

CREATE QCS Summer School 2026

Hands-on activity

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Basic idea & motivation

Develop QCS-adjacent transferrable skills

- The idea is for students to identify **skills** that will carry them forward beyond graduate school.
- Working in groups they will propose a **research project** in the QCS space, with well-defined roles for group members.
- The key will be to identify **gaps**, get some **mentorship** from participating co-PIs, weave together a **team** out of the group members and **present** this to the larger group.
- Co-PIs will be present during AM work sessions for mentorship, and will check-in during the PM sessions (see prospective timeline on an upcoming slide).

Main deliverable

QCS mock research project proposal & pitch/presentation

- Form groups of 4–5 (must have at least 1 UW student in each group).
 - We should have 2 groups of 5, and 4 groups of 4.
- Each member must have a clearly defined role.
- Discuss among yourselves to identify a gap in the research which you will propose to address.
 - Get mentorship from the participating co-PIs.
- **Present/pitch** your research project to the 2026 Summer School participants.
- Communicate your research proposal in a **written report**.

Types of research projects

Based on the gaps you identified

- Computational project
 - Numerical simulations
 - AI/ML
 - Novel data analysis
- Lab/field experiments
 - Novel experimental design
 - Novel observational methods/tools
- Field measurement campaign
 - Novel observation type or technique
 - Novel location (with a well articulated case for this)
- Theory project
 - Derive and simulate a new equation/compare to more complete simulations
 - Create a Theoretical Framework

Written proposal

Get practice at writing a compelling case for your project

A LaTeX template will be provided:

- Give background on the field
- Describe the gap you identified and why it is important to fill it
- Describe the proposed research project
 - Tools, techniques, methods, goals/expected outcomes
 - Describe each group member's role
 - Provide a timeline of the research project from start to finish
- Provide a basic budget (see later slide)
- References/bibliography

Your group's report is due to Alain (alain.gervais@uwaterloo.ca) by 6:00 PM on July 22.

Presentation

Convey key information in a condensed format

- Cover the key information from the report.
- Present information orally and visually with a **slide deck**.
- Presentation will be **at most 8–10 minutes long** (at most 2 minutes/group member on average), followed by a 2-minute Q&A and a 1-minute transition.
 - This will minimize the amount of time that presentations could cut into the lunch period.
- **Cash prize** for the members of the group with the best report and presentation.
- Scheduled for **Friday, July 24**.

Budget considerations

Based on the type of grant your mock proposal would apply for

- Computational project
 - Digital Research Alliance RAC
 - https://docs.alliancecan.ca/wiki/Resource_Allocation_Competition
- Lab/field experiments, Observational/measurement campaign, Theory project
 - NSERC Discovery Grant
 - <https://nserc-crsng.canada.ca/en/funding-opportunity/discovery-grants-program-individual>
- Applied research/industry collaboration
 - NSERC Alliance
 - <https://nserc-crsng.canada.ca/en/funding-opportunity/alliance-advantage>

Prospective timeline of project completion

To help keep you on track this week

Date	Suggested task	Student responsibility	Co-PI role
July 20: Problem introduction session	Whole-group discussion on research gaps	Form work group (at least 1 UW student per group)	Discuss research gaps
July 20: Project work time	Discuss potential projects and decide on one	Draft scientific background & member strengths, delegate tasks	Advise on scope/feasibility of proposed project
July 21: Project work time (AM)	Apply learnings from workshop I	Revise report & draft actionables + timeline	Give feedback & provide budget template based on proposed grant type
July 21: Project work time (PM)			
July 22: Project work time (AM)	Apply learnings from workshop II	Revise report & draft budget + Impact	Give feedback on report
July 22: Project work time (PM)	Start finalizing project	Finalize + submit report & begin working on slides	Advise on format/contents of presentation
July 23: Project presentation work time	Finalize presentations (based on communications workshop)	Finalize slides and rehearse presentation	Give feedback

You will also need to write an “abstract” for your group presentation. Although this is not normally part of a research proposal, we will compile all abstracts for record-keeping purposes.
(Presentations like these are a metric that NSERC uses to evaluate the overall CREATE grant.)

Written report structure

Use the provided LaTeX template

- 4 pages content:
 - **Background** (1 page): describe the research area, the gap you identified, and (briefly) outline what you propose to do about it.
 - **Group skills** relevant to project (1 page): for each group member, describe in a paragraph their relevant skills and their concrete role in the proposed project.
 - Detailed proposal **actionables with timeline** (1 page): describe each of the goals/objectives/outcomes your proposed project will achieve, and give a timeline of the steps toward those outcomes.
 - **Budget** (1/2 page): provide a budget based on the type of funding your proposed project would apply for.
 - **Impact** (1/2 page): describe why your proposed project is important for the field and broader scientific community.
- plus 1 page for **references** (make sure you cite references appropriately in your report).

Some grants specify deliverables that your proposed research must achieve. Make sure your written report explains how each deliverable will be satisfied.

Written report adjudication

The co-PIs will consider these criteria

- Graded out of 15 points:
 - Feasibility (0-3)
 - Group skill identification (0-3)
 - Budget (0-2)
 - Scientific Novelty and Strength (0-3)
 - Presentation (0-3)
- Reviewer Bonus Point (please give to only one group) (0-1)