

**Faculty of Science Course Syllabus****Department of Earth Sciences****ERTH 2110: Field Methods****Fall, 2018**

**Instructor:** Mike Young      *mike.young@dal.ca*      Room 2055A LSC  
*Office Hours: Thursdays 1:30-3pm*

**Lectures:** T 13:05-13:55, WF 12:35-13:25      LSC-Earth Sciences 2055

**Laboratories:** Wed 13:35-17:25      LSC-Earth Sciences 2055

**Teaching Assistant:** Sean Kelly      *sn454421@dal.ca*      Room 2709 Ocean Wing  
*Office Hours: TBD*

---

**Course Description**

This is intended as an introduction to field techniques useful to the practicing geologist, particularly those concepts essential for the accurate field description and identification of rocks and the use and construction of geological maps. Computer techniques and elementary structural geology are also considered.

**Course Objectives/Learning Outcomes**

- Describe and identify rocks in the field and in hand sample
- Recognize and record elementary structural features (e.g. bedding, cleavage, intersection lineation)
- Map folds in the field using cleavage-bedding relationships
- Identify true geometry of geological bodies from map pattern
- Use structural contours as an aid to map analysis
- Draw a geological cross section (unbalanced)
- Make a geological map and cross section from field data
- Write and present a report describing and analysing a geological map

**Course Materials****Required Text:**

1. Field Sheets course pack for ERTH 2110. Available from course instructor.

**Optional Texts:**

1. Structural Analysis & Synthesis, by Rowland, Duebendorfer, and Schiefelbein (3<sup>rd</sup> edition)
2. Geological Field Techniques, by Angela Coe

**Supplies Required:**

Field notebook (sold at bookstore in ERTH 2110 shelf), pencil, eraser, ruler, pencil crayons, calculator, compass (on loan from department), hand lens, geologic hammer, clipboard.

### Course Assessment

This is a project-based course. Many of the projects will be done with partners, or in groups, but each person will hand in their own final piece of work for most of the projects. Most projects will be graded using a rubric and will take into account not only accuracy and thoroughness of field data, but also neatness, completeness, and presentation (i.e., PROFESSIONALISM). Final grades will be calculated on the following basis:

Component	Weight (% of final grade)	Date
<b>Weekly Labs and Field trips</b>	25%	<b>See schedule below</b>
<b>Quiz</b>	15%	<b>Nov 9<sup>th</sup></b>
<b>Minas Basin Field Trip Report</b>	8%	<b>Oct 19<sup>th</sup></b>
<b>Halifax Peninsula Mapping Project</b>	15%	<b>Nov 20<sup>th</sup></b>
<b>Field Notebook</b> <i>(your field notebook will be submitted at the end of term for final grading. It will be submitted periodically during term for feedback and grading)</i>	7%	<b>Dec 5<sup>th</sup></b>
<b>Geology of Nova Scotia Report</b>	10%	<b>Dec 5<sup>th</sup></b>
<b>Final exam</b>	20%	<i>(Scheduled by Registrar)</i>

### Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale

A+ (90-100)	B+ (77-79)	C+ (65-69)	D (50-54)
A (85-89)	B (73-76)	C (60-64)	F (<50)
A- (80-84)	B- (70-72)	C- (55-59)	

### Course Policies

Labs and weekly field trip reports will generally be due on Friday afternoons following the lab period or field trip. Late submissions of labs, reports or projects will lose 10% of their value each day they are late.

Attendance at all classes is mandatory. It is very difficult to make up a missed day in the field. Obviously, if you have a serious medical problem, a contagious illness, or another emergency, do not come, but realize that you will most likely not be able to complete the project.

### IN THE FIELD

For Wednesday afternoon trips, be ready to leave promptly at 12:35 pm. Gather on the lawn outside the Earth Sciences entrance to the LSC. Sturdy water-resistant field boots are a must; don't rely on sneakers. Dress for the weather. Layers are best, which will allow you to adapt to changing conditions. Don't forget a hat and gloves. Keep a rain jacket or poncho in your day pack. Carry a bottle of water and a snack to see you through. Sun protection is a good idea, and insect repellent can be helpful.

### Course Content

Please note: This course is often weather dependent! We will not be deterred by light rain or cold temperatures. However, we may have to rearrange the schedule due to heavy rain or snow-covered rocks. We will hope for sunny, warm Wednesdays, but will deal with whatever comes!

