



UNIVERSITY OF CALGARY

DEPARTMENT OF GEOSCIENCE COURSE OUTLINE SUMMER 2017

1. **Course:** GOPH 549, Geophysics Field School

Lecture Sections: *none*

B01: August 21-August 26 Location: Castle Mountain and Environs

B02: August 27-September 1 Location: Castle Mountain and Environs

T01: September 9-30 – Tuesdays, 17:00 – 19:50 SA 147

Dr. K. Innanen, Office: ES 212, Ph. 403-210-6837, email: k.innanen@ucalgary.ca, Office Hours: by appointment

Dr. Brandon Karchewski, Office: ES 108, Ph. 403-220-6678, email: brandon.karchewski@ucalgary.ca, Office Hours: by appointment

Dr. Rachel Lauer, ES 276, Ph. 403-220-7923; email: rachel.lauer@ucalgary.ca, Office Hours: by appointment

Geoscience Department ES 118, 403-220-5184, geoscience.ucalgary.ca, geoscience@ucalgary.ca

2. **Prerequisites:** Geophysics 355, 453 and 457. See section 3.5.C in the Faculty of Science section of the online Calendar (www.ucalgary.ca/pubs/calendar/current/sc-3-5.html)

Notes: This course occurs in rugged field conditions and varying weather, for which participants must be prepared and equipped. Students will be required to cover food and accommodation costs, and a supplemental fee will be assessed to cover the additional costs associated with this course.

Owing to the resources and logistics involved in field school, withdrawal from the course without permission of the Department will only be allowed prior to the field portion. After attending the field portion, withdrawal from the course will be limited to extenuating circumstances. Relevant deadlines are listed below:

Last date to withdraw from GOPH 549 by section: Students will require consent of the Department to drop this course after the drop date-August 22nd for B01, August 28th for B02.

Last date to withdraw with penalty: B01 & T01 – September 4, 2016; B02 & T01 – September 11, 2016

3. **Grading:** The University policy on grading and related matters is described in sections [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Field performance & participation	40%
Field assignments	15%
Final report & oral exam	30% (During tutorial date TBA)
Tutorial attendance & participation	10%
Team evaluations	5%

Each piece of work (e.g. lecture and lab exams, lab assignments, project) submitted by the student will be assigned a percentage score. The student's average percentage score for the various components listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade. The conversion between course percentage and letter grade is given below.

The **field performance and participation** grade component will be assessed from field participation rubrics (to be posted on D2L) evaluated by TAs and/or instructors on each field day, as well as the quality of notes taken in field books. Field books will be evaluated based on quality and relevance of notes, as well as legibility. DO NOT remove pages from your field notes or re-write field notes after leaving the field. Only your original field notes will be evaluated. A rubric for field book evaluation will be posted on D2L. It is *highly recommended* that you review the rubric prior to arriving at field school so that you will know what we expect from your field notes.

The **field assignments** grade component will be based on a set of posters completed in teams after each day's field activities. The details of the assignments will be explained in the field, and they will have a rapid feedback cycle, with greater weight given to work completed toward the end of field school when more feedback has been provided.

After returning from the field, all students will be assigned a data set to analyse based on one of the methods encountered during field school. Students will analyse the data and write a report that presents a defensible model for interpreting the data, and discusses the key geophysical features of the data. Further details will be provided on D2L.

The **final report & oral exam** grade component will be based on the evaluation of this report, and performance in an oral exam involving questions about the report, and field school theory and practice in general.

The **tutorial attendance and participation** grade component will be assessed by the instructors based on a student's progress and engagement in tutorials and office hours when working on the report after field school. Instructors will be present at the tutorials to answer questions and provide feedback on report progress, but it is each student's responsibility to ensure that they demonstrate their engagement during the tutorials. One should not assume that simply attending the scheduled tutorials is sufficient to receive full participation marks.

The **team evaluations** grade component will be based on a combination of peer feedback forms filled out by teammates as well as instructors and TAs following field school. Remember that instructors and TAs are part of your team, and their opinion of your contribution to each day's activities carries equal weight to that of your peers.

The course involves use and manipulation of computer programs written in the programming language Matlab in the field and during the tutorials. Matlab codes and instructions for using the codes, in the form of preliminary exercises, are published on D2L roughly 1 month prior to the start of the field component. Students are expected to have worked through these exercises and to be familiar with the workings of the codes at the time their field course begins.

You must receive a passing grade in each of these components to pass the course. Assignment of letter grades:

Grade %	Letter
95-100	A+
90-94	A
85-89	A-
80-84	B+
75-79	B
70-74	B-
65-69	C+
60-64	C
58-59	C-
	D+
50-59	D
< 50	F

4. **Missed Components of Term Work:** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize himself/herself with these regulations. See also [Section E.6](#) of the University Calendar

5. **Scheduled out-of-class activities:** A Safety Briefing will be held prior to departure on August 21.

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a clash with this out-of-class-time-activity, please inform your instructor as soon as possible so that alternative arrangements may be made for you.

6. **Course Materials:** *"Applied Geophysics", 2nd Edition, by Telford, Geldart and Sheriff, Cambridge*
Lecture notes from GOPH 355 may be helpful.

