

laboratory fees and transportation to field sites, is \$575.00. You must pay fees prior to the course. **Bring the receipt** to the course meeting on the first day of classes **on Saturday, August 20.**

9. Writing across the curriculum statement: In this course, the quality of the student's writing in laboratory reports will be a factor in the evaluation of those reports. See also [Section E.2](#) of the University Calendar.

10. Human studies statement (see also [Section E.5](#) of the University Calendar):

ETHICS IN THE BIOLOGICAL SCIENCES

Studies in the Biological Sciences involve the use of living and dead organisms. Students taking laboratory- and field-based courses in these disciplines can expect involvement with and experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells, or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

11. OTHER IMPORTANT INFORMATION FOR STUDENTS:

(a) **Academic Misconduct:** (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties

(b) **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).

(c) **Student Accommodations:** Students needing an Accommodation because of a Disability or medical condition should contact Student Accessibility Services in accordance with the Procedure for Accommodations for Students *with Disabilities available at* http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.pdf.

Students needing an Accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the Associate Head of Biological Sciences, Dr. H. Addy by email addy@ucalgary.ca or phone 403 220-3140.

(d) **Safewalk:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.

(e) **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also <http://www.ucalgary.ca/secretariat/privacy>.

(f) **Student Union Information:** VP Academic Phone: 403 220-3911 Email: suvpaca@ucalgary.ca
SU Faculty Rep. Phone: 403 220-3913 Email: science1@su.ucalgary.ca, science2@su.ucalgary.ca and science3@su.ucalgary.ca;
Student Ombuds Office: 403 220-6420 Email: ombuds@ucalgary.ca; <http://ucalgary.ca/provost/students/ombuds>

(g) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.

(h) At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference - please participate in USRI Surveys.

Department Approval: ORIGINAL SIGNED Date _____

Department Approval
for NO FINAL EXAM: ORIGINAL SIGNED Date _____

E413 F16; 6/24/2016 8:55 AM

COURSE OBJECTIVE To examine ecological principles and techniques through field exercises in terrestrial and/or aquatic ecosystems. Understanding of introductory ecology, study design and data analysis is assumed.

COURSE COORDINATOR Dr. Ralph Cartar BI 355 cartar@ucalgary.ca

WHEN TO ARRIVE **Saturday, August 20.** Anyone needing transportation to the field station should inform and coordinate with Dr. Cartar prior to August 20th. We have rented two vans and will be leaving from the loading docks behind the Biological Sciences Building at **1:00 pm** sharp on Saturday and return to there at the end of the course. Anyone who will need transportation should be there at that time. For those who will be driving to the station by themselves, it is important to note that **the course meeting starts before dinner at 3:00 pm in the laboratory.** All should be present.

SPECIAL RESTRICTIONS: If you have any special medical or eating restrictions please bring these to the attention of the course coordinator **prior to the commencement of the course.**

TUITION, TRANSPORTATION AND BIOGEOSCIENCES INSTITUTE FEES

The course tuition and supplementary fee are paid directly to the University of Calgary, Registrar's Office. The supplementary fee (field fee), which includes accommodation, meals, laboratory fees and transportation to field sites, is \$575.00. You must pay fees prior to the course. **Bring the receipt** to the course meeting **on Saturday, August 20.**

FACILITIES

Rooms are double occupancy. **Bedding and towels are NOT supplied; pillows and pillowcases are.** Each dormitory has a central washroom with showers. Because dormitories have day sleepers (i.e., researchers who work at night) it is important that these areas are **quiet at all times.** If you wish to talk, do it in the lounge areas. No pets are allowed at the field station.

Breakfast and Dinner are served in the lodge, cafeteria style, at 7:30 a.m. and 5:30/6:00 p.m. respectively. You will make your own bag lunch after breakfast.

Computers will be available during scheduled periods. See attached policy on computer use.

