

Earth Sciences 1081A: Resources, Environment and Sustainability

Course Syllabus: Fall 2017

Additional course information can be found at: <https://owl.uwo.ca/portal>

Prerequisites: None

Antirequisites: Earth Sciences 1022a/b, 1081b, 1070a/b.

Objectives of this course: This course is designed to introduce students to the relationships between humans and their geological environment. It examines geological principles and process and relates them to human activities. Emphasis is placed on geological hazards and on evidence for human perturbation of Earth's natural systems that may impact the future of humankind and our planet. As the course is an Earth Sciences course, topics covered with focus on geologic aspects of environmental issues.

Learning Outcomes: Upon completion of this course, the student will be able to:

1. Identify and classify common minerals, rocks and other Earth materials and describe the significance of these materials in context of: a) their distribution and abundance in the Earth system; b). their use as resources; c) environmental impacts associated with their extraction, processing and disposal; and d) natural hazards.
2. Demonstrate an understanding of interaction and interplay of human activity and Earth materials and processes through time.
3. Utilize basic geologic information on a practical level (in laboratory exercises) to identify and interpret geologic processes as they relate to human use and environmental hazards.

Note: this course may be used as an entry course for any Earth Sciences program.

Background Required: This course is intended for (but not limited to) students registered in faculties other than Science.

Instructor: Alysha McNeil; **E-mail:** amcnei22@uwo.ca;

Instructor's Office Hours: Office hours are tentatively scheduled for Thursdays from 2:00pm-3:30pm in B&GS 1084 starting September 14th 2017. This may change in September once schedules have been finalized (if a change is made, new office hours will be posted on OWL). Students can also set up meetings by appointment (please email Alysha to set up an appointment time).

Lectures: Tues. & Thurs. 9:30-10:30 am; **P&AB 106**

Power Point slides for note-taking in lectures are available online at <http://owl.uwo.ca/> the night before each lecture.

Please note that the first week of lectures, complete slides for PowerPoint lectures will be posted on OWL. Thereafter, slides will be posted in incomplete form (i.e. with some parts of the text missing) to encourage you to come to class. It is completely up to you to get the missing "blanks" if you miss any lectures from a classmate.

Department of Earth Sciences: Phone (519) 661-3187. Fax (519) 661-3198

Email: *For all correspondence, please use amcnei22@uwo.ca* (Please include 'ES 1081a' in the subject line of all emails about this course. Emails without "ES 1081a" in the subject line might be deleted as spam). Please also note that Alysha is less likely to respond promptly to messages sent through OWL (so just avoid using the OWL messaging system if at all possible).

Teaching Assistants: Jumin Lee (jlee926@uwo.ca) and Ramjay Botor (rbotor@uwo.ca)

Laboratory Sections: Tues. 11:30-1:30 (Sec. 002), Tues. 3:30-5:30 (Sec. 003). All labs held in the Biological and Geological Sciences Building (B&GS) Rm. 1015. Note: if you need to change the lab section you are currently registered in due to a timetable conflict, you **must** ask your instructor for approval. If approved, you must then confirm both your instructor and TAs of both sections of your intent to attend a different section. A calculator and a drafting compass (for drawing circles) will be required for one lab, but if you do not have one, there will be some provided to share between students.

Recommended Textbook: Earth: An Introduction to Physical Geology, 4th Canadian Edition (Tarbuck, Lutgens, Tsujita and Hicock) Available for purchase at UWO Bookstore.

Laboratory Assignments: Laboratory assignments will be provided as downloadable pdf files on OWL. **You will be required to print out the worksheets (which will be handed in for marking).** However, whether or not to print out the background information is your choice. **Note:** Labs for this course will start on the 4th week of classes, so there will be no need for you to attend labs up until that week. Lab assignments will be directly handed in to presiding TA at the beginning of your next regularly scheduled lab session prior to the pre-lab presentation (you will have one week to complete each lab assignment except for lab 2 due to fall reading week). Lab assignments handed in late will be deducted 10% of the assignment grade for each day late. If you intend to submit an assignment late, please inform your TAs to arrange delivery of that assignment to them for marking.

