

Cold Regions Eco-Hydrology Field Course

**Wilfrid Laurier University & the Sambaa K'e First Nation
9 – 16 February, 2019**

Course objectives

This course aims to describe and explain:

- The physical principles and processes that govern cold regions eco-hydrology, with special reference to Canadian winter conditions,
- Mass and energy balance calculations and their application in eco-hydrology,
- Linkages and feedbacks among hydrology, ecology and biogeochemistry.

Students will emerge from the course with a deeper understanding of cold regions eco-hydrological processes and feedbacks. The course is intended for senior undergraduate students with an interest in hydrology and/or ecology who are looking to broaden their understanding of cold regions eco-hydrological systems and processes. This bio-physical science course is quantitative in nature and so a foundation in quantitative methods in the context of hydrology and/or ecology is recommended.

Course synopsis

The Cold Regions Research Centre (CRRRC) at Wilfrid Laurier University (www.coldregions.ca) is offering an intensive field-based course on the physical principles of cold regions eco-hydrology and water resources. Factors governing eco-hydrological processes in cold regions landscapes will be discussed including precipitation, interception, energy balance, snow accumulation and redistribution by wind, plant physiology, plant-snow interactions, over-winter moisture redistribution in vegetation, snow and soil properties, and coastal/lake processes. Each will be framed within the context of the subarctic Boreal Shield, a distinctly Canadian landscape. Students will be exposed to an overview of each subject, with recent scientific findings and new cutting edge theories, tools and techniques.

The course will take place at Sambaa K'e, a remote community in the northern Boreal forest. Sambaa K'e is a small village in the traditional land of the Dene people located on the eastern shore of Trout Lake, Northwest Territories (<https://dehcho.org/community-page/sambaa-ke-first-nation-sambaa-ke/>). The community offers unparalleled access to a wide range of boreal environments and to one of the largest lakes in the NWT.

The course will focus on field examinations to expose students to cold regions eco-hydrological phenomenon, state of the art field instrumentation and measurement techniques, including the use of un-manned aerial vehicles (UAVs). Field activities will be complimented by numerical and essay assignments to develop skills in problem solving and in synthesizing eco-hydrological concepts. Each day will start with a condensed lecture on the primary subject, followed by field activities to examine the processes and measurement techniques relevant to the lectures. Points of interest on the land, lake and along the shore will be reached by snowshoe and snowmobile. These scientific activities will be complimented by a traditional knowledge component led by Elders from the community of Sambaa K'e.

Evaluation

Students will collaborate on a group report based on their measurements, discussions and other activities during the course. More details on the group report will be provided at an orientation meeting in January, 2019.

Orientation Meeting

Prior to the field trip, there will be a planning and logistics meeting during the week of 7 January, 2019. Students enrolled in GG499V will receive advanced email notification of the day, time and location of this meeting. The purpose of the meeting is to discuss logistics and to provide course handouts and other reading materials.

Registration

All students taking this course are required to enroll in GG499V at Wilfrid Laurier University. In addition to the tuition fee, a logistics fee of \$1040 is also required. This covers the cost of ground transportation from Yellowknife to the course location, the use of the facilities, meals and accommodation in Samba K'e as well as 2 nights accommodation in transit, at the Quality Inn and Suites Yellowknife for the nights of February 8 and February 16.

In addition, students will cover the cost of their airfare to and from Yellowknife (flying in on February 8 and flying out on February 17), as well as winter gear rental, if required (arrangements can be made with a local supplier).

Non-Laurier students must complete a "letter of permission form" provided by their home university. The home university of the non-Laurier students will provide more information on the credit transfer process.

Application

To apply, please send by email attachment to Bill Quinton (wquinton@wlu.ca) with the following:

- a brief (500 word) letter explaining why you are interested in taking this course, and
- a copy of your academic transcript (an unofficial copy is sufficient).

Important Dates

- 1 October: Last day to submit application.
- 15 October: Successful applicants will be notified.
- 31 October: Last day to submit the logistics fee (\$1040)
- 16 November: No refunds after this date. Refunds can be made prior to this date, but \$100 will be retained to cover the cost of administration.

For further information...

For questions about course content – Bill Quinton (wquinton@wlu.ca)

For queries related to registration – Susan Lankowski (slankowski@wlu.ca)

For information related to transferring the GG499V course credit to your home institution, contact your department chair or Dean's office. For further information contact artsinfo@wlu.ca (519.884.0710 x3891).