

URBAN UPDATE

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Urban Projects

I've been selected as a technical advisor for an ENVE/ GEO Fourth Year Design Project (Capstone), for a group looking to design a net-zero energy for a high-density residential building. Aida Mollaei's 2nd Committee Meeting took place, with a change in research direction to include transportation in addition to buildings to calculate the weight of cities.

Engineering Education

Joined the CEE Department's Outcomes Committee, which includes the Industrial Curricular Advisory Board (ICAB) to which I will contribute from an industry-academic engagement standpoint.

Teaching

Accepted a teaching challenge for the Winter 2020 term to teach Rebecca Saari's course, ENVE335 together with my course CIVE332, both pertain to systems and decision-making.



TurkstraTalks Speaker Series

This month saw the commencement of the TurkstraTalks, a distinguished speaker series that brings cities into our classrooms to revitalize our urban perspectives and to motivate our connections to cities. I invite experts from professional practice, government, and academia to present a talk on the state of the art in their field. Students have a chance to broaden their horizons in urban engineering, and faculty have an opportunity to engage in the urban discourse together. Our inaugural speaker was Diane Freeman, a City of Waterloo Councillor, and she shared a very candid presentation with us on the politics and science behind engineering projects in the city. #TurkstraTalks



11:30 AM - 1:00 PM
E2-2350

Event Highlights

Urban Design Days: Promoting Interdisciplinary Design and Communication Through Experiential Learning



LITE Grant. Awarded and started hiring undergrads and grads for Urban Design Days.

More Feet on the Ground.

Attended Mental Wellness Training, Sept 11.

New Faculty Family Dinner.

Attended with the family at University Club, Sept 20.

Ontario Universities Fair (OUF).

Volunteered to represent CEE at MTCC, Toronto, Sept 27.

Keep an eye out next month for...

Here are events to look forward to in October 2019:

- Industrial Curricular Advisory Board (ICAB) Meeting, Oct 4
- STTPA, UTM, Oct 16-19
- Structures Seminar, Queen's University, Oct 25
- Future Cities and Technological Stewardship Workshop, Evergreen Brickworks, Oct 28-29
- 1st Urban Economy Forum, Toronto, Oct 28-29
- Turkstra Talks, Oct 30



TEACHING &
LEARNING
RESEARCH
COMMONS



ENGINEERS &
GEOSCIENTISTS
BRITISH COLUMBIA

ENGINEERS &
GEOSCIENTISTS
BC
EIT MEMBER



ENVIRONMENTAL
& WATER
RESOURCES
INSTITUTE (EWRI)



Educating the urban engineers of the future

The latest 2018/2019 Report on Giving featured an Impact Story about my role. Quoting: "Cities are inherently interdisciplinary, and they are getting more complex. The future won't just require engineers, it will require engineers collaborating with others in the face of a challenge." "If I'm successful, more students will want to work in the cities that need them. They'll see great opportunity in municipal work, and they'll be inspired to create exciting careers." "There's so much value in bringing today's knowledge from cities into course material."

<https://uwaterloo.ca/impact-stories/urban-leaders>

As engineers, we were going to be in a position to change the world - not just study it - Henry Petroski

Faculty Contribution



Rania Al-Hammoud is a Lecturer in the Department of Civil & Environmental Engineering. Her efforts at integrating the community around us with what is delivered to the students in the classroom adds a lot of value to the learning process. Students can see how what they are learning can directly impact and benefit the society around them. Dr. Al-Hammoud came up with the idea for a community-based project which gives her students a real-life opportunity to meet and discuss projects with stakeholders. A course project, designing a playground for a school, together with the community cannot get more real and engaging than that! It's a win-win situation for all: engineering students, school kids and people living in the community. Currently another community engagement project with a middle school is happening and first year engineering students with more details to come at the end of the fall term of 2019. Dr. Al-Hammoud is also known for developing many of the Design Days in the department for civil, environmental and geological engineering students.

To achieve this community connection, one of the projects done in a first year mechanics course was the iterative design of a \$75,000 playground for a local elementary school. The engineering students had to meet with the school kids twice during the term: first time to get feedback on what the kids (end users) need in their future playground, second meeting was to discuss their preliminary designs with the school kids to figure out if any changes are required. The school principal, head of facilities in the Waterloo Regional District School Board (WRDSB), and the playground committee all came to the University of Waterloo to attend the presentations of the 40 different designs that were pitched by the engineering students. They then chose the top 10 of these designs to be pitched to the kids at the school assembly, where the kids showed a lot of excitement especially when a design they liked was presented. The school kids then cast 3 votes each from which the top 3 designs were selected and then presented at the school fun fair for the whole community to vote on their favourite playground design to be implemented. The playground was built in 2018 with few modifications. This project was then carried in different courses and 3 different schools participated: Keatsway Public School, Vista Hills Public School and Elizabeth Ziegler public school.



Student Contribution



Anelisa Schmidt is an experienced water professional in her second year as a MASc candidate in civil and environmental engineering. She is also part of the Centre for Advancement of Trenchless Technologies (CATT), a research group dedicated to tackle water and wastewater buried infrastructure challenges. Her research focuses on the influence infrastructure asset management holds in fostering a new mindset for decision-making in municipalities. Her 8 years of experience as a project manager in water utilities were key to understand the asset management framework in Canada and worldwide. By identifying the practices Ontario municipalities are implementing, the research goal is to provide direction and support to new asset management policies and guidelines. Anelisa developed a readiness/maturity assessment methodology in the form of a survey to provide a snapshot of readiness levels in Ontario municipal water utilities, which is valuable to further advance asset management and to help closing the infrastructure gap.

The safety and quality of services provided by water utilities depend on sound water and wastewater infrastructure. About 12% of this infrastructure is in poor condition in Canada, representing \$51 billion in asset replacement value (CIRC, 2016). Municipalities own almost 57% of the core public systems (FCM, 2016), and are responsible for operational and capital investments, key to keep physical assets in adequate state and operating efficiently. Infrastructure Asset Management (IAM) is a framework that encourages municipalities to take into account long-term analysis in asset decisions. This framework considers a life-cycle approach to establish assets characteristics, replacement value, current condition, and operational performance, to subsequently define the costs and timeframe for asset maintenance, renewal or replacement. With asset management being a growing priority in Canada, several readiness or maturity assessment tools were developed as an attempt to determine how advanced municipalities are in adopting these practices. However, existing tools are time consuming and expensive, and even when municipalities choose to perform a readiness assessment, the results are not shared with the industry. Additionally, new regulations and guidelines are constantly being released in Canada and particularly in Ontario, with limited information regarding asset management processes implementation. To address this issue, the researcher designed and applied a web-based survey for Ontario municipal water utilities, with respondents representing 51% of Ontario's population. Results show that:

- 23% of municipalities still do not have a process to identify funding gaps;
- 55% do not have a process to monitor asset management plan implementation; and
- 39% have not considered climate change in asset management planning.

