

Department of Earth Sciences  
**WELCOME to... GEOLOGY II - 1090 – WINTER 2019**  
**Dr. Anne Marie Ryan – amryan@dal.ca**

***The Amazing Story continues...***

*This course (a continuation of EARTH 1080), offers a second half-course in earth sciences (geology), designed for any student interested in Earth Sciences.*

*The prerequisite for EARTH 1090 is EARTH 1080, however, 1090 may be taken at the same time as 1080. 1090 is a 3-credit hour lab science course.*

*1090 is a required course for earth science majors.*



**OUTCOMES**

- ❖ Identify and critique a number of modern geologic problems in the context of change
- ❖ Identify and interpret a variety of geologic processes, such as fluvial (river), groundwater, mass movement, glacial, and coastal processes using maps and other graphical representations, where applicable
- ❖ Explain, evaluate, and appreciate the varied nature of interactions between the physical earth, the environment, and humans
- ❖ Classify and discuss a variety of earth's mineral, energy, soil, and water resources using earth materials and maps as appropriate
- ❖ Develop basic critical reasoning skills as they relate to the study of the earth
- ❖ Further develop thinking and working in 4 dimensions
- ❖ Summarize and interpret key events in earth history, and begin to develop an understanding of deep time in terms of earth's physical world and the fossil record
- ❖ Under supervision and in small groups, conduct a geoscience-related research project

*The overriding theme of this course is change through geologic time – both long term and short term.*

*The first section of the course looks at shorter-term change in terms of geologic processes: water, ice, and gravity as agents of change. In this section, we also look at a number of geohazards, such as flooding, mass movement (landslides), and coastal processes.*

*The second section looks at resources of earth: in particular, those of water, minerals and energy. Using specific examples, we consider our evolving and changing dependence on these resources, their link to geology, and how they contribute to modern society.*

*We complete the course with a look at Earth's vast history in terms of physical and biological change (the fossil record). The focus here is on long-term change. As well, we consider what geology can contribute to our understanding of global change, including more recent climate change.*

## CLASS INFORMATION

Time: Lect: MWF 11:30-12:30  
Location: LSC 238 (and Fridays in 2055)  
Instructor: Anne Marie Ryan (amryan@dal.ca)  
Office: 2047 LSC (right beside the lab!)  
Office hours: Open door policy – if my door is open, you can come in!  
Phone: 902-494-3184 (email is better)  
Text: Earth, by Marshak; 5<sup>th</sup> ed (as for 1080)  
Lab manual - as for 1080

Brightspace is established for this class. As most of the material is taken from the textbook, **NOTE THAT only material not in the textbook will be posted on Brightspace.** Other material from class may or may not be posted, depending on the nature of the class on a given day. **It is your responsibility to find out what you miss from classmates**, if you are not able to be at class on a given day.

## USE OF TECHNOLOGY

**LAPTOPS:** YOU MAY USE, ONLY AS LONG AS IT IS NOT A DISTRACTION TO SELF, CLASSMATES, OR ME – BUT ALSO NOTE THAT RESEARCH HAS SHOWN THAT USE OF LAPTOPS HAS RESULTED IN REDUCED GRADES

**CELL PHONES:** Please refrain from using cellphones / texting during class others – to yourself, to classmates, and to me – and if I am distracted, then everyone in class is also likely to be distracted.



## **EVALUATION: 1090 – Winter**

### **2019 NOTES:**

- *Both the lab and the lecture component require a passing grade to pass the course*
- *The final exam may contain material from the lab section of the course*
- *\* Learning Activities – best 75 - 80% (approx.) of these will be counted, as it is not possible to make these up at another time – it is important to be at class, unless you are ill, or have another reasonable excuse.*

## **COMPONENTS**

<b>Lab</b>	<b>34% (split between research project (17%) and lab activities (17%))</b>
<b>*Learning Activities / Assignments</b>	<b>20% (these occur throughout the term, often partially during class)</b>
<b>Quizzes</b>	<b>16% (best 2 of 3)</b>
<b>Exam</b>	<b>30% DURING EXAM SCHEDULE SET BY REGISTRAR - NO EARLY OPTION</b>



## **CLASS POLICIES RE: YOUR LEARNING**

### **How are “Learning Activities” graded? (Learning activities are worth 10-12% of your total mark)**

- \* Your learning activities mark is recorded as approx. the best 75 - 80% of all activities assigned (in other words, you get a mark out of 100% for successful completion of approx. 75 - 80% of these activities - this allows for absences because of illness, weather-related absences, etc. There are no make-up opportunities for missed learning activities).
- \* You can anticipate that these learning activities will occur randomly but frequently throughout the term.
- \* Most of these learning activities will take place in class, although there may be some that require you respond to a reading or discussion on Brightspace, or do some activity / reading outside of class time.
- \* Examples of learning activities may include any of the following: (but are not limited to these)
  - > Independent reading, and response to this reading through in-class writing activity / discussion
  - > Response to a question, article, paragraph through BbL
  - > Engagement during in-class activity /discussion
  - > Presence at class on a given day for the discussion
  - > “pop” quiz
  - > Identifying or locating a feature, on or off campus
  - > Creating a question or writing a short response to a new concept introduced in lecture
  - > Connecting lab learning / research project learning with “lecture” material

### **Assignments: (assignments are worth 8-10% of your total mark)**

There are 2 or 3 assignments in this course, and you will have a minimum of 1 week to complete each assignment. You can expect that these are distributed approximately once a month during the term. Late assignments may be penalized at a rate of 10% per day: once an assignment has been marked and returned, no further late assignments will be accepted.

