

## UNIVERSITY

### Ontario Universities Program in Field Biology

<b>Course Title:</b>	<b>Arctic Ecology</b>										
<b>Instructor(s):</b>	<b>Dr. Sarah Adamowicz</b> , Associate Professor, Department of Integrative Biology, University of Guelph, Phone: 519-824-4120 ext. 53055, Email: <a href="mailto:sadamowi@uoguelph.ca">sadamowi@uoguelph.ca</a> . Additional instructor from U. Guelph, TBD.										
<b>Dates:</b>	Approximately July 6-20, 2019*										
<b>Location:</b>	Churchill Northern Studies Centre ( <a href="https://churchillscience.ca/">https://churchillscience.ca/</a> ), Churchill, Manitoba										
<b>Cost:</b>	\$1500 aprox (includes meals and accommodation for 14 nights, airport pick-up and drop-off in Churchill, transport around Churchill region for course activities, research materials; does <u>not</u> include transportation to and from Churchill)										
<b>Prerequisites:</b>	University Ecology Course (required) University Statistics Course (required) University Invertebrate Zoology or Entomology Course (recommended) University Course in Plant Ecology or Plant Systematics (helpful but not required) <i>Note: This course is intended for 3<sup>d</sup> or 4<sup>th</sup>-year students specializing in biology, particularly ecology, biodiversity, environmental studies, evolution, or aquatic biology.</i>										
<b>Enrolment:</b>	20 students (5 for OUPFB; 15 for University of Guelph)										
<b>Description:</b>	Churchill is a diverse region for ecological study, being located at the junction of the boreal, tundra, and Hudson Bay biomes. The first week of the course includes exploration of terrestrial, freshwater, and near-shore marine Arctic environments, as well as an overview of both aquatic and terrestrial collecting methods used to survey invertebrate and plant biodiversity in these environments. Two group projects are performed during week 1. Evening tutorials and student presentations provide background on Arctic ecology as well as statistical techniques for studying biodiversity and ecology. Weather permitting, excursions will include kayaking in the estuary and seeing belugas. During week 2, students conduct independent research projects. A major individual research paper and your field journal are due the last Friday of September. This course provides excellent opportunities to visit a spectacular sub-Arctic locality, to learn about Arctic ecology and biodiversity, and to conduct an independent research project with instructor guidance.										
<b>Evaluation:</b>	<table style="width: 100%; border: none;"> <tr> <td>Short presentations</td> <td style="text-align: right;">2@5% each</td> </tr> <tr> <td>Group project</td> <td style="text-align: right;">10%</td> </tr> <tr> <td>Participation</td> <td style="text-align: right;">10%</td> </tr> <tr> <td>Field notebook</td> <td style="text-align: right;">20%</td> </tr> <tr> <td>Individual research paper</td> <td style="text-align: right;">50%</td> </tr> </table>	Short presentations	2@5% each	Group project	10%	Participation	10%	Field notebook	20%	Individual research paper	50%
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\*Course dates may be slightly adjusted if the train line to Churchill reopens, as the train has historically been run only a few times per week.

