

## Research Training Program

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Considering the upcoming August, Dr. Catherine Niu is excited to launch the research training program with the support of the College of Engineering and in collaboration with the Undergraduate Research Initiative at the Office of the Vice President Research of the University of Saskatchewan (USask), that is exclusively designed for undergraduate students and graduate students with a passion for natural sciences and engineering research.

The primary goal of this program is to offer a select group of highly motivated undergraduate students or graduate students the chance to develop basic research proposals under Dr. Niu's supervision. By providing a nurturing and intellectually stimulating environment, Dr. Niu aims to inspire and empower these young scholars to explore the frontiers of knowledge and unleash their potential as future researchers.

**Land Acknowledgment:** As we engage in remote or in-person teaching and learning, we acknowledge that the Saskatoon campus of the University of Saskatchewan (USask) is on Treaty Six Territory and the Homeland of the Métis. We pay our respect to the First Nation and Métis ancestors of this place and reaffirm our relationship with one another. We would also like to recognize that some may participate in this program from other traditional Indigenous lands. We ask that you take a moment to make your own Land Acknowledgement to the peoples of those lands. In doing so, we are actively participating in reconciliation as we navigate our time in this program, learning, and supporting each other.

**Supervisor of the program:** Dr. Catherine Niu is a full professor and Chair of the chemical engineering undergraduate program at USask. She has a passion for natural sciences and engineering research and training of highly qualified personnel. Dr. Niu established the research program specializing in biosorption and adsorption technology at USask. As the principal investigator of the research program, she has received funding from Canadian federal government, Saskatchewan provincial government, and industrial partners including, but not limited to, Natural Sciences and Engineering Council of Canada, Canada Foundation for Innovation, Saskatchewan Ministry of Agriculture, Saskatchewan Canola Development Commission, Saskatchewan Western Grain Research Foundation, and more. Dr. Niu has supervised highly qualified personnel including postdoctoral research fellows, PhD, master, and

undergraduate students, and additional researchers. She has co-authored numerous journal publications and conference presentations.

Dr. Niu believes that achieving a more equitable, diverse, and inclusive research environment is crucial to creating the innovative, excellent, and impactful research to advance knowledge and understanding and to address local, national, and global challenges. She has implemented Tri-agency equity, diversity, and inclusion (EDI) in her research program with embedding EDI considerations relevant to each stage of the research process and research team build-up. Dr. Niu has co-chaired the Woman-in-Engineering Chemical and Biological Engineering Chapter at USask to promote and support female undergraduate and graduate students and their involvement in engineering. Nationwide, Dr. Niu has been the Champion of USask to serve in Engineers Canada 30 by 30 Champions Network to facilitate the initiative of Engineers Canada to increase the number of women to 30% by 2030. Dr. Niu has also volunteered at The Bridge Saskatoon, a non-profit organization to primarily serving the indigenous community in Saskatoon.

**When:** The research training program will be from **August 15 to November 30, 2023**. Dr. Niu will meet with students approximately 1-3 h a week either in person or by virtual meeting based on the progress of the program. Through the meetings, the fundamentals of a research process, and basic information about the key components of a research proposal will be introduced. The meetings will also provide opportunities for students to present their learning and Dr. Niu to provide feedback, comments, and answers to students' questions where appropriate.

**Where:** Meet with Dr. Niu and students in the program in person or through virtual meetings dependent on the student's needs.

**What to deliver:**

- Introduce the research process.
- Present research ethics and management.
- Introduce Safety: Laboratory safety, WHMIS, Biosafety.
- Develop a research proposal for a topic fostering students' interest.

**Learning outcomes:**

- Understand the fundamentals of a research process.
- Be aware of research ethics and conduct.
- Understand the safety.
- Develop a basic research proposal for a research topic of interest.

**Project outline:**

- Create questions and identify knowledge gaps.
- Conduct literature survey and review.
- Propose hypothesis.
- Develop objectives.
- Identify materials to be used and select/develop methods.

- Make a workplan.
- Set up timeline to carry the project.
- Cite and present references.
- Present proposal and experience in a symposium with Dr. Niu and fellow students.
- Attend Award Ceremony.

**Who are eligible to apply:** All undergraduate students in any year of their programs with a passion or curiosity in exploring self-potential in natural sciences and engineering research are welcome to apply. Graduate students are also welcome. However, choice of research topics need be approved. Selection of students will be based on the best candidates who would benefit the most from this transformative experience.

**How to apply:** Please prepare a letter with maximum 2 pages by replying to the following questions and submit it together with your resume to Dr. Catherine Niu at [catherine.niu@usask.ca](mailto:catherine.niu@usask.ca) by **August 10, 2023**. For undergraduate students, please also cc your application email to Dr. Mandy Fehr, Coordinator of the Undergraduate Research Initiative at the Office of the Vice President Research of USask at [mandy.fehr@usask.ca](mailto:mandy.fehr@usask.ca).

1. Why are you interested in this research program?
2. What specific areas in scientific and engineering research are you interested in?  
If you have a specific topic that you would like to research, please provide if possible.
3. What expectation do you have for yourself through this program?
4. Which meeting approach you would prefer, in person or by virtual meeting?