<i><b>Week of</b></i>	<i><b>Topic</b></i>	<i><b>Lab/Field Trip</b></i>
Sept 4	Syllabus, Field Equipment, Field Safety, Rock & Mineral Review	Lab: Rock & Mineral review; rock description
Sept 11	Igneous rocks in the field	Field Trip: Granite near Halifax, stops include Peggy's Cove
Sept 18	Topographic maps, compass use, orienteering	Lab/campus trip: orienteering and compass work
Sept 25	Sedimentary rocks in the field	Field Trip: Sedimentary rocks in Point Pleasant
Oct 02	Introduction to deformation: Folds, bedding, cleavage	Field Trip: Blue Rocks
Oct 09 <i>Thanksgiving</i>	Geological time, unconformities, introduction to geological maps	Lab: Geological maps, cross sections, stratigraphic columns.
<b>Oct 13-14</b>	<b><u>Weekend Field Trip:</u></b> Horton Bluff, Avondale, Rainy Cove; stay overnight in Windsor	
Oct 16-17	No classes or lab	
Oct 19	Introduction to mapping project	
Oct 23	Introduction to mapping project	Field Trip: Intro to Halifax Peninsula mapping project
Oct 30	Apparent Dip and Structure Contours	Lab: apparent dip and structure contours
<b>Nov 1-3</b>	AUGC conference hosted at Dalhousie – all 2110 students strongly encouraged to attend	
Nov 06	Stereonet	Lab: stereonet
<b>Nov 09</b>	Quiz	
<b>Nov 12</b>	<b>Reading Week</b>	
Nov 20	Cross sections	Lab: cross sections part I
Nov 27	Map Synthesis; Geology of Nova Scotia	Lab: cross sections part II

## **University Policies and Statements**

**This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate**

### **Academic Integrity**

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity.

**Information:** [https://www.dal.ca/dept/university\\_secretariat/academic-integrity.html](https://www.dal.ca/dept/university_secretariat/academic-integrity.html)

### **Accessibility**

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (Canada and Nova Scotia).

**Information:** [https://www.dal.ca/campus\\_life/academic-support/accessibility.html](https://www.dal.ca/campus_life/academic-support/accessibility.html)

### **Student Code of Conduct**

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.

**Code:** [https://www.dal.ca/dept/university\\_secretariat/policies/student-life/code-of-student-conduct.html](https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html)

### **Diversity and Inclusion – Culture of Respect**

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness

**Statement:** <http://www.dal.ca/cultureofrespect.html>

### **Recognition of Mi'kmaq Territory**

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit or e-mail the Indigenous Student Centre (1321 Edward St) ([elders@dal.ca](mailto:elders@dal.ca)).

**Information:** [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)

### **Important Dates in the Academic Year (including add/drop dates)**

[https://www.dal.ca/academics/important\\_dates.html](https://www.dal.ca/academics/important_dates.html)

### **University Grading Practices**

[https://www.dal.ca/dept/university\\_secretariat/policies/academic/grading-practices-policy.html](https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html)

### **Missed or Late Academic Requirements due to Student Absence (policy)**

[https://www.dal.ca/dept/university\\_secretariat/policies/academic/missed-or-late-academic-requirements-due-to-student-absence.html](https://www.dal.ca/dept/university_secretariat/policies/academic/missed-or-late-academic-requirements-due-to-student-absence.html)

## **Student Resources and Support**

### **Advising**

**General Advising** [https://www.dal.ca/campus\\_life/academic-support/advising.html](https://www.dal.ca/campus_life/academic-support/advising.html)

**Science Program Advisors:** <https://www.dal.ca/faculty/science/current-students/academic-advising.html>

**Indigenous Student Centre:** [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)

**Black Students Advising Centre:** [https://www.dal.ca/campus\\_life/communities/black-student-advising.html](https://www.dal.ca/campus_life/communities/black-student-advising.html)

**International Centre:** [https://www.dal.ca/campus\\_life/international-centre/current-students.html](https://www.dal.ca/campus_life/international-centre/current-students.html)

### **Academic supports**

**Library:** <https://libraries.dal.ca/>

**Writing Centre:** [https://www.dal.ca/campus\\_life/academic-support/writing-and-study-skills.html](https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html)

**Studying for Success:** [https://www.dal.ca/campus\\_life/academic-support/study-skills-and-tutoring.html](https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html)

**Copyright Office:** <https://libraries.dal.ca/services/copyright-office.html>

**Fair Dealing Guidelines** <https://libraries.dal.ca/services/copyright-office/fair-dealing.html>

### **Other supports and services**

**Student Health & Wellness Centre:** [https://www.dal.ca/campus\\_life/health-and-wellness/services-support/student-health-and-wellness.html](https://www.dal.ca/campus_life/health-and-wellness/services-support/student-health-and-wellness.html)

**Student Advocacy:** <https://dsu.ca/dsas>

**Ombudsperson:** [https://www.dal.ca/campus\\_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html](https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html)

### **Safety**

**Biosafety:** <https://www.dal.ca/dept/safety/programs-services/biosafety.html>

**Chemical Safety:** <https://www.dal.ca/dept/safety/programs-services/chemical-safety.html>

**Radiation Safety:** <https://www.dal.ca/dept/safety/programs-services/radiation-safety.html>

**Scent-Free Program:** <https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html>