Grade Components

Weekly Labs (plus in-lab quizzes): 20 %*

Lecture-Based Midterm 20%

Lab Final Exam: 25 %

Lecture-Based Final Exam 35 %

*Note: **There are 7 weekly labs.** Marks for all 7 lab assignments will count toward your final “weekly labs” mark. In addition, for any of the lab sessions, there may be a lab quiz on material covered in the previous week’s session (which will also be included in your weekly lab grade), so it is important that you show up for all lab sessions. The **writing of all exams in the course will be mandatory in order to pass the course** (the midterm, final, and lab final), so if you miss one or more due to illness, you **MUST** arrange the writing of a makeup exam with your instructor (and receive recommendation from academic counselling with valid documentation of illness or other circumstance warranting Special Accommodation in accordance with university guidelines).

Course Schedule (2017)

Note: We will adhere to the schedule (below) as closely as possible. However, there may be times in which a particular lecture is longer than anticipated and may therefore “overflow” into another (e.g. if a lecture is cancelled due to unforeseen circumstances such as a “snow day,” if a longer time is needed to help everybody understand an important concept, or if an interesting discussion arises). Please be patient; we will do our very best to catch up if we do fall behind. **And just as a reminder: Do not treat the slide handouts as a substitute for attending lectures! Doing so will be almost guaranteed to result in a significantly lower mark than desired.**

Material covered on the midterm lecture exam and final exam will be entirely based on the lecture material (and you cannot rely on a textbook to make up for significant absences). Please regularly visit OWL for important announcements and updated information on the course (in the event that the following schedule is modified).

Lectures and Labs (Listed by Week)

Week 1 (Sept. 7-8)

Sept. 7 – Lecture 1: Course introduction

Week 2 (Sept. 11-15)

Sept. 12 – Lecture 2: Human links with geology

Sept. 14– Lecture 3: The basic matters of matter: from atoms to minerals

No lab this week

Week 3 (Sept. 18-22)

Sept. 19 – Lecture 4: The chemistry, structure and properties of minerals

Sept. 21 – Lecture 5: Rocks: the stuff they don’t teach you about in high school

No lab this week

Week 4 (Sept. 25-29) Note: Labs start this week (all labs in B&GS Rm. 1015)!

Sept. 26 – Lecture 6: Plate tectonics: why the stuff in lecture 5 is important

Sept. 28 – Lecture 7: The context of geologic time

Lab. 1: Identifying minerals

Week 5 (Oct. 2-6)

Oct. 3 – Lecture 8: Introduction to natural hazards

Oct. 5 – Lecture 9: Surface water and flooding

Lab. 2: Identifying rocks and interpreting geologic events

Week 6 (Oct. 9-13)

No classes! Fall study break

Week 7: (Oct. 16-20)

Oct. 17 – Lecture 10: Earthquakes

Oct. 19 – **Midterm Exam (9:30-10:20 am, in regular lecture room (P&AB 106);** will cover material up to, and including, the “Surface water and flooding” lecture (Lecture 9)

Lab 3: River features and flood hazards

Week 8 (Oct. 23-27)

Oct. 24 – Lecture 11: Volcanic activity and associated hazards

Oct. 26 – Lecture 12: Mineral resources

Lab 4: Natural Hazards: volcanoes and earthquakes

Week 9 (Oct. 30 – Nov. 3)

Oct. 31– Lecture 13: Fossil fuels

Nov. 2 – Lecture 14: Air pollution and acid rain

Lab 5: Metallic mineral resources and mining

Week 10 (Nov. 6-10)

Nov. 7– Lecture 15: Alternative energy sources

Nov. 9– Lecture 16: Water resources

Lab 6: Energy resources and air pollution

Week 11 (Nov. 13-17)

Nov. 14– Lecture 17: Water pollution and treatment

Nov. 16– Lecture 18: Waste management

Lab 7: Groundwater and groundwater pollution

Week 12 (Nov. 20-24)

Nov. 21– Lecture 19: Mass wasting and soil

Nov. 23 – Lecture 20: Climate change and global warming

Lab 7 due (but no formal lab this week).