7. **Examination Policy:** There will be no written Exams in this course; see point 3., above. Students should also read the Calendar, [Section G](#), on Examinations.

8. **Approved Mandatory and Optional Course Supplemental Fees:** Transportation \$125; meals and accommodation involve a further fee TBA.

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

10. 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) **Academic Accommodation Policy:** Students with documentable disabilities are referred to the following links: Students with Disabilities: <http://www.ucalgary.ca/pubs/calendar/current/b-1.html> and Student Accessibility Services: <http://www.ucalgary.ca/access/>
- (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 (FOIPPA). 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) **U.S.R.I.:** 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: August 8, 2017

Associate Dean's Approval for
alternate final examination arrangements: ORIGINAL SIGNED

Date: August 14, 2017

Geophysics 549 – Course Description and Tentative Itinerary

Dr. Kris Innanen
Dr. Brandon Karchewski
Dr. Rachel Lauer

Location:

Castle Mountain Resort and Pincher Creek, Alberta: All field components except for the seismic reflection surveys will take place on the grounds of the Castle Mountain Resort, where staff and students will be staying for the duration of field school. The seismic reflection survey will take place at a site that is approximately a 20-30 minute drive from the resort. Safety meetings will be held each morning to explain important features of each field site related to hazard awareness.

Dates of Travel and Study:

Schedule details provided on D2L.

Group Work:

Students will work in groups of 4-5, as assigned by the instructors on the first day. Much of the work will be graded as a group, but there will be a number of places where individual effort will be factored into the grading scheme (e.g., participation, field book quality, etc.). We will go over this early in the field school so everyone is fully aware of the grading procedure and can aim to do as well as possible with it in mind.

Field School Scope

Exercises for this field school will focus on three key learning outcomes: 1) familiarity with equipment in common use in field methods in geophysics, 2) conceptual understanding of what is being measured by each piece of equipment and 3) algorithms for processing gathered data into meaningful output. Further details are provided in the Roadmap document posted on D2L.

What to bring

1. You must bring a 4 5/8" x 7" spiral bound rite-in-rain field notebook (#303, 313, 353) – Everyone must have one, we will be checking and grading your notebook. The bookstore has stock of these. NOTE: It is highly recommended to fill in the first page (name, purpose of field notes, etc.) immediately after obtaining the field book so that you do not forget.
2. 5 days worth of dry clothes, long pants and shirtsleeves, appropriate for outdoor wear, walking through tall grass, working with equipment above and in the ground. Note: Long pants are required for field work, no shorts.
3. Appropriate footwear (sturdy hiking boots/work boots; steel toes a plus). If they are waterproof or resistant, so much the better. It is never a bad idea to have an extra pair of dry socks per day.
4. Comfortable and durable backpack, large enough for laptop, notebook, pens/pencils, lunch, water.
5. 1 or 2 large water bottles. You should aim to be consuming roughly 3L of water per day to stay properly hydrated.
6. Sun protection: hat, UV sunglasses, sunscreen. Note that you should consider clothing (ideally UPF rated) as your first line of defense against UV, and sunscreen as a second resort for areas that you are unable to protect with clothing.
7. Rain/wind protection: waterproof, windproof jacket, gaiters if you want.
8. Cold protection: toque, gloves, fleeces, jacket. Avoid cotton clothing as if it gets wet and cold, it will be undesirable.
9. Insect protection: bug spray with DEET. Again, you should consider long pants and long sleeved shirts as your first line of defense here, and bug spray as a backup. Be sure to check yourself after each field excursion for ticks (for more information on tick removal and health concerns related to ticks, see the Alberta Health page [here](#)).
10. A **friendly and professional attitude**: GOPH 549 has developed a very good relationship with the staff at Castle Mountain, and we would like to be able to return to this site into the foreseeable future. This requires that the staff's experience with GOPH 549 students be professional and agreeable (as well as vice versa). Please comport yourselves as representatives not just of yourselves, but also of many past and future U of C geophysics classes.

** A note on weather – you can expect to experience long hours in any temperature from -5-35 degree with a combination sun/rain/snow, you must be prepared for this. We have experienced all of these conditions at Castle mountain.

What not to bring:

1. Cell phones. You can bring them to Castle Mountain, but there is a 100% prohibition on use of cell phones for communication or internet use **while in the field**. They may be used for photos or as calculators, but be prepared to be challenged on your use of these devices by instructors, TAs and staff. It is not difficult to tell what a phone is being used for, even from quite a distance. Improper or unsafe use of phones may lead to you being sent home.
2. Alcohol. The hostel is a dry zone. Castle Mountain has a licensed restaurant where students may socialize in the evenings, but **alcohol in any other place or time is prohibited**. Violation of this will result in you being sent home. **Do Not Bring Alcohol to the field school.**

What to discuss with your instructors:

1. Special medical conditions or requirements (e.g., medication, allergies, etc.)
2. Special dietary restrictions (allergy related or otherwise).
3. Any questions/concerns that you have about field activities. Do not hesitate to keep the lines of communication open. We are happy to answer your questions.