SAFETY

A brief overview of normal safety precautions will be presented at the initial meeting on Saturday evening. However, remember that you, not the University, are responsible for your personal safety and, through your actions, those around you. Prevention is the key to safety, and all students will come to the course each day prepared with:

- attitudes and behaviours conducive to safe field practices;
- good footwear (no open-toed shoes);
- appropriate clothing for a normal range of local weather, including sun, rain and snow protection;
- medicines for chronic problems such as diabetes and asthma.

While engaged in field-school activities, the following are forbidden: alcohol, non-medicinal drugs, firearms, rough-housing, antagonizing wildlife, boulder rolling, rock-climbing, and hiking or swimming alone. All field-school participants are equally responsible for safety, but faculty and staff are in charge. If you are ever instructed to take an action, or stop one, do so first and ask questions later.

GENERAL ACTIVITY SCHEDULE

Work starts after breakfast and start time will be at the convenience of the instructors, typically at about 8am. Some field trips might require an early start. Lunches will be packed and usually only breakfast and dinner will be taken at the field station. Work may continue through to 10:00 p.m. (or later for nocturnal work), with a break for lunch and for dinner. Most days are spent in the field, and evenings are used for laboratory work, data analysis, and report writing. Students are required to write up reports based on data/observations from each section; time will be made available during each module for this purpose.

EXERCISES

Please note that all reports are due by 5:00 PM Monday September 19, 2016 via email to respective faculty members.

August 20-24: Dr. Lawrence Harder

We will address one or both of two topics concerning plant reproduction, depending on the availability of flowering plants and weather conditions:
1) Plants & many plant species rely on animals to mate, and they can impose control on pollination by manipulating pollinator behaviour. If conditions are suitable, students will examine the response of pollinators (probably bumble bees) to floral traits, including the number of flowers displayed simultaneously. These responses will form the basis of discussions about plant's ability to influence their reproductive success.

2) Reproductive resource allocation by plants. Seed production by plants depends on both their success during pollination and their allocation of resources to reproduction. The relation of seed production to reproductive allocation can affect many plant characteristics, from whether they reproduce as hermaphrodites or separate sexes to the relative production of pollen and ovules. Students will examine such relations, including their modification by herbivorous insects.

August 25–29: Dr. Ralph Cartar

The forests throughout eastern Kananaskis Country have experienced high levels of clearcut logging, particularly since the mid-1980s. One forestry practice used to retain some of the biodiversity in the pre-logged forest and to provide a source of tree seeds for the regenerating clearcuts is to leave "retention" stands of uncut trees within clearcuts. These retention patches differ in size, location within the clearcut, and initial composition. In this module, we will explore spatial and biophysical theories that might explain biota in these remnant "islands" of old growth forest habitat. Students will test hypotheses to explain organisms within retention patches involving ecological theories evaluated at one of a number of levels: biophysical, individual, population, or community. Students will work in groups of up to 3, designing and carrying out research that seeks to elucidate ecological patterns in critters found in retention patches.

