Dept. of Civil and Environmental Engineering: Open Channel Flow
- Tracked sediment transportation using loop antenna and total station
  - Analyzed precipitation in streams by monitoring water levels with gauging station
  - Assessed empirically and theoretically proposed particle size prediction equations by modelling with MATLAB
  - Documented literature related to geomorphology and open channel flow of northern Ontario rivers
- Jan 2017 - May 2017  
University of Waterloo
- Waste Water Lab Research Assistant**
- Dept. of Civil and Environmental Engineering: Anaerobic Bioreactors
- Monitored Anaerobic Bioreactor efficiency through measuring total and solid carbon oxygen demand (TCOD and SCOD) with photo-spectrometer
  - Measured total and volatile suspended solids (TSS and VSS) levels throughout the reactor with microfibre filters
  - Analyzed lab data to confirm proper reactor performance through normalizing data with calibration
- Sep 2016 - Dec 2016  
The Region of Waterloo
- Waste Management Project Assistant**
- Conducted research on different waste management techniques and sustainable energy resources with waste management team
- Aug 2015 - Apr 2016  
The Regional Municipality of York
- Operations Technician**
- Configured installation and maintained traffic lights through configuring and managing communication equipment with XML scripts
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## Awards

- 2021 **School of Environment, Enterprise and Development First Scholarly Publication Award**  
An award of \$1000 given to a master's student in any SEED graduate program who publishes, as first-author, their first peer-reviewed publication.
- 2020 **University of Waterloo Graduate Experience Award**  
An award of \$5000 given to an incoming master's student with an outstanding application based on community leadership and academic achievement.
- 2017 **SaskPower Scholarship**  
An award of \$1000 given based on community leadership and academic achievement.
- 2017 **Sir Sandford Flemming Work Term Report Award**  
A \$300 award given to the student with the highest quality work term report. Report written on particle size prediction in gravel bed streams using theoretical models proposed in literature.
- 2017 **Undergraduate Student Research Award**  
**The Natural Sciences and Engineering Research Council**  
This award is a \$5000 scholarship aiming to support students assisting with natural sciences and engineering research to stimulate their interest and to encourage them to undertake graduate studies.

## Awards

- 2017 **Learning Innovation and Teaching Enhancement (LITE) Grant**  
Research of Dr. Rania Al-Hammoud  
Formulated grant application for “CivE Days: Enhancing Student Learning by Providing a Failure Risk Free Environment and Experiential Learning Opportunities”
- valued at \$5,000 – granted (July 2017)
- Formulated grant application for “Strengthening Student Knowledge through Instructional Videos of Hands-on Activities”
- valued at \$30,000 – granted (December 2016)
- 2017 **First Place Poster Competition  
Canadian Engineering Education Association (CEEA)**  
Created a poster on the research done for the project, “Strengthening Student Knowledge through Instructional Videos of Hands-on Activities” and presented it at the annual CEEA Conference. The first place award was given based on project impact, quality of poster and presentation.
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## Extracurricular & Volunteer

- Apr 2020 – Apr 2021  
Frontier College
- Newcomer Online Mathematics Tutoring**  
Frontier college is a Canadian national literacy organization with a focus on providing free literacy support to students and adults within Canada.
- work with elementary and middle school students who have newly immigrated to Canada
  - review and complete online mathematics and science course material during school closures due to the COVID-19 pandemic
- May 2016 – Dec 2019  
Engineers Without Borders: University of Waterloo Chapter
- Communications, Co-President & VP Internal**  
The chapter works to support the national organization with its goal to end global poverty through systemic change.
- Communications** (May 2019 to Dec. 2019)
- promotional material design, photography of events, and sharing of chapter events and projects on social media
- Co-President** (Jan. 2018 to Apr. 2019)
- led and coordinated a team of six executives
  - ensured appropriate communication within the club and acted as liaison between the executives and the national organization
  - hired a Junior Fellow to go overseas to work on an EWB project by coordinating advertisement, interviews and pre-departure preparation
  - projects operating within the organization include: running youth workshops, developing podcasts, fundraising events, organizing week-long Waterloo visits for African professionals, hiring a fellow to contribute to an international project, developing ethically minded UW course material incorporated into first year courses
- VP Internal** (May 2016 to Dec. 2017)
- coordinated one day retreat for executives to gain leadership skills, be exposed to inspiring projects and to do long term chapter planning
  - organized housing, meetings and schedule for two Professionals from Africa
  - participated in chapter outreach on and off campus: High School presentations, on campus booths, social events and podcasts
- Apr. 2019 – June 2019  
Frontier College
- Reading Buddies Program Tutor**
- read and played educational literacy games with elementary school students
- Sep 2016 – Jun 2017  
Frontier College
- Somalian Canadian Association of Waterloo Region (SCAWR) Tutor**
- provided homework assistance to elementary and high school students
- Jan 2017 – Dec 2017  
Women in Engineering (WIE)
- Outreach Volunteer**  
Women in Engineering (WiE) supports current female engineers, students and encourages the next generation of women to pursue careers in engineering.
- lead tours, activities and workshops with the outreach team to inspire female high school students and their parents

## Extracurricular & Volunteer

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May 2015 - Aug 2015

Federation of Students  
(Feds)

### Clubs Coordinator

An organization on campus of the University of Waterloo which works to be a support and a voice for the students. They manage all clubs, events and advocacy on campus.