## An Average Day – What to Expect

(a) Daily timeline	Typical day: 7:00 breakfast. 8:00 meeting to discuss objectives and to organize field gear for the day. 8:30-noon in the field. 12:00-13:00 lunch. We return to the field station for lunch many days, but we will eat a bagged lunch in the field on a couple of days. 13:00-17:30 field work. 17:30-18:30 supper. 19:00-21:00 evening activities (e.g. student presentations, sorting and databasing samples in the lab, data analysis, guest lectures). On a severe weather day, we would sort samples in the lab and also use the time for a tutorial on ecological data analysis.
(b) Work habitat & Physical exertion	This course involves about 7 hours of field work per day. At some locations, we will have a short hike of up to half an hour prior to reaching the research site. On the coastal rock bluffs, we will be climbing over rocks. It is important to have good treads on your footwear. We will spend much time in rubber boots, due to working at the edges of ponds and in water-logged environments (tundra, fen, intertidal).
(c) Common activities	Common activities include collecting samples in the field (e.g. collecting invertebrates) and collecting data in the field (e.g. identifying and recording plant species in quadrats). You will also spend time making your own observations and writing in your field journal. We will have breaks for meals and to consume water. A main risk is slipping and falling (e.g. into a pond). To mitigate this, bring rubber boots with good treads and exercise caution.
(d) Weather, dehydration, & biting insects	The Churchill region in July can experience wide fluctuations in temperature, depending upon the direction of the wind. On a typical day, the temperature is about 20° C. However, temperatures can approach 30° C (which feels extra hot when wearing a bug jacket). On very hot days, we will take extra breaks to consume water. On cold/wet days (<10° C), you could become uncomfortably cold. It is very important to bring warm clothing, which you can wear in layers for flexibility, as well as rain gear. Biting insects (particularly mosquitoes and black flies) are present in extreme abundance at certain sites. It is absolutely essential to bring a high-quality bug jacket as well as pants that insects can't bite through (e.g. field pants with tight weave or breathable rain pants). Some field researchers prefer a hat plus head net.
(e) Toxic/poisonous, wildlife/ plants	Churchill is known as the "Polar Bear Capital of the World". We will be accompanied by a bear guard. In addition, there is safety in numbers, so it is vital to follow instructions and not stray away from the group. We will have safety orientation upon your arrival in Churchill, which will be reinforced throughout the course.
(f) Sleeping, washroom & laundry facilities	Accommodation for this course is very comfortable. Sleeping quarters are in the form of dormitories, with typically 3-4 people per room (2 sets of bunk beds per room). There are modern washroom and laundry facilities (bring \$6 in loonies per load). You do not need to bring any of your own sleeping gear.
(g) Meal plans & food allergies	Staff at the CNSC will prepare most of our meals, while each person will prepare their own bagged lunch for a couple of days. Student with dietary restrictions or allergies can be accommodated, but you need to inform the course instructor well in advance.
(h) Non-academic responsibilities	At the CNSC, everyone pitches in with washing dishes. We will have a sign-up sheet for rotations. You are also responsible for following all rules at the field station regarding noise levels, safety protocols, etc.
(i) Degree of isolation	You should be able to recharge your laptop, phone, camera, etc. in the evenings at the CNSC (except in case of an occasional power outage). There is usually internet connectivity, but it is very slow. You are requested not to try to watch videos online, etc. There are pay phones in a hallway, but most people are able to get cell phone reception at least part of the time (but not at all locations in the field – we will have a satellite phone with us for field safety). We will stop in town a couple of times at "The Northern" so that you may purchase personal hygiene supplies or any other forgotten supplies (e.g. basic clothing). There is a medical facility and pharmacy in the town of Churchill. The CNSC is about a half hour drive from town. Please note that Churchill is a remote community. It is essential that you bring a more than adequate supply of any medications that you require.
(j) Alcohol & drugs	For field and lab safety, participants must abstain from alcohol and recreational drug consumption during the hours of our course activities. After hours, consumption of alcohol is permitted in specific areas of the CNSC. Moderation, as well as going to bed at a reasonable time, is necessary for your safety and course performance. The course is intense, and we have a full day of activity every day.
(k) Vaccinations/ Insurances	You should be up to date on the regular course of vaccines recommended for all people living in Canada. No additional special vaccines are required. It is also recommended to purchase cross-province medical insurance in the case of an unforeseen event (e.g. ambulance fees aren't covered through OHIP). Some students already have insurance through their parents' plans (so check), while others can purchase additional insurance through a student travel agency.
(l) Social Situations	The course involves some group work as well as living in close quarters. For refuge, I would recommend to check out the exercise room (usually empty!). As an optional activity, we typically go into town one evening each week for a night off and to engage with members of the local community (e.g. open mic night, trivia night).
(m) Final comments	This course offers the opportunity to conduct field biological studies in a unique setting and to experience part of northern Canada. Highlights often include wildlife sightings (e.g. snowy owl, caribou, belugas, polar bears). This is also an excellent opportunity to develop more general research, analytical, and interpersonal skills.