

Earth Science 1G03
Earth and the Environment
Course Outline
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Instructor:

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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 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 in geological observation, recording, and interpretation through 2 field-based labs: geologic field work at the Rock Chapel outcrop and a hydrologic investigation on campus.

Textbooks and Equipment

1. Marshak, Stephen. (2016). *Essentials of Geology, 5th Edition*. New York: Norton & Company, Inc.

Earlier editions are also fine.

2. Custom Courseware, Earth Science 1G03 Lab Manual.

Please don't buy any "used" courseware packages. The custom courseware includes pages you will need to submit and changes every year.

3. Mineral Kit – Available at Campus Store

Lectures

Lectures will occur on Monday at 12:30, Tuesday at 1:30 and Thursday at 12:30 in LRW B1007 as per the attached schedule. 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. EarthSc 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 twice 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/>.

Evaluation

Labs (4 @ 2.5%, 5 @ 5%)	35%
Midterm (2 @ 15%)	30%
Final Exam	35%

EarthSc 1G03

Lecture and Lab Schedule 2017

Week of:	Week-day	Lecture Topics	Labs, Quizzes, and Field Trips	Readings
Sept. 4 Sept. 6	Mon Tues Thurs	Introduction to Course Plate Tectonics I Plate Tectonics II	No labs AIR QUIZ – due by Fri. Sept 21st at 4:30pm	Prelude, Chapter 1, 2
Sept. 10 Sept. 11 Sept. 13	Mon Tues Thurs	Plate Tectonics III Plate Tectonics IV <i>Lab 1 Intro: Mineral ID*</i>	No labs	Chapters 2, 3
Sept. 17 Sept. 18 Sept. 20	Mon Tues Thurs	<i>Lab 2 Intro: Igneous Rocks*</i> Volcanoes I Volcanoes II	Lab 1: Mineral ID - due at end of your lab period	Chapters 4, 5
Sept. 24 Sept. 25 Sept. 27	Mon Tues Thurs	Earthquakes I <i>Lab 3 Intro: Sedimentary Rocks*</i> Midterm Review	Lab 2: Igneous Rock ID – due at the end of your lab period	Chapters 8, 6
Oct. 1 Oct. 2 Oct. 4	Mon Tues Thurs	Earthquakes II MIDTERM 1 <i>Lab 4 Intro: Local Area Environment*</i>	Lab 3: Sedimentary Rock ID – due at the end of your lab period	
Oct. 8 Oct. 9 Oct. 11	Mon Tues Thurs	BREAK WEEK		No Labs
Oct. 15 Oct. 16 Oct. 18	Mon Tues Thurs	Geologic Structures Geologic Time I <i>Lab 5 Intro: Metamorphic Rocks*</i>	Lab 4: Local Area Field Trip – Field Trip takes place during the lab period – lab due at the end of the lab period	Chapters 7, 9, 10
Oct. 22 Oct. 23 Oct. 25	Mon Tues Thurs	Geologic Time II Streams and <i>Lab 6 Intro: McMarsh*</i> Streams II	Lab 5: Metamorphic Rock ID – due at end of lab period	Chapters 10, 14 Interlude F
Oct. 29 Oct. 30	Mon Tues	Streams III Groundwater I	Lab 6: McMarsh Hydrology – due at the end of lab period	Chapters 14, 16

