A Student's Guide to Earth Sciences

at Dalhousie University

In this guide, you will find information about:

- University Requirements
- First-Year Requirements
- Major in Earth Sciences (120-credit hour)
- Double-Major with Earth Sciences
- Honours in Earth Sciences
- Combined Honours in Earth Sciences
- Minor in Earth Sciences
- Minor in Geography
- Co-op in Earth Sciences
- Certificates
- Knowledge Requirements for Professional Geoscience Registration in Canada

DAL

University Requirements

General Degree Requirements

The University mandates that students in a BA or BSc program must meet specific requirements to complete their degree. In addition to degree requirements, each Program (e.g., Earth Sciences) has a set of requirements necessary to complete the program. It is important to know both the degree and program requirements to ensure successful completion of a degree. For a full list of University requirements, please check the **Academic Calendar**.

Subject Groupings

Course offerings within the College of Arts and Science are placed into three subject groupings: (1) **Languages and Humanities**, (2) **Social Sciences**, and (3) **Life and Physical Sciences**. All BA and BSc programs must include a minimum of **6-credit hours** from each of the three subject groupings.

Writing Course Requirements

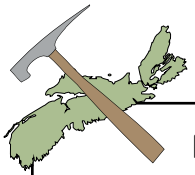
An approved writing course or set of courses is required for all BA and BSc degrees. It is recommended that students complete the writing requirement early in their programs, preferably in their first year of study. The Writing Course may also be used to satisfy one of the subject groupings. See Academic Calendar for list of approved courses and course combinations.

Math Requirements (BSc)

A minimum of **6-credit hours** in mathematics or statistics are required for all **BSc programs**. See Academic Calendar for list of approved courses.

Language Requirements (BA)

BA students are required to obtain **6-credit hours** in a language course or set of courses. See Academic Calendar for list of approved courses.



Pro Tip:

Use the **Degree Audit Reporting System** (DARS) on DalOnline, to ensure you're on track for graduation. DARS will show you all the requirements you need for your degree; identifying those you've met and those you have yet to complete.

First-Year Requirements

All Earth Sciences programs (e.g., BSc, BA, Honours, Double-Major, etc.) have the same program requirements for the first-year. *Remember to check the Academic Calendar for University requirements for all BA and BSc degrees.*

1000-level Program Requirements

- Geology I (ERTH 1080)
- Geology II (ERTH 1091)
- Chemistry I (CHEM1011)
- Chemistry II (CHEM1012)
- Calculus (MATH1000 (*recommended*) or MATH1215)
- One other half credit in Mathematics or Statistics
- *Note: students in the Dalhousie Integrated Science Program (DISP) should consult a program advisor in Earth Sciences regarding first-year equivalencies.*

Pro Tip:

We recommend students **declare their major** in winter term of their first year. Head to DalOnline to easily declare your major and update it at any point throughout your degree.

120-credit hour **Major** in Earth Sciences

Major in Earth Sciences (120-credit hour)

Program-specific requirements for BSc and BA students are listed below.

1000-level Program Requirements

- ERTH 1080 and ERTH 1091
- CHEM 1011 and CHEM 1012
- MATH 1000
- One other MATH or STAT course (BSc students)

2000-level Program Requirements

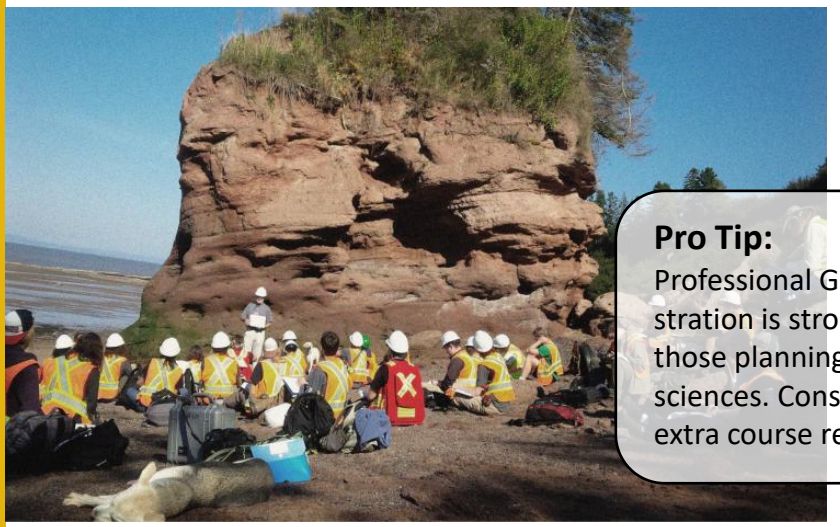
- ERTH 2001 – Mineralogy
- ERTH 2110 – Field Methods and Geological Maps
- ERTH 2203 – Sediments and Sedimentology
- ERTH 2002 – Introduction to Petrology
- ERTH 2380 – Geochemistry

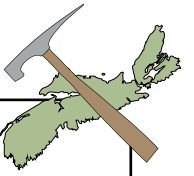
3000/4000-level Program Requirements

- ERTH 3002 – Introductory Field School
- ERTH 3303 – Stratigraphy
- ERTH 3140 – Structural Geology
- ERTH 4005 – Advanced Field School (*required for BSc majors, elective for BA)*

Additional Program Requirements

- BSc students must take an additional 15-credit hours of Earth Sciences courses, of which a minimum of 12-credit hours must be at the 3000- or 4000-level
- BA students must take an additional 12-credit hours of Earth Sciences courses at the 3000- or 4000-level (Does not include ERTH 4005)





Pro Tip:
Professional Geoscience (PGeo) Registration is strongly encouraged for those planning a career in the geosciences. Consult page 11 for a list of extra course requirements for PGeo.

Double-Major in Earth Sciences (120-credit hour)

Students may take a degree that combines a Major in Earth Sciences with another subject, such as Ocean Sciences or Physics. If electing to complete a Double-Major, students must select one subject as the primary and one as the secondary. Requirements are the same whether Earth Sciences is selected as the primary or secondary subject.