- Maintained appropriate communication to support all charity clubs by answering questions, emailing updates and ensuring member satisfaction

Oct 2015 - Mar 2016

Southlake Regional  
Health Center

### Hospital Elder Life Program (HELP) Program Volunteer

Southlake is a health centre dedicated to positive patient experience. HELP is specifically designed to help elderly patients who after an accident experience a state of delirium. Contributions;

- Aid patients with activities and games to stimulate positive brain activity

Jan 2015 - Apr 2015

The Esperanza Project

### Teaching Assistant

An after school English program in the Dominican Republic for children in the community. Teaching the students is done through fun games and projects to keep students engaged.

- Planned and lead science, math and art classes
  - Coordinated and helped students with an after school photography club, fashion club, and hair club
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## Event Administration

2018-2020

Frontier College

### New Volunteer Recruitment and Training

Frontier college is a Canadian national literacy organization. Their focus is on providing free literacy support to students and adults within Canada who can not afford privatized aid. Four recruitment and training sessions were conducted over the span of two years which consisted of attending fairs, coordinating information sessions and conducting training. These periods lasted a time period of four weeks each.

2019

Hult Prize

### Hult Prize On-Campus Startup Competition

Hult Prize is the world's biggest engine for the launch of for-good, for-profit startups emerging from universities around the world. In nearly a decade, the movement has deployed more than \$50M of capital into the sector and mobilized more than one million young people to re-think the future of business as it continues to breed disruptive innovation on college and university campuses across 120 plus countries. This is a great competition for students to gain experience in launching a start-up business within the social impact sector. 2019 focused on Environmental Sustainability and Accountability. The event consisted of five events; Kickoff; Quarter Finals; Speed Mentoring; Semi Finals; and Finals. Over 100 participants registered to vote and the top three teams went on to compete internationally.

2019

Waterloo Institute for  
Sustainable Energy  
(WISE)

### Affordable Energy for Humanity Innovation Lab Conference

The 'innovation lab' is a non-traditional workshop format wherein participants focus more on what they want to do next and how they might work together rather than on sharing past results. Deep discussions in small groups are a feature, and we avoid 'death by powerpoint'. These are invite-only events that feature a highly diverse set of participants (expertise, nationality, age, gender, etc.). The 2019 event represents the second full-scale innovation lab. This event brought together experts and practitioners in the field of energy access for the purpose of developing new insights on the delivery of affordable energy services in regions with limited access to electricity. The aim is to produce a set of working papers that outline follow-up activities which advance off-grid energy innovation to support key end user needs/energy services.

2018

University of Waterloo

### Civil Engineering Days (CivE Days) Workshop

In second year Civil Engineering, a two-day event called CivE Days was implemented. This event freed students from classes and deadlines and allowed them to completely immerse themselves in a simulated bridge design project. Learning is taken place through a combination of experimental learning, group work, reflective learning and learning from failure. All these pedagogical approaches enforce a deeper learning for students and have enhanced student retention in upper years. This provided a positive atmosphere where design creativity was encouraged without fear of failure. It was found that student grades and performance improved, which indicates a better understanding of the bridge design project and how the information from the different courses are integrated. This event also resulted in improved group dynamics and student professor relationships.

## Presentations

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2019 Alberta, CA	<b>Canadian Land Reclamation Association (CLRA) National Conference</b> A non-biological option for Se removal by photocatalytic reduction of selenate in mine-impacted water containing high concentrations of sulfate and nitrate
2018 Vancouver, CA	<b>Canadian Engineering Education Association (CEEA)</b> Strengthening Student Knowledge through Instructional Videos of Hands-on Activities
2018 Salt Lake City, USA	<b>American Society for Engineering Education (ASEE)</b> CivE Days: Enhancing Student Learning by Providing a Failure Risk Free Environment and Experiential Learning Opportunities
2017 Toronto, CA	<b>Canadian Engineering Education Association (CEEA-ACEG)</b> Strengthening Student Knowledge Through Instructional Videos of Hands-on Activities