Earth Science / Environmental Science 1G03
Earth and the Environment
Course Outline
May 2018

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Introduction

What will we study?
This course will introduce students to the many dynamic geological processes that shape the Earth and its environments. The course begins with an examination of the composition of the Earth, plate tectonics, earthquakes and volcanism.

Students will learn the principles of mineral and rock identification, Earth movement and structure, and relative and absolute determination of geologic time. We will also explore surface processes connected with rivers, glaciers, and coastal environments and their impact on human populations and activities. The course is richly illustrated with both local and ‘global’ case studies and environmental applications.

Skills Development
Students will gain rock and mineral identification skills in both field and lab settings and will learn how to visualize and interpret 3-dimensional geologic structures. Topographic map reading skills will also be introduced and are required for labs involving topographic feature identification and interpretation. Students will gain valuable field skills through hydrologic investigation of Coldwater Creek.

Textbooks
2. Mineral Kit – Available at Campus Store
Lectures
Lectures will occur on Tuesday and Thursdays (1-4pm) in BSB B136. All students are expected to attend all lectures. Lectures will be made available on Avenue.  **It is the responsibility of the student to ensure that notes are obtained for any classes missed.**

Labs
Attendance at labs is mandatory, and you must attend the section assigned to you by the Registrar’s Office. Students who miss lab without appropriate documentation (ex. MSAF) will not be allowed to complete the lab.

Submitted Assignments will need to include ALL of the following information: name, student ID number, course name and number (i.e. Envir Sc 1G03), assignment number (e.g. Lab 1), name of your Teaching Assistant (TA), Lab section number or day/time of your lab section, and date. Assignments submitted without this information will be penalized; 10% of the mark obtained will be subtracted. No late assignments will be accepted.

Avenue Information (http://avenue.mcmaster.ca)
Avenue is an online system that will be used in this class for communicating information relating to the course (e.g. previous years’ tests and exams, field trip arrangements, quiz instructions, lab preparation etc.). Quizzes will be completed on Avenue. To log into Avenue, use your MUGSI login and password. See the Avenue homepage address above for more instructions if you need them. **You are required to log on to Avenue at least three times a week for course updates.**

If you encounter any technical problems with this service go to the following website for support: http://avenue.mcmaster.ca/help/.

**Please note that it is not the responsibility of the teaching staff of EARTH SC / ENVIR SC 1G03 to assist you with Avenue issues.**

Evaluation
Table:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Labs (6 @ 6%)</td>
<td>36%</td>
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<tr>
<td>Midterm</td>
<td>25%</td>
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<td>Final Exam</td>
<td>39%</td>
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<tr>
<td>Week 1</td>
<td>Lecture</td>
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<tr>
<td>Tuesday, May 1st</td>
<td>Introduction to the Course Earth's Composition</td>
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<td>Thursday, May 3rd</td>
<td>Plate Tectonics Revolution Plate Tectonics Theory</td>
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<td>Tuesday, May 8th</td>
<td>Lab 2 Intro: Sedimentary Rocks Magma and Igneous Settings Volcanoes</td>
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<td>Thursday, May 10th</td>
<td>Lab 3 Intro Part I: Igneous Rocks Earthquakes I, II</td>
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<td>Week 2</td>
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<td>Tuesday, May 15th</td>
<td>Geologic Structures Lab 3 Intro Part II: Metamorphic Rocks Midterm Review</td>
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<td>Thursday, May 17th</td>
<td>Midterm</td>
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<td>Week 3</td>
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<td>Tuesday, May 22nd</td>
<td>Geologic Time I, II Lab 4 Intro: Earthquakes</td>
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<td>Thursday, May 24th</td>
<td>Geologic Resources I and II Mass Movement I and II</td>
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<td>Week 4</td>
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<td>Tuesday, May 29th</td>
<td>Lab 5 Intro: Cross Sections and Geologic Structures Groundwater I</td>
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<td>Thursday, May 31st</td>
<td>Streams I, II, III</td>
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<td>Week 5</td>
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<td>Tuesday, June 5th</td>
<td>Lab 6 Intro: McMarsh Hydrology Oceans and Coasts I, II</td>
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<td>Thursday, June 7th</td>
<td>Glaciers I, II</td>
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<td>Week 6</td>
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<td>Tuesday, June 12th</td>
<td>Global Change and Review</td>
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<td>Thursday, June 14th</td>
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This lecture schedule is only a guideline and may be modified during the course of the class.
* Please note that Lab introductions do not always occur in the week before the lab. Before attending labs, please review lab introductions, relevant lectures, and read through the lab material.