1000-level Program Requirements

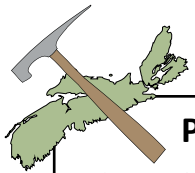
- ERTH 1080 and ERTH 1091
- CHEM 1011 and CHEM 1012
- MATH 1000 and one other Math or Stats course

2000-level Program Requirements

- ERTH 2001 – Mineralogy
- ERTH 2110 – Field Methods and Geological Maps
- ERTH 2203 – Sediments and Sedimentology
- ERTH 2002 – Introduction to Petrology
- ERTH 2380 – Geochemistry

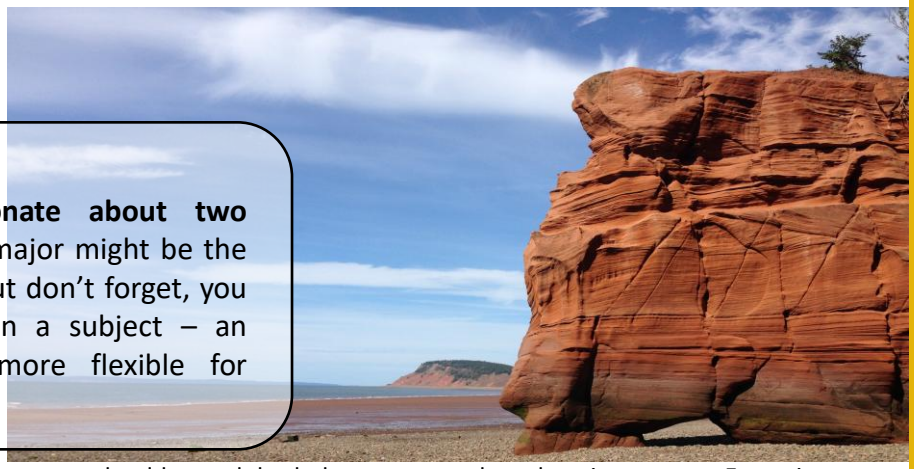
3000/4000-level Program Requirements

- ERTH 3002 – Introductory Field School
- ERTH 3303 – Stratigraphy
- ERTH 3140 – Structural Geology
- Additional 9-credit hours of 3000/4000-level Earth Sciences courses



Pro Tip:

If you're **passionate about two topics**, a double-major might be the option for you! But don't forget, you can also minor in a subject – an option that is more flexible for scheduling.



Students in Double Major programs should consult both departments when choosing courses. Exceptions to requirements may be made where justified by a student's particular subject combination.

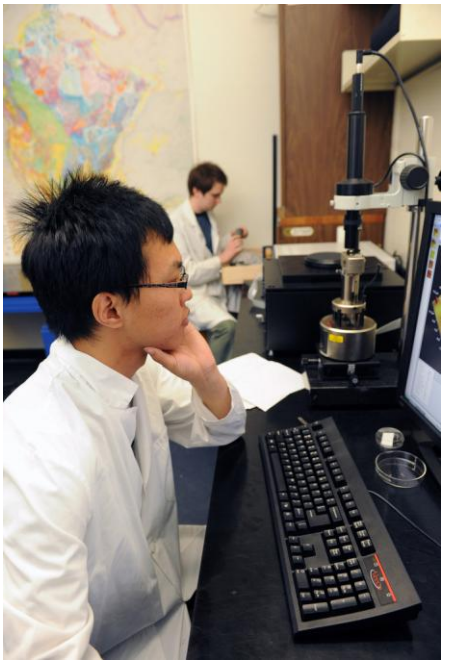
120-credit hour **Double-Major** in Earth Sciences

Honours in Earth Sciences

Admission to the Honours program requires the approval of both the Department and the Registrar. Typically, students apply in January of their 3rd-year (after fall grades have been released).

Requirements for admission:

- Minimum GPA of 3.5 in Honours subject courses (2000-level and above), with no grade less than C



1000-level Program Requirements

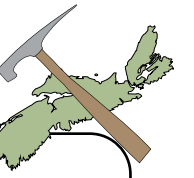
- ERTH 1080 and ERTH 1091
- CHEM 1011 and CHEM 1012
- PHYC 1190 and PHYC 1290
- MATH 1000 and one other MATH or STAT course

2000-level Program Requirements

- ERTH 2001 – Mineralogy
- ERTH 2110 – Field Methods and Geological Maps
- ERTH 2203 – Sediments and Sedimentology
- ERTH 2002 – Introduction to Petrology
- ERTH 2380 – Geochemistry
- ERTH 2270 – Introduction to Applied Geophysics

3000/4000-level Program Requirements

- ERTH 3002 – Introductory Field School
- ERTH 3303 – Stratigraphy
- ERTH 3140 – Structural Geology
- ERTH 4005 – Advanced Field School
- ERTH 4201 and ERTH 4202 – Honours Thesis
- Honours Qualifying Exam (Thesis Defense)
- Additional 18-credit hours of ERTH courses at or above the 2000-level, of which at least 12-credit hours must be at or above the 3000-level



Pro Tip:
Students should start searching for thesis projects and supervisors in their 3rd year. Some projects are advertised on the website or through the Honours Coordinator. But it's best to contact potential supervisors directly and discuss your interests.

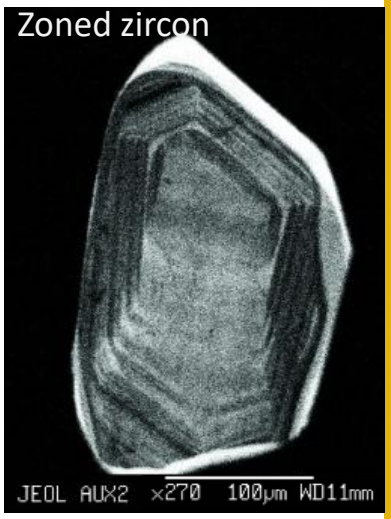
Honours in Earth Sciences

Combined Honours in Earth Sciences

Students may elect to complete a Combined Honours, combining Earth Sciences with another subject. If electing to complete a Combined Honours, students must select one subject as the primary and one as the secondary. Admission to the Honours program requires the approval of the Registrar and both Departments. Typically, students apply in January of their 3rd-year (after fall grades have been released). For a full list of University requirements for a Combined Honours degree, please see the Academic Calendar.

Requirements for admission:

- Minimum GPA of 3.5 in Honours subject courses (2000-level and above), with no grade less than C



1000-level Program Requirements

- ERTH 1080 and ERTH 1091
- CHEM 1011 and CHEM 1012
- PHYC 1190 and PHYC 1290
- MATH 1000 and one other MATH or STAT course

2000-level Program Requirements

- ERTH 2001 – Mineralogy
- ERTH 2110 – Field Methods and Geological Maps
- ERTH 2203 – Sediments and Sedimentology
- ERTH 2002 – Introduction to Petrology
- ERTH 2380 – Geochemistry
- ERTH 2270 – Introduction to Applied Geophysics

3000/4000-level Program Requirements (with ERTH as primary subject)

- ERTH 3002 – Introductory Field School
- ERTH 3303 – Stratigraphy
- ERTH 3140 – Structural Geology
- ERTH 4005 – Advanced Field School* (*contact the ERTH advisor if scheduling conflicts)*
- ERTH 4201 and ERTH 4202 – Honours Thesis
- Honours Qualifying Exam (Thesis Defense)

3000/4000-level Program Requirements (with ERTH as secondary subject)

- ERTH 3002 – Introductory Field School
- ERTH 3303 – Stratigraphy
- ERTH 3140 – Structural Geology
- Additional 9-credit hours of ERTH courses at or above the 3000-level

Minors in Geography or Earth Sciences

Science Co-op in Earth Sciences

Minor in Earth Sciences

Students majoring in a subject other than Earth Sciences may choose to complete a minor in Earth Sciences. The minor is available to most students in a 120-credit hour Bachelor program. Alternately, a BSc or BA (90-credit hour) degree program with a Minor in Earth Sciences is available to students in the Faculty of Science.

