

Summer 2022 Sustainability Scholars Program Internship Opportunity

The UBC Sustainability Initiative (USI) is pleased to offer current UBC graduate students the opportunity to work on funded sustainability internship projects. Successful candidates work under the mentorship of a partner organization, and are immersed in real world learning where they can apply their research skills and contribute to advancing sustainability across the region.

- Visit the [Sustainability Scholars Program website](#) to learn [how the program works](#) and to [apply](#).
- Be sure to review the [application guide](#) to confirm your eligibility before applying.

Applications close at midnight on Sunday January 30, 2022.

Research Project Title: Research to establish dedicated innovation and training spaces within Wastewater Treatment Plants

Project description

Overview:

Wastewater treatment research, technology, and operational development is limited by bench-scale research while laboratory/test space with access to continuous wastewater flows are sought after by academia and industry. Treatment centers with integrated testing space are magnets for innovation, including Metro Vancouver's Annacis Research Centre (ARC), City of Calgary's Advancing Canadian Wastewater Assets (ACWA), and DC Water's Blue Plains. These facilities incubate emerging technologies, process optimizations, and research contributing to better treatment, reduction in environmental impact, reduced cost of treatment, and fostering academic collaboration. The benefits of providing dedicated modular and adaptable "test beds" for the development of emerging technologies have been explored by public and private utilities, including Metro Vancouver. Integrating dedicated training and innovation spaces, or Innovation, Training, Optimization spaces (ITOs), in wastewater treatment plants (WWTPs) may reduce the cost, complexity, and timeline of pilot-scale projects, anchor partnerships with universities and industry, and be an educational "learning ecosystem" for plant operators, engineers, and researchers.

Retrofitting existing plants or establishing "greenfield" test locations, where no utilities, input commodities, or output streams exist, hinders the acceleration of emerging technologies and plant improvements. Greenfield site prep, design, set-up, testing, decommissioning for pilots can represent one-half of the innovation budget.

Incorporation of ITOs during plant design may enable greater focus on innovation and optimization. ITOs improve sustainability by testing innovative technologies that result in processes efficiencies, reducing the need for temporary pilot infrastructure, and reusing test beds. This benefits utilities by reducing human resources and infrastructure, while allowing greater focus by researchers on experiments and technological advancement. However, there exists a need to summarize the capacity of existing continuous wastewater flow test spaces at top utilities, identify and rank ITO space location within a treatment plant based on potential for research, operational, and sustainability improvements, and quantify the value generated by ITOs via case studies.

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Purpose of the Project:

This study seeks to identify engineering and/or businesses opportunities created by ITO spaces within utilities, including research partnerships, technology development, and media recognition of excellence.

Project Scope:

- Identify domestic and international utilities with strong innovation portfolios or “innovative utilities”, including identifying which have dedicated pilot testing facilities.
- Develop and collect measureable input (e.g., a survey and/or literature review) on the desired attributes of laboratory/test spaces embedded in WWTPs for possible tenants, including university researchers, industry partners, plant operators, and plant engineers.
- Identify and rank specific process locations within WWTPs where ITO space would be of greatest benefit to sustainability and operation, consider the benefits based on unit process emissions, energy consumption via literature review.
- Summarize key business factors influencing the cost of pilot projects conducted in dedicated ITO spaces in comparison to the use of Greenfield sites using 3-5 case studies. Case studies may be found in literature or via discussion with public utilities.
- Summarize the state of test facilities or business models, at the previously identified “innovative utilities”, through literature search and the support of Metro Vancouver.

Deliverables

The Scholar will deliver a final report containing a summary of their completed work complemented by a final presentation to key stakeholders. The report should include

- A summary of existing and potential continuous flow test spaces with identified capacity to improve sustainability and WWTP operations.
- Presentation of the areas of research and process optimizations identified by stakeholders. Including findings of interviews, surveys or meetings with Utilities and researchers.
- A summary of case studies (3-5 preferred) on the value of integrated innovations spaces.
- A final report, containing a summary of completed work with recommendations, complemented by one or two final presentation to key stakeholders.
- A final report [or Executive Summary] for the UBC Sustainability Scholars online project library.

Time Commitment

- This project will take 250 hours to complete.
- This project must be completed between May 2, 2022 and August 12, 2022
- The scholar is to complete hours between 9 am and 5 pm, Monday to Friday, approximately 17 to 20 hours per week.
- Attend a 1-hour weekly meeting with Project team as needed.
- Prepare and attend a project kickoff and end of project meeting with client.

Required/preferred Skills and Background

- Excellent research and writing skills
- Demonstrated interest in sustainability
- Familiarity with research methodologies and survey techniques
- Strong analytical skills

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- ☒ Ability to work independently
- ☒ Deadline oriented
- ☒ Project management and organizational skills
- ☒ Comfortable interacting with strangers to conduct public/in person surveys
- ☒ Familiarity preparing feasibility studies
- ☒ Interested in innovation, small-medium enterprises, or applied research considered an asset
- ☒ Familiarity with Waste Water Treatment or Waste Water Treatment Plant processes an asset.
- ☒ Interest in the economics or engineering involved with public utility operations
- ☒ Candidate does not need experience in a laboratory or industry setting.

Applications close **midnight Sunday January 30, 2022**

Apply here: [Click here to apply](#)

Contact Karen Taylor at sustainability.scholars@ubc.ca if you have questions

Useful Resources

We are holding a special **resume preparation workshop for prospective Scholars** on January 19. [Click here for details and to register.](#)

Below are some links to useful resources to help you with your resume and cover letter (there are many more online). Some of these resources also provide information on preparing for your interview.

<https://students.ubc.ca/career/career-resources/resumes-cover-letters-curricula-vitae>

<https://www.grad.ubc.ca/current-students/graduate-pathways-success>

<https://www.grad.ubc.ca/cover-letter-cv-resume-templates-ubc-career-services>