**Missed Work**
If you are absent from the university for a medical or non-medical (personal) reason, lasting fewer than 3 days, you may report your absence, once per term, without documentation, using the McMaster Student Absence Form (MSAF). Absences for a longer duration must be reported to your Faculty/Program office, with documentation, and relief from term work may not necessarily be granted. When using the MSAF, report your absence to leonil@mcmaster.ca or paddenm@mcmaster.ca. You must then contact your instructor (Lisa Leoni or Dr. Maureen Padden) immediately (normally within 2 working days) by email at leonil@mcmaster.ca or paddenm@mcmaster.ca to learn what relief may be granted for the work you have missed, and relevant details such as revised deadlines, or time and location of a make-up exam. Please note that the MSAF may not be used for term work worth 25% or more, nor can it be used for the final examination. For more information see the section ‘Request for Relief of Missed Academic Term Work’.

**Course Contract and Academic Integrity**
All students are required to read and understand the Student Responsibility Contract included in this outline (a copy can also be found in your courseware). This contract is a component of the course outline, and extends as well as specifies a number of course policies students must be aware of.

**Academic Dishonesty**
You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the University.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at http://www.mcmaster.ca/academicintegrity

The following illustrates only three forms of academic dishonesty:
1. Plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.

In this course we will be using Avenue. Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

_The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes._

Requests for Relief for Missed Academic Term Work

The University recognizes that students periodically require relief from academic work for medical or other personal situations. This academic regulation aims to manage these requests by taking into account the needs and obligations of students, instructors and administrators. It is the prerogative of the instructor of the course to determine the appropriate relief for missed term work in his/her course. Any concerns regarding the granting of relief should be directed to the respective Faculty Office. Requests for relief should be made with a commitment to academic integrity in mind. Requests that deviate from this commitment will be handled under the Academic Integrity Policy and Student Code of Conduct, where appropriate.

1. Relief for missed academic work worth less than 25% of the final grade resulting from medical or personal situations lasting up to three calendar days:
   - Use the McMaster Student Absence Form (MSAF) on-line self-reporting tool. No further documentation is required.
   - Students may submit requests for relief using the MSAF once per term.
   - An automated email will be sent to the course instructor, who will determine the appropriate relief. Students must immediately follow up with their instructors. Failure to do so may negate the opportunity for relief.
   - The MSAF cannot be used to meet a religious obligation or to celebrate an important religious holiday.
   - The MSAF cannot be used for academic work that has already been completed/attempted.
• An MSAF applies only to work that is due within the period for which the MSAF applies, i.e. the 3-day period that is specified in the MSAF; however, all work due in that period can be covered by one MSAF.

• The MSAF cannot be used to apply for relief for any final examination or its equivalent. See Petitions for Special Consideration above.

2. For medical or personal situations lasting more than three calendar days, and/or for missed academic work worth 25% or more of the final grade, and/or for any request for relief in a term where the MSAF has been used previously in that term:

• Students must report to their Faculty Office to discuss their situation and will be required to provide appropriate supporting documentation (see Documentation Requirements below).

• If warranted, the Faculty Office will approve the absence, and the instructor will determine appropriate relief.

Documentation Requirements
If the reason for a request for relief is medical, the approved McMaster University Medical Form covering the relevant dates must be submitted. The student must be seen by a doctor at the earliest possible date, normally on or before the date of the missed work and the doctor must verify the duration of the illness.

If the reason is non-medical, appropriate documentation with verifiable origin covering the relevant dates must be submitted, normally within three working days.

In some circumstances, students may be advised to submit a Petition for Special Consideration (Form A) seeking relief for missed academic work. In deciding whether or not to grant a petition, adequacy of the supporting documentation, including the timing in relation to the due date of the missed work and the degree of the student’s incapacitation, may be taken into account. Failure to do so may negate the opportunity for relief.