- ERTH 1080 and ERTH 1091
- Additional 18-credit hours in ERTH courses at the 2000-level or higher, of which at least 6-credit hours must be at the 3000-level or higher

Minor in Geography

The Geography minor is available to most students in a 120-credit hour Bachelor program. To fulfill the requirements, students must complete 24-credit hours.

- GEOG 1030, GEOG 1035, and GEOG 2000
- Additional 15-credit hours in GEOG courses at the 2000-level or higher, of which at least 6-credit hours must be at the 3000-level or higher
    - Consult the Academic Calendar for a list of approved courses for the Geography minor

Co-operative Educational Program (Science Co-op) in Earth Sciences (Additional to Program)

Science Co-op is a program of academic study in a science subject, combined with paid career-related work experience. Students undertake three work-terms interspersed with their academic study terms.

Science Co-op is available to students in BSc (120-credit hour) Honours or Major programs in Earth Sciences, or in Combined Honours or Double Major programs with Earth Sciences as the primary subject. Students normally apply to join Science Co-op during their first year of study. Students must apply before April 15, and it is strongly recommended that interested students meet with the Earth Sciences Co-op advisor early in the Winter term of their first year.

Visit dal.ca/ees to find contact info for the Earth Sciences advisors including the Co-op Advisor

Certificates (Additional to Program)

Certificates: Geographic Information Systems (GIS)

Geographic Information Systems (GIS)

The GIS Certificate program provides training and experience in geographic information science as part of an undergraduate degree program, usually in Earth Sciences, Environmental Science or Biology, and prepares students for further study or employment in the area. The Certificate requires the completion of GIS-related courses and completion of a major project that involves work with geographic information systems and geomatics.

Mandatory Courses (minimum grade of B- in all courses)

- ERTH 3500/ENVS 3500/GEOG 3500 – Geoscience Information Management
- ERTH 4520/GEOG 4520 – GIS Applications to Environmental and Geological Science

Selectives

A minimum grade of B- in at least two of the following courses

- GEOG 2000 – Cartography
- GEOG 2006 – Space, Place and GIS
- BIOL 3633/ENVS 3633/GEOG 3633 – Spatial Information and GIS in Ecology
- ERTH 4530/GEOG 4530 – Environmental Remote Sensing
- ENVS 2100 – Environmental Informatics
- ENVS 3400/GEOG 3400 – Environment and Human Health

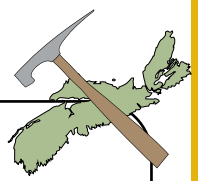
Research Project: Completion of a research project with an emphasis in geographic information science via one of the following sets of courses (minimum grade of B-). Research topics must be pre-approved by the Certificate Coordinator.

Set 1

- BIOL 4900/MARI 4900 or BIOL 4901/MARI 4902 – Honours Thesis
- ENVS 4901/ENVS 4902 – Honours Thesis
- ERTH 4101/ERTH 4102 – Research Project
- ERTH 4201/ERTH 4202 – Honours Thesis
- SUST 4800 – Independent Study
- SUST 4900 – Honours Thesis

Set 2

- ERTH 4850/ENVS 4850/BIOL 4850/ SCIE 4850/GEOG 4850 – Geographic Information Science Research Project



Pro Tip:

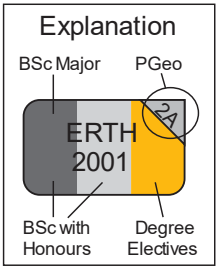
Although students enroll in the certificate programs in their 3rd or 4th year, it's a good idea to think about these in your 2nd year to ensure you've completed any necessary 2000-level courses.

GIS Certificate Coordinator: Dr. C.S Greene (csgreene@dal.ca, Earth and Environmental Sciences)

Updated June 2025

Required Courses (Visual Guide)

The majority of our students tend to complete either the BSc Major or BSc Honours programs in Earth Sciences along with the requirements for Professional Geoscience Registration.



Year 1

Fall	ERTH 1080	CHEM 1011 1A	MATH 1000 1A	PHYC 1190 1A	Elective (Humanities/ Language)
Winter	ERTH 1090/1091	CHEM 1012 1B	MATH/ STATS Elective 1B	PHYC 1290 1B	Elective* (Humanities/ Language)

*Total number of 1000-level credit-hours may not exceed 48 (16 courses). Conversely, minimum of 72 credit-hours required at 2000-level and higher.

Year 2

Fall	ERTH 2001[1] 2A	ERTH 2110 2C	ERTH 2203 2C	Elective (PGeo Foundation Science) 1B	Elective (Social Science)
Winter	ERTH 2002 2C	ERTH 2380 2B	ERTH 2270[2] 2B	Elective (PGeo Foundation Science [3]) 1B	Elective (Social Science)

[1] Prerequisites: ERTH 1080 and 1090, CHEM 1011 and 1012.

[2] Prerequisites: ERTH 1080, MATH1000, PHYC 1190 and PHYC 1290 (or equiv.)

[3] PGeo Group 1B subjects include Math, Chemistry, Physics, Statistics, Computer Programming, and Biology.

Years 3 & 4

ERTH 3002 Field School[4] 2C

Fall	ERTH 3303 2A	ERTH Elective (>2999) [5] 2B	ERTH Elective (>1999) 2C	Elective	Elective
Winter	ERTH 3140 2A	ERTH Elective (>1999) [6] 2B	Elective (PGeo Foundation Science) 1B	Elective	Elective

[4] ERTH 3002 Field School is 12 days and usually runs at the end of August

[5] Consider in 3rd year for PGeo (2B):
- ERTH 3010 for Geology Stream, or
- ERTH 3701 for Env. Geo. Stream

[6] PGeo Group 2B requires five courses. Consult the GKE or dept checklist to determine the various course combinations to satisfy this category.

Years 3 & 4

ERTH 4005 Field School[7] 2A

Fall	ERTH Elective (>2999) 2C	ERTH Elective (>2999) 2C	ERTH 4201[8] 2C	Elective
Winter	ERTH Elective (>2999) 2C	ERTH Elective (>2999) [6] 2B	ERTH 4202[8] 2C	Elective

[7] ERTH 4005 Advanced Field School is 14 days and usually runs at the end of August. Required for concentrated BSc Honours, and BSc Majors. Elective for double majors and BA degrees.

[8] Honours thesis class. For acceptance:
- Min. GPA in ERTH of 3.5, and no grade lower than C
- Students generally find their own supervisor/project in Year 3.

Required Courses - Visual Guide

Checklist for PGeo Knowledge Requirements for Dalhousie Earth Sciences students

Refer to the Professional Geoscience Knowledge and Experience (GKE) handbook while filling out this document.
https://geoscientistscanada.ca/source/GC-Knowledge-Requ-BKLT--REV--EN--web--final-.pdf

Group 1A and 1B Compulsory and Additional Foundation Science

Group 1A - Compulsory Foundation Science (3 courses*)

*course is equivalent to a 3-credit hour course. The GKE uses the term Education Unit (EU) which is also a 1 semester course.