Nov. 1	Thurs	<i>Lab 7 Intro: Groundwater*</i>		
Nov. 5 Nov. 6 Nov. 8	Mon Tues Thurs	MIDTERM 2 <i>Lab 8 Intro: Topographic Maps*</i> Mass Movement I Video: Rissa Quick Clay	Lab 7: Earthquakes – <i>due at the end of lab period</i>	Chapter 13 Interlude F
Nov. 12 Nov. 13 Nov. 15	Mon Tues Thurs	Mass Wasting II Geologic Resources I Geologic Resources II	No labs Lab 8 Pre-Lab QUIZ – <i>due by Mon. Nov 19th at 8:30am on Avenue</i>	Chapter 12, 13
Nov. 19 Nov. 20 Nov. 22	Mon Tues Thurs	Oceans and Coasts I Oceans and Coasts II <i>Lab 9 Intro: Geologic Structures*</i>	Lab 8: Understanding Topographic Maps – <i>due at end of lab period – takes place in Lloyd Reeds Map Collection in Mills Library</i>	Chapters 15, 9
Nov. 26 Nov. 27 Nov. 29	Mon Tues Thurs	Glaciers I Glaciers II GIS guest lecture	Lab 9: Geologic Structures - <i>due at the end of the lab period- takes place in GSB 330</i>	Chapter 18
Dec. 3 Dec. 4	Mon Tues	Global Change and Review	No labs	Chapter 19

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 paddenm@mcmaster.ca. You must then contact your instructor (Dr. Maureen Padden) immediately (normally within 2 working days) by email at 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 Integrity is an important issue at McMaster University and it is the responsibility of all students to understand what constitutes Academic Dishonesty. All students must agree to the course policies and demonstrate an understanding of what constitutes Academic Dishonesty by completing the Academic Integrity and Responsibility (AIR) Quiz. **All students are required to complete the AIR Quiz on Avenue and score a grade of greater or equal to 90% by Friday, Sept 21st, 2018 at 4:30pm. Students will receive a grade of zero on Lab 1 if the AIR Quiz has not been completed successfully by the deadline.**

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.

EarthSc 1G03 - Student Responsibility Contract

Being a university student requires you to assume a level of responsibility towards your academic career. Rules and Regulations regarding coursework change during the transition from high school to university as well and vary between Faculties and courses at McMaster. We want to ensure that you (the student) understand and acknowledge certain aspects of how this course operates.

All students are required to read and understand this course contract. 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. **All students must agree to the course policies and demonstrate their understanding of Academic Integrity by completing the Academic Integrity and Responsibility (AIR) Quiz on Avenue. Students will receive a grade of zero on Lab 1 if they have not successfully completed (grade of $\geq 90\%$) the AIR Quiz.**

Assignment Submission and Late Assignments:

I am aware that all submitted assignments need to include ALL of the following information: name, student ID number, course name and number (i.e. EarthSc 1G03), assignment number (e.g. Lab 1), name of my T.A., Lab section number or day/ time of my lab section, and due date.

I am aware that the labs are due at the end of the lab period. I also understand that no late assignments will be accepted in this course, unless supporting documentation is provided and arrangements are made with the course instructor (see 'Illness' below).

I understand and agree to the course policies with respect to Assignment Submission.

Illness:

I understand that absences that last up to 3 days must be reported using the McMaster Student Absence Form (MSAF). I also understand that a maximum of 1 MSAF may be filed per term and MSAFs cannot be filed for term work worth 25% or more, or during examination periods. I understand that when using the MSAF, absences must be reported to paddenm@mcmaster.ca. I must then contact the Instructor (Dr. Maureen Padden) immediately (normally within 2 working days) by email at paddenm@mcmaster.ca to learn what relief may be granted for the work I have missed, and relevant details such as revised deadlines, or time and location of a make-up exam.

If I am absent for more than 3 days or exceed the maximum of 1 request per term I must visit my Associate Dean's Office with supporting documentation. It is my responsibility, after submitting this documentation, to immediately email the Instructor to discuss what, if any, accommodations will be made with respect to any missed work. I am not to assume that I do not have to complete any missed work; it is up to my Instructor to determine what, if any, accommodations will be made. **I have one week from the date in which the assignment was originally due to complete this process; otherwise I will receive a mark of zero.**

If accommodations are made for missed work and an extension is granted, I understand that there is an EarthSc 1G03 dropbox located on the second floor of GSB where the missed work may be submitted.