August 30–September 03: Ms. Sara Smith

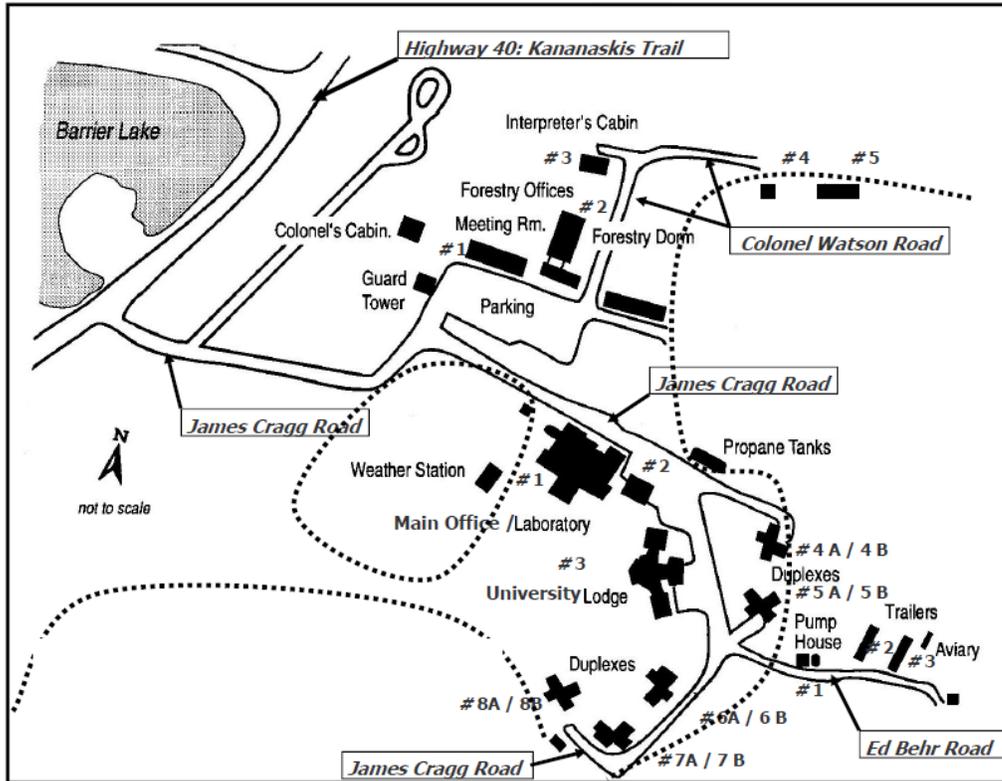
This is a combined field and lecture/lab module focusing on the ecology and evolution of Alberta fishes in the aquatic habitats they inhabit. The goal of this module is to provide a fun and meaningful field experience in which students will be familiarized with current fish collection techniques. Lectures will provide a background in the history and diversity of fishes, while labs will supplement field excursions to strengthen species identification skills. Students will be responsible for a small group research study of their choice on an approved topic linked with Alberta fishes and the ecosystem. These small group studies will be presented at the end of the module in a student symposium on the morning of September 3 before returning to Calgary.



BARRIER LAKE FIELD STATION: Students Information for Courses

Upon arrival at the Field Station there will be a presentation on Field Station procedure by a BGS staff member.

1. For University of Calgary courses, please bring your own bedding (2 sheets) or sleeping bag and towels. BGS will provide pillow/pillow cases (see Page 8 for more complete list of suggested items).
2. Long distance calls may be made on **Line 1** by using a phone card or on operator assisted calls. 1-800 #s may be made on **Line 1**. There is a pay phone in the Lodge for visitor use. **We do not have a direct line to Calgary. Please don't use Lines 1 or 2 during office hours (8am - 4pm).**
3. E-mail access is available with a combination of wireless/wired connections. Wireless can be accessed in any building. **U of Calgary users connect to "AirUC" with your username and password.** There are numerous computers with wired connection in the lab building computer room.
4. Pets are not allowed at the Field Station.
5. Library books may be signed out during office hours (8am - 4pm) by Cindy Payne (Operations Manager) or by Adrienne Cunnings (Research Coordinator).
6. Outside campfires are not permitted at the field station.
7. Please park your personal vehicle in the main parking lot.
8. Hiking boots and dirty, wet footwear are not to be worn in the Lodge, Lab or duplexes.
9. Meals are served in the Main Lodge. Please contact your course instructor and the Field Station if you have any food allergies, are a vegetarian or have medical restrictions that we should be aware of.
10. Please use the recycling bins in the Lodge for your empty beverage containers.
11. A laundry room is available in the North Shop. Washing machines (\$2.00/load) and dryers (\$1.00/load) and are available onsite. Please bring your own detergent.
12. All fees are to be paid through your Registrar's Office.