Chemistry		e.g., CHEM 1011, 1021 or equivalent
Calculus		e.g., MATH 1000, 1280 or equivalent; life sciences math (1215) may not be accepted
Physics		e.g., PHYC 1190 (or 1290) or equivalent; life sciences physics (1310/1320) may not be accepted

Group 1B - Additional Foundation Science (total of 6 courses and no more than 2 courses in any one subject)

Chemistry		
Mathematics		
Physics		
Statistics		
Computer Programming		
Biology		

General notes on Group 1 courses:

- CHEM 1012, MATH 1010, and PHYC 1290 (or 1190) recommended
- Also recommended: STAT 1060 or 2060, STAT 2080, STAT 2450, MATH 1030, MATH 2300, PHYC 2050, CSCI 1105 or 1110, CSCI 2202
- Degree-stream first-year science classes. Or second-year or higher science classes must require core first-year science classes as prerequisites. Eg., PHYC 1451: Astronomy and PHYC 2800: Climate Change do not count.
- Consult the GKE handbook for individual course descriptions to compare against Dal course descriptions.

Group 2A, 2B and 2C – Compulsory, Additional and Other Geoscience

Group 2A - Compulsory Foundation Geoscience (4 courses)

Field Practice		ERTH 4005 – Adv. Field School
Mineralogy and Petrology		ERTH 2001 – Mineralogy
Sedimentation and Stratigraphy		ERTH 3303 – Stratigraphy
Structural Geology		ERTH 3140 – Structural Geology

Notes:

Group 2B - Additional Foundation Geoscience (5 courses; min 1 & max 2 from each subgroup)

PGeo Geology Stream		
Geochemistry		2380
Geophysics		2270
Igneous Petrology		3010
Metamorphic Petrology		3020
Sedimentary Petrology		N/A
Sedimentology		2203
Geomorphology or Glacial Geology		3440 or 3302
GIS or Remote Sensing		3500

PGeo Environmental Geoscience Stream		
Geochemistry		2380
Geophysics		2270
Hydrology		3701
Hydrogeology		3401
Engineering Geology		CIVL 2200
Geomorphology or Soil Science		3440 or SOIL 2000
Glacial Geology		3302
GIS or Remote Sensing		3500

Group 2C - Other Geoscience (9 courses at the 2000-level or higher)

- Any ERTH course at or above the 2000-level that counts toward a BSc in ERTH
- Other courses may count as well. e.g., Oceanography, Paleobiology, Engineering
- For students in combined degrees, up to 2 courses not counted in Group 1B can count in 2C

Professional Geoscientist boards by province:

NS: https://www.geoscientistsns.ca
NL: http://www.pegnl.ca
ON: https://www.pgo.ca
SK: https://www.apegs.ca
BC: https://www.egbc.ca
NB: https://www.apegnb.com
QC: http://www.ogq.qc.ca
MB: https://www.apegm.mb.ca
AB: https://www.apega.ca
NWT & NU: https://www.napeg.nt.ca

My Plan

Year: ______________

Fall term

Winter term

Year: ______________

Fall term

Winter term

Year: ______________

Fall term

Winter term

Year: ______________

Fall term

Winter term

Year: ______________

Fall term

Winter term

Notes: ____

ERTH Course Descriptions

ERTH 1030 Introduction to Physical Geography
CREDIT HOURS: 3
This non-lab science course examines the nature of weather and climate, earth's surface features and processes, and internal processes that contribute to landform development. An integral component of the course is an exploration of the representation and interpretation of physical geographic data through the examination of a variety maps.
CROSSLISTED: GEOG 1030.03 PREREQUISITES: none
FORMATS: Lecture | Tutorial

ERTH 1060 Earthquakes, Volcanoes and Natural Disasters
CREDIT HOURS: 3
Earthquakes, meteorite impacts, rapid climate change, volcanic eruptions, hurricanes, landslides, solar flares, and floods are natural disasters that affect our economy, public policy, and safety. Where, why and how frequently do natural disasters occur? Are predictions possible? Are media portrayals of risk and damage realistic? This course, aimed at the nonspecialist, investigates these intriguing questions. Excerpts of "disaster films", in conjunction with lectures and discussions are used to identify the causes, consequences and sometimes erroneous perceptions of natural hazards. Examples from Atlantic Canada and contemporary disasters are used to assess local risk and real-time events worldwide.
CROSSLISTED: GEOG 1060.03 PREREQUISITES: none
FORMATS: Lecture

ERTH 1080 Geology I
CREDIT HOURS: 3
This course focuses on the solid earth (geosphere) and how it evolved throughout earth's vast history, and continues to evolve today. The processes involved are recorded in the rocks and minerals of our earth, and we explore these natural processes and materials as a way to understanding our earth.The course meets the needs of students who require a science course with a lab component, is a required prerequisite course for all Earth Science majors, and serves as an introduction for all those interested in Earth Science. No previous knowledge of geology is required.
FORMATS: Lecture | Lab PREREQUISITES: none

ERTH 1090 Geology II
CREDIT HOURS: 3
Earth systems introduced in Geology I are explored in greater detail, with an emphasis on change through time, earth resources, and on geologic systems that are connected to human actions. This course provides a strong background to pursue further work in the environmental sciences and is the required course for Earth Sciences majors.
PREREQUISITES: ERTH 1080 is a pre- or co-requisite for ERTH 1090 or ERTH 1091.
FORMATS: Lecture | Lab
FORMATS: *ERTH 1091* is the same course, but without a lab

ERTH 2001 Mineralogy
CREDIT HOURS: 3
Earth Materials Science I ERTH 2001 introduces the chemical/physical properties of minerals, their origins and distribution. Labs include mineral identification, crystal chemistry, crystallography, and optical mineralogy. X-ray diffraction and electron microprobe methods are introduced.
PREREQUISITES: ERTH 1080.03 (or SCIE 1505) and (ERTH 1090.03 or ERTH 1091.03) (or SCIE 1515 or SCIE 1530) and CHEM 1011.03/CHEM 1012.03 or CHEM 1021.03/CHEM 1022.03: Chemistry majors should consult the department. Students who have not taken CHEM 1011.03 (or equivalent) are encouraged to take this concurrently.
FORMATS: Lecture | Lab

ERTH 2002 Introduction to Petrology
CREDIT HOURS: 3
Through a thorough and systematic examination of hand specimens and thin sections, and the detailed description of mineral assemblages and textures, students will be able to formally classify a wide range of igneous, metamorphic and sedimentary rock types. Case studies representing the geology of Nova Scotia will also be presented.
PREREQUISITES: ERTH 2001.03 and CHEM 1011.03/CHEM 1012.03 or CHEM 1021.03/CHEM 1022.03
FORMATS: Lecture | Lab

ERTH 2020 Journey Through The Solar System
CREDIT HOURS: 3
An introduction to the geological features of the planets, asteroid belt, and major satellites of our solar system, and the current understanding as to their formation. The course uses the earth as an analog to compare the landforms, and both the measured and inferred geology of the solar system.
CALENDAR NOTES: There are no prerequisites, however a basic understanding of mathematics and the physical sciences is required.
RESTRICTIONS: Restricted from students in first year (E1).
FORMATS: Lecture | Online Delivery