I understand and agree to the course policies with respect to Illness.

Mark Appeals and Avenue Grades:

I have one week from the date that an assignment (or test) is returned to class to appeal my mark. If I wish to appeal a grade, I must submit to my T.A. a written note justifying why I wish to have the assignment remarked, with the assignment attached. If my T.A. considers the written justification to be insufficient (e.g. simply wanting a higher grade is insufficient), the assignment will not be re-graded. If the justification is considered sufficient, the entire assignment will get re-graded. I therefore understand that my mark can increase or decrease.

My marks will be recorded on Avenue. It is my responsibility to check that all grades entered into Avenue are recorded properly. I must notify my T.A. about any errors with regards to how my mark was entered. I have until 48 hours prior to the final exam to discuss any Avenue mark issues.

I understand and agree to the course policies with respect to Appeals and Avenue Grades.

Academic Integrity:

Academic Integrity is a very important issue at McMaster University. It is my responsibility to understand what constitutes Academic Dishonesty. Among possible

forms of academic dishonesty are: cheating on tests or exams by using unauthorized aids; inappropriately collaborating in group work; and plagiarism. This extends to Avenue as well, and sharing of answers on the Discussion Board constitutes a form of academic dishonesty. For more information on what constitutes Academic Dishonesty, I should consult the University policy, and its interpretation by the Faculty of Science as included in the Custom Courseware of the course.

Furthermore, I am aware that I must source ALL information that is not my own. If I submit an assignment with inadequate referencing I may face serious academic consequences (e.g. mark deductions, grade of zero, notation on my transcript, etc.).

I understand and agree to the course policies with respect to Academic Integrity.

Lab Attendance/T.A. Emails:

Labs are held to enhance the lectures, as well as to provide essential information for my assignments. I am aware that if I miss a lab I will receive a grade of zero on the lab unless a MSAF or approved documentation is provided to my Associate Dean's office and arrangements are made with the course Instructor. If I am late for a lab or miss a lab, it is not the T.A.'s responsibility to go over the missed work with me.

It is not appropriate to use email to ask detailed questions (including asking about what was discussed in lab). T.A's are not expected to answer emails on weekends or late in the evening. Rather, emails will typically be responded to during regular working hours on weekdays, and as schedule allows. Emails on assignment due dates will not be answered.

As a courtesy, and to ensure that emails reach my T.A., Instructional Assistant, or the Instructor, I will use the following subject: line: EarthSc 1G03 - my name and student ID number. My name and student ID number should also be included in the email signature. Emails must be sent from McMaster email accounts or they will not be read or responded to. Emails should be written in a professional manner, spell-checked and proof-read before sending them. Online discussion terminology must be avoided.

I understand and agree to the course policies with respect to Attendance & Email.

Student Conduct:

I acknowledge that my behaviour in all aspects of this course should meet the standards of the McMaster University Student Code of Conduct. I understand that any inappropriate behaviour directed against any of my colleagues, my T.A, or the instructor will not be tolerated. Disruptive behaviour during labs such as talking while a T.A. presents information, or constantly being late to lab, will also not be tolerated.

Students are encouraged to check the course discussion board on Avenue on a regular basis and to ask questions in this forum rather than via email. If a question arises, in all likelihood many other students in the course will have it as well. This also means that

the Avenue Discussion Board is an extension of the classroom. These spaces are to be considered inclusive and safe. Abuse, ridicule, slander, inappropriate language, and discrimination towards the instructor, teaching staff, and other students will not be tolerated in any capacity.

I understand and agree to the course policies with respect to Student Conduct.

Acknowledgement of Understanding of Course Policies:

I have read the Student Responsibility Contract and acknowledge that I fully understand and will abide by these course policies. I understand that it is my responsibility to ask for clarification on any policies that I do not understand.

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).

These requirements are posted on the avenue site, with the relevant courses offered by the School of Geography and Earth Sciences.