Mailing Address: Biogeoscience Institute, BS 186

University of Calgary

2500 University Dr. NW

Calgary, AB. T2N 1N4

Phone: (403) 673-3662 or (403) 220-5355

Fax: (403) 673-3671

Suggested List of Personal Effects to Bring

- personal toiletries (toothbrush, toothpaste, floss, etc. but leave perfume/cologne at home!)
- hiking boots (minimally, sturdy walking shoes)
- jacket (windproof/waterproof)
- shoes/sandals for use in laboratory and dormitory (leave muddy boots in entrance way)
- shower shoes (optional)
- several pairs of socks
- pants suitable for outdoor use
- shirts/blouses
- sweater (woolen or fleece are best) (Note: clothing layers are more versatile than a heavy jacket)
- mitts/gloves
- sunglasses
- sun hat
- toque (we hike to alpine zone in some Exercises)
- insect repellent
- sun block
- waterproof boots
- raingear: jacket, hat, trousers (courses go out in rain, snow or sunshine)
- small packsack to carry extra clothing, lunch, note-taking materials in the field
- re-usable lunch bag
- water bottle (at least 1L)
- clipboard or 3-ring binder, pen, pencil, eraser, calculator, laptop with a wireless access (optional), flash drive
- laundry soap and loonies for washing machine and dryer
- camera
- binoculars
- alarm clock (note: smartphones can cover this, the camera, and the calculator suggestions)
- bathing suit for the glacier-fed lakes (highly weather dependent)
- Frisbee (optional; certainly, we don't need more than a couple of them!)

Note: It can snow any month of the year so prepare yourself accordingly. There are no nearby stores so bring what you need when you come.

As indicated on page 5, definitely bring the following:

- Sleeping bag or your own linen (2 sheets)
- Shower towels (1-2)
- Hand towel and/or face cloth

*****Please note:** We expect **space to be very limited** in the vans (owing to up to 24 bodies + sampling gear + personal effects), therefore **we strongly encourage efficient packing** (roll your clothing [e.g., <https://youtu.be/17smmlESBIs>], use soft/compressible bags, etc.). Definitely bring enough to be warm, safe, comfortable, etc. but limit extra/non-essential items.***



BIOGEOSCIENCE INSTITUTE, BARRIER LAKE FIELD STATION

SAFETY IN THE ALPINE ENVIRONMENT

Special conditions exist when working and studying in an alpine environment and certain precautions must be taken to ensure your safety. You are responsible for your own safety and for the safety of those around you. You may be working in a remote area where emergency services are not readily available so it is important that everyone acts in a safe and responsible manner.

- Weather conditions are very unpredictable in the mountains. Each time you travel in the mountains, you should take rain/wind gear, hat/toque, extra sweater/fleece, mitts/gloves. Snow can occur any time during the year and sudden afternoon thunderstorms are very common during hot, sunny days. If you are above tree line and a thunderstorm is approaching, immediately head for lower ground and protection.
- Sturdy footwear (e.g. hiking boots) should be worn when traveling in mountainous terrain.
- Sunlight can be very intense at the higher elevations. Take a hat, sunglasses and sun block.
- Stay on the maintained trails as much as possible. Avoid taking short cuts on switchback trails as this contributes to the erosion of the area. Be aware of where you are and how you got there by making mental notes of landmarks. If you get separated from your group, you may have to find your own way out. If you are working on your own, make sure someone in the group knows where you are and how long you will be there.
- It is always easier to scramble up rocks than down, so be aware of your own limitations. Don't choose a study site that puts you in unsafe conditions. Shortcuts generally take twice as long as staying on the trail, as you usually end up bushwacking.
- It is very easy to become dehydrated while working in the alpine environment. Drink fluids often and take at least 1 L of fluids with you.
- Pack a good lunch in the morning and snack frequently during the day. It is important to keep your energy levels high to prevent twisted ankles or falls on the hike out at the end of the day.
- Kananaskis Country is the home for black and grizzly bears, cougars, wolves, moose, elk and other large mammals. It is important to respect them and not attract them by leaving garbage, foodstuff outside. If you see evidence that bears are in the area that you want to work in, leave the area and choose another site. If you are working in an area, make "human noise" like singing, talking etc. to let any wildlife know that you are there and they will generally avoid you. More information on "wildlife encounters" will be presented to you on your arrival at the Field Station.

Inform your instructor prior to your field trip of any condition that may require emergency medical attention such as diabetes, asthma, or insect sting allergies. You are responsible for determining whether you should participate in any activity.