ERTH 2110 Field Methods
CREDIT HOURS: 3
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.
PREREQUISITES: ERTH 1080.03 (or SCIE 1505) and (ERTH 1090.03/1091.03)
RESTRICTIONS: Restricted to Majors in Earth Sciences
FORMATS: Lecture | Lab

ERTH 2203 Sediments and Sedimentary Rocks
CREDIT HOURS: 3
The course deals with physical, chemical and biological processes that generate modern sediments, and their conversion to sedimentary rocks through time. Labs provide a practical introduction to sediment analysis and to a range of sedimentary structures and rock types. Fieldwork may include description of beaches and bedrock in Nova Scotia.
PREREQUISITES: ERTH 1080.03 (or SCIE 1506.09/1507.09 or SCIE 1505.18) and (ERTH 1090.03 or ERTH 1091.03)
FORMATS: Lecture | Lab

ERTH 2270 Introduction to Applied Geophysics
CREDIT HOURS: 3
An Introduction to using physical principles to explore the Earth's subsurface, with an emphasis on near-surface applications. Topics include seismic, gravity, magnetic, electrical, and electromagnetic surveying techniques, and their application in prospecting, hydrogeology, environmental assessments, and well-logging. The geophysics field school, normally conducted during the last week of April, is an integral part of this course.
PREREQUISITES: ERTH 1080 (or SCIE 1505) and first year Mathematics (MATH 1000) and Physics (PHYC 1190/ 1290 or PHYC 1300X/Y), or SCIE 1515Y, or SCIE 1530Y
CROSSLISTED: PHYC 2270.03
FORMATS: Lecture | Tutorial

ERTH 2380 Geochemistry
CREDIT HOURS: 3
An introduction to the principles of chemistry applied to geologic systems, including an overview of the chemistry of rocks and minerals, isotopes in the geologic environment, processes that control the release and mobility of contaminants in the environment, and the use of geochemical data in solving geologic and environmental problems.
PREREQUISITES: ERTH 1080/(ERTH 1090 or 1091) or SCIE 1515 or SCIE 1530, and ERTH 2001 & CHEM 1011/CHEM 1012 or equivalent, or permission of the instructor
FORMATS: Lecture | Tutorial

ERTH 2410 Environmental Issues in Earth Sciences
CREDIT HOURS: 3
Geology underlies many of the environmental problems facing humans today. Topics include environmental aspects of energy and mineral resource, geologic hazards, geologic connections to pollution and waste disposal, and the role that water plays in its various guises. Canadian examples are incorporated where appropriate. Approved with Canadian Studies.
PREREQUISITES: One of: ERTH 1080, ERTH/GEOG 1030, ERTH/GEOG 1060, ENVS 1000 or ENVS 1100 or ENVS 1200, SUST 1001 with a grade of B or above, or DISP with Earth Sciences
CROSSLISTED: CANA 2410, ENVS 2410
EXCLUSIONS: This class is not available for Earth Sciences Majors
FORMATS: Lecture

ERTH 2420 Dinosaurs
CREDIT HOURS: 3
Students will consider the origin, evolution and extinction of non-avian dinosaurs. What are dinosaurs? Why were some dinosaurs so big? What did dinosaurs eat? How fast could dinosaurs run? Were dinosaurs good parents? To answer these questions, we will examine the nature of evidence gathered from dinosaur fossils and their surrounding rocks.
PREREQUISITES: ERTH 1080.03 or any two of ERTH 1010, ERTH 1020, ERTH 1030, ERTH 1040, ERTH 1041, ERTH 1050, ERTH 1060, ERTH 1090, ERTH 1091, or SCIE 1515, SCIE 1515 or SCIE 1530, or permission of instructor
FORMATS: Lecture

ERTH 3002 Introductory Field School
CREDIT HOURS: 3
This course provides two weeks of geological mapping in the field and entails: (1) identifying, measuring and localizing rocks and geological structures; (2) drawing geological maps from field observations and (3) writing a report describing and interpreting the data.
CALENDAR NOTES: The class is held at the end of summer before regular classes in the fall term and required for BSc Major and Honours programs.
PREREQUISITES: ERTH 2002.03, ERTH 2110.03, ERTH 2203.03

ERTH 3010 Igneous Petrology
CREDIT HOURS: 3
Igneous petrology is the study of the field relations, mineralogy, texture, and geochemistry of volcanic and plutonic rocks. Lectures discuss the classification and graphical representation of igneous rocks; the production, differentiation, and emplacement of magma in different tectonic environments. Practical work consists of laboratory petrographic examination and weekend field trips.
PREREQUISITES: ERTH 2002.03 and ERTH 2380.03
FORMATS: Lecture | Lab

ERTH 3020 Metamorphic Petrology
CREDIT HOURS: 3
Metamorphic petrology is the study of the way in which pre-existing igneous, sedimentary, and metamorphic rocks respond to changes in pressure, temperature, and geochemical environment. Metamorphic reactions, deformation and recrystallization, the stability relations of minerals and mineral assemblages under various physical and chemical conditions, and the concept of metamorphic facies are discussed. The relationship of metamorphism to other geological processes is considered. In the labs, microscopic mineralogy and texture are used to decipher the metamorphic history of rocks.
PREREQUISITES: ERTH 3010.03
FORMATS: Lecture | Lab

ERTH 3140 Structural Geology
CREDIT HOURS: 3
Introduction to the behaviour of rocks during deformation, stressing the geometrical aspects of rock structures. Students learn: (a) geometrical principles to identify, describe, and interpret common types of structures in outcrop and hand sample; (b) to interpret the mechanical properties of rocks based on their microstructure; (c) construction techniques to calculate and interpret stress and strain in deformed rocks.
PREREQUISITES: ERTH 2002.03, ERTH 2110.03, ERTH 2203.03
FORMATS: Lecture | Lab

ERTH 3205 Paleobiology
CREDIT HOURS: 3
This course examines fossil plants and animals and their interactions with the physical world throughout Earth history. Lectures and laboratories encompass the concepts of fossil preservation, fossil morphology, fossil identification, systematics, evolution, extinction, paleoecology and biostratigraphy.
PREREQUISITES: ERTH2203.03 or permission of the instructor
EXCLUSIONS: ERTH2205.03
FORMATS: Lecture | Lab

ERTH Course Descriptions

ERTH 3270 The Solid Earth
CREDIT HOURS: 3
This course aims to understand the structures and dynamics of the Solid Earth system from the surface to the inner core and from the ocean to the continent. Topics covered will include the internal structure of the Earth, plate tectonics, earthquakes, seismology, gravity, magnetic field, heat flow, and mantle convection.
PREREQUISITES: MATH 1000 (or 1215), MATH 1010, PHYC 1190/1290 (or 1310/1320)
CROSSLISTED: PHYC 3270, OCEA 3270
FORMATS: Lecture | Tutorial