If the petition is approved, the Faculty Office will notify the instructor(s) recommending relief. It is the prerogative of the instructor of the course to determine the appropriate relief for missed term work in his/her course.
Careers for Earth Scientists

After you finish your Earth and Environmental Science degree, you may choose to continue research in a graduate program or as a government scientist. But for earth scientists with an undergraduate degree, there are also many jobs available in the private sector.

Students graduating from our Earth and Environmental Science program have the academic requirements to be certified as Professional Geoscientists. Our students become members of a professional association (Association of Professional Geoscientists of Ontario: www.apgo.net) and the process is similar to certifying Professional Engineers. This is the only program in the Faculty of Science where you can become a certified professional.

Earth Science graduates are especially in demand in 3 sectors:

1. Environmental Consulting
2. Energy Resources
3. Mineral Resources

The need in these sectors for qualified earth and environmental scientists means that our students are often able to find well-paid summer work in their discipline and virtually all of our students find related work after completing an honours B.Sc. degree.

We’ll be posting information on the avenue site to give you some idea of the positions available in this field and some websites to explore career options.

Association of Professional Geoscientists of Ontario

All geoscientists working in Ontario must be certified as Professional Geoscientists (P.Geo). The Honours Earth & Environmental Sciences (B.Sc.) fulfills educational requirements for professional certification. Students who registered in this program prior to January 2008, must meet the Minimum Knowledge requirements of the APGO (Association of Professional Geoscientists of Ontario). These requirements can be found here (include link to www.apgo.net).

Students who registered in the Honours Earth and Environmental Sciences (B.Sc.) as of January 2008, must meet the new knowledge requirements adopted by the CGSB (Canadian Geoscience Standards Board) in November 2007.

These requirements are indicated below, with the relevant courses offered by the School of Geography and Earth Sciences indicated between parentheses.

Compulsory Foundation Science (1 course in each area): Chemistry, Mathematics, Physics
Additional Foundation Science (6 courses in total, with no more than 2 courses in any one subject): Biology, Chemistry, Mathematics, Physics, Statistics

Compulsory Geoscience (1 course in each area):
- Field Techniques (Earth Sc 3FE3)
- Mineralogy and Petrology (Earth Sc 2K03)
- Sedimentation and Stratigraphy (Earth Sc 2E03)
- Structural Geology (Earth Sc 3Z03)

Additional Geoscience courses must be taken (minimum of 5 from 3 sub-groups in total; a minimum of 1 and at most 2 from each sub-group).

For the CGSB Geology specialization, the subgroups are:
- Geochemistry (Earth Sc 2Q03) or Geophysics (Earth Sc 3V03)
- Igneous or Metamorphic Petrology (Earth Sc 3K03)
- Sedimentology (Earth Sc 3E03), Glacial Geology (Earth Sc 4G03), Remote Sensing (Earth Sc 3SR3)

For the CGSB Environmental Geoscience specialization, the subgroups are:
- Geochemistry (Earth Sc 2Q03) or Geophysics (Earth Sc 3V03)
- Hydrogeology (Earth Sc 3W03) or Hydrology (Earth Sc 2W03)
- Glacial Geology (Earth Sc 4G03), Geomorphology (Earth Sc 2G03), Remote Sensing (Earth Sc 3SR3)

A minimum of 9 other Geoscience courses must be taken. Extra courses not used to meet the requirements listed above can be used to satisfy this set of knowledge requirements.

APGO Knowledge Requirement Tool Kit
We encourage students to register for Student Membership (it’s free) so that they can continually update/save their progress in the Knowledge Requirement Toolkit, and it also allows them to correspond with the Registrar should they have any questions about their courses/self-assessment. The link to the Student application is as follows: https://portal.apgo.net/mpower/ktoolkit/toolkit-register.action

Non-student members can access the Knowledge Requirement Tool kit at the following link: https://portal.apgo.net/mpower/ktoolkit/public-requirements.action (Non-student members are not able to update/save their progress, but can save/print it for their own records.)