### **Quizzes and Exam:**

There are 3 quizzes, with the best 2 of 3 quizzes counting. **There are no make-up quizzes. If you are ill and must miss more than one quiz, then your exam will count for extra.** **Note also:** there is no option to write the exam early, so please do not make travel plans until the Registrar’s office has posted the exam schedule in early February.

### **Readings:**

In the schedule attached, you can find the recommended chapters to read. There may be supplemental readings, and these will be posted in Brightspace. From time to time throughout the course, you will be required to read some of the material ahead of time and come prepared to discuss or otherwise work with the information in a learning -activity.

### **Grade conversion:**

Numerical results will be converted to letter grades as follows: **(Standard Dalhousie Grade Scheme)**

A+ = 90-100	A = 85-89.9	A- = 80-84.9
B+ = 77-79.9	B = 73-76.9	B- = 70-72.9
C+ = 65.69.9	C = 60-64.9	C- = 55-59.9
D = 50-54.9	F = < 49.9 (a grade of D is a passing grade)	



## 1090 – WINTER 2019 - SCHEDULE – TENTATIVE

(Note: there may be changes - the weather is unpredictable in the winter, etc....)

WEEK OF...	CLASS	LAB
Week 1 Jan 7, 9, 11 <b><u>THEME: CHANGE ON EARTH'S SURFACE</u></b>	Mass Movement (Ch 16) Landscapes and the hydrologic cycle (Int F)	NO LAB
Week 2 Jan 14, 16, 18	Streams and Flooding (Ch. 17) <b>JAN 18 - LAST DAY TO JOIN CLASS, OR TO DROP WITH NO FEES</b>	Lab 1 1. Topographic maps (chapter 9 – in lab book) 2. Introduction to research project
Week 3 Jan 21, 23, 25	Coasts (Ch.18) (and maybe introduction to desserts (Ch. 21)	Lab 2 – Streams (Chapter 10 – in lab book) 3. Research project II
Week 4 Jan 28, 30, 1	Glaciers (chapter 22)  <b>Fri – Feb 1 is Munro Day – no classes</b>	Lab 3 1. Stream Table 2. Research project III
Week 5 Feb 4, 6, 8	<b>Feb 4 - Quiz 1 (mass movement, streams, flooding, coasts, glaciers +/- desserts)</b> <b>Feb 6-8 – Groundwater (Ch 19)</b> <b>FEB 4 – LAST DAY TO DROP CLASS WITHOUT A “W”</b>	Lab 4 1. Coasts 2. Research Project IV
Week 6 Feb 11, 13, 15 <b><u>THEME: CHANGING NEEDS: EARTH RESOURCES</u></b>	Water – our most precious resource...  Groundwater (Ch.19) and the Hydrologic Cycle	Lab 4 1. Glaciation (chapter 11 – in lab book) 2. Research project V
STUDY WEEK Feb 16-24 incl		
Week 7 Feb 25, 27, 1	Mineral Resources (Ch.15)	Lab 5 permeability experiment
Week 8 Mar 4, 6, 8	Mineral Resources concluded Energy Resources (Ch.14) <b>QUIZ 2 – Glaciation, Groundwater, Hydrologic Cycle, Mineral Resources (date TBA)</b>	Lab 6 1. Introduction to geologic maps 2. Research project VI
Week 9 Mar 11, 13, 15	Resources concluded (including SOILS – Interlude B)  <b>MAR 11 – LAST DAY TO DROP CLASS WITH A “W”</b>	Lab 7 1. Geologic maps Part II 2. Research project VII
Week 10 (Quiz 2) Mar 18, 20, 22 <b><u>THEME: CHANGE THROUGH DEEP TIME</u></b>	Biography of Earth (Ch.13 and Interlude E)	Lab 7 1. Mineral Deposits 2. Research project VIII
Week 11 Mar 25, 27, 29	Biography of Earth (Ch. 13 and Interlude E)	Lab 9 1. Fossils 2. Research project IX
Week 12 April 1, 3, 5 and 8	Global Change (Ch. 23) <b>QUIZ 3 - April 8</b>	Lab 10 – poster sharing

**Exam period: 10-26 April. Do not make travel arrangements until the exam schedule is posted in early February – it will not be possible to write the exam early.**

**IN SUMMARY, ALTHOUGH NOT IN THIS ORDER:** Chapters 1, 13, 14, 15, 16, 17, 18, 19, 21, 22, and 23, as well as Interludes B, D, E, and F (and supplementary readings, as given (see Brightspace for any additional readings)

## 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>