ERTH 3302 Quaternary Sedimentary Environments
CREDIT HOURS: 3
The student is exposed to fluvial, alluvial, subglacial, glaciolacustrine, hillslope, eolian, coastal, shallow marine, rift, wedge top, retroarc, and foreland basin environments. Field trips and labs provide experience in methods used to distinguish the environments, including sedimentology, geomorphology, geochronology and thermochronology, and analysis of soils, cores, pebble fabrics, and section-scale non-petroleum sedimentary facies. Quaternary paleoclimatology and tectonic controls on weathering and deposition are discussed and debated.
PREREQUISITES: ERTH 2203.03
CROSSLISTED: GEOG 3302
FORMATS: Lecture | Lab

ERTH 3303 Stratigraphy
CREDIT HOURS: 3
Stratigraphy is the backbone of the geological sciences; it brings together sedimentology, paleontology, petrology and structural geology to reconstruct Earth history. We survey the impact of sea-level change, tectonics and climate on sediment accumulation, with emphasis on seismic and sequence stratigraphy. Case studies focus on sedimentary basins across Canada, and practical work includes laboratory and class exercises, as well as field excursions.
PREREQUISITES: ERTH 2203.03
FORMATS: Lecture | Lab

ERTH 3401 Hydrogeology
CREDIT HOURS: 3
Hydrogeology examines the space-time characteristics of groundwater quantity and quality. It includes physical processes occurring in natural groundwater systems and the governing relations for flow and transport; emphasizing Darcy's Law, steady state and transient flow. It provides an overview of groundwater resource development, evaluation, contamination, and remediation.
PREREQUISITES: ERTH 3701 or permission of instructor
EXCLUSIONS: ERTH 3400.03, ERTH 3402.03
FORMATS: Lecture | Lab

ERTH 3420 Geochemistry of Aquatic Environments
CREDIT HOURS: 3
Given the abundance of water at the earth's surface and the wide use both humans and other organisms make of aqueous environments, it becomes imperative for environmentally-oriented scientists to understand the chemistry of natural bodies of water. In particular, we need to comprehend the processes that lead to the observed composition of groundwaters, lakes, rivers and oceans. We also need to be aware of how man's activities can alter these natural systems. Water is also an agent for geologic and environmental change, both on short and long time-scales. Earth and environmental scientists should have an appreciation of these processes (sources, sinks and transport mechanisms) and the resulting geological cycles. This course is an introduction to the governing principles and processes of aquatic geochemistry. Specific topics will include physical chemistry of natural waters, kinetics (mechanisms & rates) of geochemical reactions, the hydrologic cycle, the dissolved carbonate system and pH controls, redox reactions and the influence of life, rainwater and acid rain, weathering and the formation of soils, mineral-solution equilibria, controls on the composition of rivers, lakes and oceans, sediments and their after-burial changes, and the global cycles of carbon, nitrogen, and sulfur. Students will be taught to approach problems quantitatively through the principles of mass action (Eh-pH and activity-diagrams) and of mass balance (box models and conservation equations).
CALENDAR NOTES: This course is not offered every year.
PREREQUISITES: CHEM 1011.03/CHEM 1012.03 or equivalent and ERTH 1080/(ERTH 1090 or ERTH 1091) or ERTH 1010/ERTH 1020
CROSSLISTED: OCEA 3420.03
FORMATS: Lecture

ERTH 3440 Geomorphology
CREDIT HOURS: 3
Geomorphology is the quantitative study of Earth's surface processes and landforms with applications in geology, civil engineering, hydrogeology, and environmental management. We investigate slope stability, weathering and soils, sediment production, wind-driven and coastal environments, tectonic landforms, and river, glacial and permafrost processes.
PREREQUISITES: ERTH 1080 (or SCIE 1506/1507 or SCIE 1505) and (ERTH 1090 or ERTH 1091); OR completion of (or concurrent enrolment in) a 1000-level mathematics class, a 1000-level physics class, a 1000-level chemistry class AND permission of instructor
CROSSLISTED: GEOG 3440.03
FORMATS: Lecture

ERTH 3500 Geoscience Information Management
CREDIT HOURS: 3
Geographic Information Systems (GIS), as a tool for the management of georeferenced data, have become indispensable for disciplines where location of objects and pattern of processes is important. GIS plays a significant role a wide range of applications, from modeling, to analysis and predictions, to decision making. The course is aimed at a broad base of potential users and draws on examples of the role of GIS in global climate change, mineral exploration, preservation of biodiversity, coastal zone management, resource depletion, and many other present and future environmental issues. The course material will be of interest to those studying geoscience, environmental science, ecology, marine biology, oceanography, epidemiology, urban and rural planning, civil engineering, and any other field involving spatial data. Laboratory exercises emphasize the principles of raster and vector GIS, and the integration of databases and GPS (global positioning systems) data into GIS. Exercises draw on the diversity of GIS applications in a number of application areas.
PREREQUISITES: Two years of university study or equivalent or instructor's permission
CROSSLISTED: ERTH 5600, GEOG 3500, ENVS 3500
FORMATS: Lecture | Lab

ERTH 3601 Global Biogeochemical Cycles
CREDIT HOURS: 3
We currently face daunting environmental challenges at the global scale that are expected to worsen in the 21st century, including a global water crisis, climate change and pollution of our waters and atmosphere; this course examines the science behind these environmental issues from the multi-disciplinary framework of global biogeochemical cycling. With the global scale as the focus, this course pulls together the many disparate fields that are encompassed by the broad reach of biogeochemistry. You will learn about the processes that drive the movement of carbon, water, nitrogen, phosphorus, and sulphur, through the earth system, and the residency of these elements in the atmosphere, soils, lithosphere, oceans and freshwaters. In the quantitative and analytical exercises, you calculate and compare the effects of industrial emissions, land clearing, agriculture, and rising population on the processes driving the Earth's chemical cycles. Weekly journal readings for discussion in laboratory group cover the latest developments in this exciting and rapidly changing field. This course provides an excellent framework for those interested in the science of global change.
PREREQUISITES: CHEM 1011/ CHEM 1012 or equivalent, and one of ENVS 1000, SUST 1001, ERTH 1080, or one of SCIE 1502XY/SCIE 1504/ SCIE 1510XY, and completion of 2 years of study.
CROSSLISTED: ENVS 3601.03

ERTH 3700 Earth Resources, Sustainability, and Society
CREDIT HOURS: 3
This course addresses the question: What do we need to know and understand about the nature and distribution of geologic resources to optimally reconcile mineral extraction with society's needs, considerations of the environment, and the sustainable development goals in a more sustainable, geoethical, and balanced approach, through the 21st century.
NOTES: Aimed as an elective course for majors in Earth Sciences and in Environmental Sciences. Must be third year students.
FORMAT: Seminar
PREREQUISITES: ERTH 1080 and 2 years of undergraduate study
CROSS-LISTING: GEOG 3700 ENVS 3700

ERTH 3701 Fundamentals of Hydrology
CREDIT HOURS: 3
This course is an introduction to hydrology, emphasizing surface processes and watershed responses. In this course we learn about both the pure and applied uses of hydrology. The course is quantitative and introduces hydrologic processes in the atmosphere, on the land surface, in groundwater and in stream channels.
PREREQUISITES: MATH 1000.03 or MATH 1215.03, AND one of ENVS 1100/1200 (or ENVS 1000), SUST 1001.06, ERTH 1080.03, SCIE 1506/1507 (or 1505), AND completion of 2 years of an undergraduate degree. PHYC 1190 and PHYC 1290.03 (or PHYC 1310/1320) are recommended.
CROSSLISTED: ENVS 3701.03
FORMATS: Lecture | Lab

ERTH 4001 Sponsored Geologic Experience
CREDIT HOURS: 1.5
These Field Trips &/or Laboratory Sessions Introduce students to some of the following: Practical exploration techniques, field and laboratory skills, familiarization with deposit models, related economic and environmental geology, and the business side of Earth-science industries.

