

Geography 294
Approaches to Research in Physical Geography

Fall 2016

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Lectures: T, Th 8:30 – 9:50 am, EV3-3412
Labs: T 10:30-12:20, 12:30-2:20, EV1-134
Office hours: Th 10:00 am – 11:30 am

Calendar description: This course introduces students to skills for conducting research in physical geography. Selected techniques used in climatology, hydrology, geomorphology and/or biogeography research will be demonstrated and the principles behind these techniques will be explained. This course will provide students with hands-on experience in research design, field and laboratory techniques, data assembly and the interpretation of data.

Detailed course description: This course introduces students to skills for conducting research in physical geography. In the early part of the course, students will become familiar with research design and how to properly design a field- or laboratory-based experiment or field monitoring programme. This will be developed throughout the term as students write their own *individual* research proposal. Students will also be introduced to some of the techniques used by physical geographers in the sub-disciplines of climatology, hydrology, geomorphology and biogeography. For each selected technique, students will learn (1) the theory behind the technique in a classroom setting; (2) how to execute the technique in a field or lab setting; and (3) how to compile and interpret the dataset. Skills learned are relevant for careers in both a professional setting as well as academics. Assignments for the course will involve a series of assignments/labs and a written proposal/term project.

Learning Outcomes:

1. Students will be familiar with many of the field techniques used by physical geographers, and will have an enhanced understanding of the importance of critical thinking and research design.
2. Students will understand the challenges associated with data collection and be able to evaluate the accuracy and precision of a range of field techniques.
3. Students will apply what they have learned in the classroom and field setting and will prepare a research proposal to address a scientific research question.

Evaluation

Labs (3/4, done in groups of 3 or 6) (14% each)	42%
Literature Review & Objectives (Part 1, 6 pp)	14%
Methods, Budget, Timelines (Part 2, 6 pp)	14%
Final Full Proposal (Part 3, 15 pp)	15%
Lab and Class Participation (5% lab, 10% class)	15%

Lecture Schedule:**

Week	Day	Date	Lecture	Proposal Due Dates
1	Th	9-08	i) Introduction	
2	T	9-13	ii) Research & Experimental Design; Intro to Research "Proposals"	
	Th	9-15	iii) Critical Thought & The Literature Review	
3	T	9-20	iv) Methods in Climatology	
	Th	9-22	v) Methods in Hydrology - Streamflow	
4	T	9-27	vi) Soil Sampling Techniques	
	Th	9-29	Overflow if needed*	
5	T	10-04	vii) Vegetation Classification Techniques	
	Th	10-06	<i>Student Peer Evaluation of Literature Review & Objectives</i>	Part 1 peer evaluation
6	T	10-11	NO CLASS: Reading days	
	Th	10-13	Overflow if needed*	
7	T	10-18	<i>In class vegetation classification exercise</i>	Part 1 Due
	Th	10-20	Overflow if needed*	
8	T	10-25	viii) Proposing Methods for a Project	
	Th	10-27	Overflow if needed*	
9	T	11-01	ix) Presenting results	
	Th	11-03	<i>Student Peer Evaluation of Methods/Timeline/Budget</i>	Part 2 peer evaluation
10	T	11-08	x) Data loggers 101	
	Th	11-10	Overflow if needed*	Part 2 Due
11	T	11-15	xi) Discussion of Ethics	
	Th	11-17	Overflow if needed*	
12	T	11-22	xii) Additional Steps in Proposal Writing – Responding to Calls	
	Th	11-24	<i>Journal article critique (group exercise)</i>	
13	T	11-29	xiii) Course Summary + final proposal polishing help session	
	Th	12-1	Overflow if needed*	Part 3 Due

* On these dates there is no lecture unless we need it for overflow from previous lecture.

** Course schedule subject to change by instructor

*** Assignments are DUE by 4pm and must be submitted (paper copies) in the dropboxes in EV1.

Lab schedule

Day	Date	Activity	Location	Due Dates
T	09-13	Tutorial	In lab	
T	09-20	Lab 1 assigned	In lab	
T	09-27	Lab 2 assigned	In field	
T	10-04	Lab 3 assigned	In field	Lab 2 due
Th	10-13		NO LAB	Lab 3 due
T	10-18	Lab 4 assigned	In lab	
T	11-1		NO LAB	Lab 4 due
T	11-22		NO LAB	Lab 1 due

Course Readings:

There is no textbook for this course but I may put materials on reserve in the library or course website as needed.

Attendance and In-class Discussions: The ability to communicate via discussion is an important skill to develop for academia, the private sector and other public workplaces. Students are expected to listen carefully, be objective, and contribute to in-class discussions. Such discussions may occur in the classroom or out in the field. Your involvement in these discussions will be reflected in your participation grade. Regular attendance of this course is essential as much of the learning in this course is hands-on. A portion of your participation grade will reflect your regular attendance and participation in class (particularly group discussions and peer reviews).

Field Journals: One of the most important tools a Geographer has is the field journal. All field journals, no matter what their form, serve the same purpose: to record, describe, analyze and remember some form of data. Your journal for this class may include entries from lecture notes and readings but will largely consist of field notes. Your field journal must accompany you to each class and is *ALWAYS WITH YOU IN THE FIELD*.

PLEASE NOTE

Email Correspondence: Any email correspondence between students and myself will only be through University of Waterloo email accounts. There will be no exceptions.

Late Assignments: A penalty of 5% will be applied for each day that an assignment is late.

Students with disabilities: Students with special needs are encouraged to contact the Office for Persons with Disabilities (OPD) (Needles Hall). Please register with the OPD at the beginning of each academic term and subsequently meet with me to discuss your needs.

Academic Integrity and Discipline: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check www.uwaterloo.ca/academicintegrity/ for more information.]. A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline, www.adm.uwaterloo.ca/infosec/Policies/policy71.htm. For typical penalties check Guidelines for the Assessment of Penalties, www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm

Appeals and Grievance: A decision made or penalty imposed under Policy 70 (Student Petitions and Grievances) (other than a petition) or Policy 71 (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm

Plagiarism detection software (*Turnitin*) will be used to screen assignments in this course. This is being done to verify that use of all materials and sources in assignments is documented. Students will be given an option if they do not want to have their assignment screened by Turnitin. In the first week of the term, details will be provided about arrangements and alternatives for the use of Turnitin in this course.