ERTH 4005 Advanced Field School
CREDIT HOURS: 3
This course is a field-based learning experience focused on applying field and mapping methods to create geological maps and reconstruct geological histories from collected and interpreted data. Students will practice independent mapping, utilizing skills developed in earlier years. The primary goal is to reconstruct the geological history of a studied area by integrating field data with published peer-reviewed literature. This exercise fully integrates theoretical knowledge of Earth processes acquired during the first three years of the program.
NOTES: Daily independent field work 12 to 14 continuous days along the coast of the Northumberland straight in Antigonish County (Nova Scotia).
FORMAT COMMENTS: Field School; Experiential Learning Full-day excursions and overnight accommodations at Camp Geddie, a venue equipped with comprehensive lodging and workspaces suitable for lectures, study sessions, and large work tables for map drawing.
PREREQUISITES: ERTH 2110.03, ERTH2002, ERTH2203, ERTH3002, ERTH3140
RESTRICTIONS: Course mandatory for Earth Sciences Majors and Honors, opened to other students with prerequisites.

ERTH 4010 Advanced Topics in Petrology and Geochemistry
CREDIT HOURS: 3
This course advances students' knowledge of modern aspects of petrology, volcanology, and geochemistry, chosen to reflect instructor and students interests. The focus is on learning thermodynamic and computational methods as well as advanced petrographic work and field mapping for interpretation of igneous and metamorphic rocks.
CALENDAR NOTES: This course is not offered every year. Please consult department in the spring for further information.
PREREQUISITES: ERTH 3010, ERTH 3020, ERTH 3001
CROSSLISTED: ERTH 5010

ERTH 4101 Research Project
CREDIT HOURS: 3
This course allows students who are not in an Honours program to do a research project. See course description for ERTH 4201/4202.
CALENDAR NOTES: Credit can only be given for this course if ERTH 4101.03 and 4102.03 are completed in consecutive terms. No grade is assigned for ERTH 4101 until both ERTH 4101 and 4102 have been completed.

ERTH 4102 Research Project
CREDIT HOURS: 3
This course allows students who are not in an Honours program to do a research project. See course description for ERTH 4201.03/4202.03.
CALENDAR NOTES: Credit can only be given for this course if ERTH 4101.03 and 4102.03 are completed in consecutive terms. Credit cannot be given for a single term.
PREREQUISITES: ERTH 4101.03

ERTH Course Descriptions

ERTH 4110 Geological Oceanography
CREDIT HOURS: 3
This course provides a broad survey of geology and geophysics as they apply to the oceans. The course content covers methods and observations with quantitative applications to an understanding of marine geophysical and geological processes. The topics covered include the origin of ocean basins, plate tectonics, heat flow, gravity, and magnetics (1/3 of the course); patterns and processes of sediment transport and deposition, and the paleoceanographic reconstruction of past climates (2/3 of the course).
CALENDAR NOTES: Some training in calculus and statistics will prove to be advantageous.
PREREQUISITES: OCEA 2001.03/OCEA 2002.03 (or OCEA 2000.06); OCEA 2020.03; OCEA 2021.03; ERTH 1080.03 or equivalent; or permission of instructor.
CROSSLISTED: OCEA 5110.03; OCEA 4110.03

ERTH 4131 Advanced Petroleum Geoscience
CREDIT HOURS: 3
This is an advanced course in petroleum geoscience applications and interpretation of basin/prospect evaluation. Students work in a team interpreting industry data, including well logs and reflection seismic, in a competitive environment. The team submits its findings and recommendations in written and oral presentations.
PREREQUISITES: ERTH 3303.03, ERTH 4153.03, or permission of the instructor
CROSSLISTED: ERTH 5131.03
FORMATS: Lecture

ERTH 4151 Mineral Deposits
CREDIT HOURS: 3
This course is an introduction to the geology of metallic ore and some industrial mineral deposits. Emphasis is given to the ore formation processes that lead to the economic concentrations of commodities. The course integrates many Earth Science disciplines. Laboratory work introduces ore study in reflected light microscopy.
CALENDAR NOTES: This course is not offered every year. Please consult department in the spring for further information.
PREREQUISITES: ERTH 3010.03, 3140.03
CROSSLISTED: ERTH 5151.03
FORMATS: Lecture | Lab

ERTH 4153 Petroleum Geology and Energy Systems
CREDIT HOURS: 3
The course provides an introduction to petroleum geology (gas and oil) with some discussion of alternative energy sources. The course provides an introduction to petroleum geology and petroleum systems with discussion of basin analysis, source rock evaluation, seismic and well log sequence stratigraphy, core and outcrop description, depositional facies analysis, oil sands geology, biostratigraphy, drilling and completions, petrophysics and well log analysis in addition to other topics.
PREREQUISITES: ERTH 2270.03, ERTH 3140.03, ERTH 3303.03
FORMATS: Lecture | Lab

ERTH 4157 Petroleum Geoscience Field Methods
CREDIT HOURS: 3
This course provides an advanced-level overview of petroleum systems and petroleum geology field methods including basin analysis, source rock evaluation, seismic and well log sequence stratigraphy and depositional facies analysis, biostratigraphy, drilling and completions, petrophysics and well log analysis in addition to other topics. The course comprises lecture, presentations, and a one week field seminar.
PREREQUISITES: ERTH 3303.03 and ERTH 4153.03 and permission of instructor

ERTH 4201 Honours Thesis
CREDIT HOURS: 3
This course covers many aspects of written and oral communication of scientific material. In particular, it covers the scientific method, the elements of scientific style, the logical organization and development of ideas and scientific writing. Individual research presentations form a key component.
CALENDAR NOTES: This is a compulsory course for students writing an Honours thesis in Earth Sciences, but is open to students from other disciplines. Field work may be part of thesis research. Credit can only be given for this course if ERTH 4201.03 and 4202.03 are completed in consecutive terms. No grade is assigned for ERTH 4201 until ERTH 4202 has also been completed.
FORMATS: Lecture

ERTH 4202 Honours Thesis
CREDIT HOURS: 3
This course covers many aspects of written and oral communication of scientific material. In particular, it covers the scientific method, the elements of scientific style, the logical organization and development of ideas and scientific writing. Individual research presentations form a key component.
CALENDAR NOTES: This is a compulsory course for students writing an Honours thesis in Earth Sciences, but is open to students from other disciplines. Field work may be part of thesis research. Credit can only be given for this course if ERTH 4201.03 and 4202.03 are completed in consecutive terms.
FORMATS: Lecture

ERTH 4320 Seafloor Mapping
CREDIT HOURS: 3
A fourth-year undergraduate course on ocean mapping technologies and techniques for study of the seabed environment. Acoustic remote sensing technologies, ground-validation techniques, and data processing and integration methods using geospatial software are covered. The focus of the course is on how these approaches are used to study and map the geology and biology of the ocean floor.
FORMAT COMMENTS: A combination of lectures and computer labs throughout the semester
LECTURE HOURS PER WEEK: 2
LAB HOURS PER WEEK: 2
PREREQUISITES: ERTH 3500.03
CROSS-LISTING: OCEA 4320.03, OCEA 5320.03

ERTH 4350 Tectonics
CREDIT HOURS: 3
This course is intended to synthesize the various aspects of geology covered in the third-year core program. The focus of the course is on tectonic processes and the ways in which these processes create and modify the Earth's crust. We cover the fundamental geological, geophysical, and geochemical controls that operate today, including pate tectonics, and the ways in which these might have differed in the geological past. The tectonic evolution of specific orogenic belts is discussed, including both modern and ancient examples in Canada and other parts of the world.
PREREQUISITES: ERTH 2270.03, 3140.03
CROSSLISTED: ERTH 5350.03

ERTH 4410 Environmental Geoscience
CREDIT HOURS: 3
Environmental geoscience integrates various aspects of earth sciences to critically examine the interaction between humans and the geologic environment. Topics include: environmentally sensitive elements and minerals, geologic hazards, water, soil, mineral and energy issues, use of isotopes as tracers, as well as waste management, radioactivity, and the urban environment.
CALENDAR NOTES: This course is not offered every year. Please consult department in the spring for further information.
COREQUISITES: ERTH 2380.03
PREREQUISITES: ERTH 2380.03, ERTH 3303.03 and two additional ERTH courses at the 3000 level or above, or permission of instructor
RESTRICTIONS: Restricted to students in third year or above.

ERTH 4460 Geochronology and Thermochronology
CREDIT HOURS: 3
Earth and Planetary Sciences extensively use the radioactive decay and growth of naturally occurring nuclides to quantify the timing and rates of geological processes. This course introduces the fundamentals of Geochronology and Thermochronology including the principles, analytical methods and application of several of the most widely applied geo- and thermochronometers.
FORMAT: Online Delivery
PREREQUISITES: ERTH 2380.03, ERTH 2002.03 and one course out of MATH 1000.03, PHYC 1190.03 or PHYC 1290.03.
CROSS-LISTING: ERTH 6400.03

ERTH 4470 Introduction to Seismic Imaging
CREDIT HOURS: 3
This course teaches the basic techniques of the reflection seismic method for imaging of earth structures such as those used in hydrocarbon exploration. Lectures introduce concepts and techniques that are applied in computer lab to the processing of a multi-channel seismic dataset. Concepts covered include: source and receiver geometry, digital filtering, deconvolution, velocity analysis, stacking, and migration.
PREREQUISITES: ERTH 2270.03 or consent of instructor
CROSSLISTED: ERTH 5470.03, OCEA 4470.03, PHYC 4470.03, PHYC 5470.03
FORMATS: Lecture | Lab

ERTH 4510/4511 Directed Readings
This course is intended to permit further study of a specific topic of interest, or to correct a deficiency in a student's program. The course is supervised by a regular faculty member and the course content and marking scheme must be submitted to and approved by the chairperson in the first week of classes. Note: Further guidelines for directed reading courses are available from the undergraduate advisor or the Earth Sciences office. CREDIT HOURS: 3
PREREQUISITES: Permission of Department

ERTH 4520 GIS Applications to Environmental and Geological Sciences
CREDIT HOURS: 3
Geographic information systems (GIS) provide a rich set of new tools to the geologist and environmental scientist, not only to solve conventional problems, but also to explore transdisciplinary questions not readily answered by other means. This course builds on the fundamentals of GIS taught in ERTH 3500.03 to explore analytical tools that aid in decision-making processes encountered in mineral exploration, hydrogeology, site selection, environmental assessment, and global change analysis. The course concentrates on case studies and problem solving, including those requiring multi-criteria and multi-objective decision making processes.
PREREQUISITES: GEOG 3500.03, ENVS 3500.03, ERTH 3500.03; ERTH 5600.03, or SCIE 3600.03; STAT 1060.03
CROSSLISTED: GEOG 4520.03, ERTH 5520.03
FORMATS: Lecture | Lab

ERTH 4530 Environmental Remote Sensing
CREDIT HOURS: 3
The goal of this course is to introduce students to the role of remote sensing as a technique provide environmental and geologic information. Particular emphasis will be placed on examining the potential and limitations of remote sensing methods and data in this context. The lectures discuss the fundamentals of remote sensing with an emphasis on optical multi-spectral satellite systems. In the lab, students use computerized techniques of digital image enhancement and thematic information extraction to process images derived from a range of remote-sensing systems. The integration of remote-sensing information with GIS (Geographic Information Systems) is stressed in both the labs and lectures.
CALENDAR NOTES: This course is not offered every year. Please consult department in the spring for further information.
PREREQUISITES: ERTH 3500.03, GEOG 3500.03, ENVS 3500.03 or ERTH 5600.03 or SCIE 3600.03
CROSSLISTED: GEOG 4530.03, ERTH 5530.03
FORMATS: Lecture | Lab

ERTH 4850 Geographic Information Science Research Project
CREDIT HOURS: 3
Students learn how to design, manage and complete a research project in Geographic Information Science (GIS). Projects must include a substantive analytical component where GIS is central to methods employed. Evaluation includes a written report, oral presentation and digital data. Required for completion of the Certificate in GIS.
COREQUISITES: ERTH 5420.03/GEOG 4520.03/ERTH4520.03
PREREQUISITES: ENVS 3500.03/ERTH 3500.03/GEOG 3500.03 and permission of instructor
CROSSLISTED: SCIE 4850.03, ENVS 4850,03, ERTH 4850.03, GEOG 4850.03
EXCLUSIONS: Restricted to 3rd and 4th year students
FORMATS: Lecture

Who do I speak to about…?

- General degree (e.g., BA, BSc, etc.) requirements?
  - Academic Advising (dal.ca/advising)
- Program requirements (e.g., Major, minor, honours, PGeo, etc.)?
  - Faculty Advisor (dal.ca/ees)
- Courses required to graduate?
  - Consult the Degree Audit Report System (DARS) through DalOnline and/or speak to an advisor (dalonline.dal.ca)
- Class offerings?
  - Consult the Academic Calendar (academiccalendar.dal.ca), speak to an advisor, or seek advice from other students (e.g., Undergraduate Dawson Society)
- Getting more involved?
  - Check out all our resources posted on our departmental website: dal.ca/ees