Week 13 (Nov. 27 - Dec. 1)

Nov. 28– Lecture 21 (cont'd): Climate change and global warming (cont'd)

Nov. 30– Lecture 22: Geology and health

Marked Lab 7 handed back (come to your regular lab session to pick up marked lab (and any other unclaimed lab assignments); This lab period will serve as a Question and Answer Session for Lab Review (use this period to ask your TAs about lab content you are still unsure about, in advance of Lab Exam held the following week).

Week 14 (Dec. 4 -8)

Dec. 5– Catching up on any remaining material we have fallen behind on.

Dec. 7- Wrapping up of any remaining material, cont'd; an opportunity to ask questions in advance of final exam, time permitting)

Lab Exam (conducted during your scheduled lab period)

Final Exam: Tentative TBA (see <https://studentservices.uwo.ca/secure/Exams/>)

Comments on Exams

Midterm Exam: Thursday, October, 19, 2017 (regular lecture room, regular lecture time).

Lab exam: Held during your regularly schedule lab in the **week of Dec. 4 - Dec. 8 (you will have a full 2 hours to write this lab exam).**

Final Exam: The official date for the final exam will be set by the Office of the Registrar. The final exam **will** be cumulative, but will focus more on post-midterm material.

Format for Midterm and Final Exams: Both exams will consist of a combination of multiple choice, fill-in the blank, & short answer questions. The Midterm (Lecture) Exam will be 50 minutes long and the Final (Lecture) Exam will be 2 hours long. **No** electronic devices are allowed to be used on the midterm or final exam.

Note: Your final grade for the course will be calculated as the sum of your marks for each of the components. This mark will then be rounded to the nearest integer. No marks will be awarded for arbitrary reasons, and there will be no after-the-fact changes (e.g. 89 to 90 %). In addition, please note that you will be judged according to your performance in this course.

Marks are not awarded with reference to external requirements, like medical school entry criteria, or your personal need for a particular average.

Attendance and Course Material Tested

Lectures and posting of lecture slides: As with any university course, attendance is very important! You are responsible for understanding **all** material presented in the lectures, regardless of your attendance. . However, the **downloadable PowerPoint lecture slides only partially cover what will be discussed in class** (and you can be guaranteed that there will be some of this material on the exams). In other words, **do not treat the slide handouts posted on OWL as a substitute for attending lectures!**

Text: Note that **several of the lectures cover topics that are treated only superficially in the text.** The exams will draw from material covered in the lectures, but the readings will provide additional background that will aid in the understanding of the concepts. If you miss a lecture, it is up to you to obtain any missing information you require from one or more of your classmates.

Labs: All hand-in sheets for any given lab must be submitted directly to your assigned TA at the very beginning of your next officially scheduled lab period in order to be counted as being “on time” and, ultimately, to be marked by your TA (unless due to illness or other exceptional circumstances considered as a valid excuse by the Dean’s Office of your Faculty or Affiliated College, as discussed below). If you are anticipating that you will be absent from a particular lab period it is up to you to make special arrangements with your assigned TA to submit the assignment to him or her beforehand. Labs not handed by the designated time will not be marked, and you will not receive grades for them. **No make-up labs will be arranged for missed labs or lab assignments handed in late without recommendation of accommodation by an academic counsellor in your home faculty or Affiliate College (see “in case of illness...” section below).** In other words, late lab assignments will not be accepted for grading, so it is important for you to show up on time at the beginning of your regularly scheduled lab. Also note that it is **very important** that you **follow the instructions provided for all lab assignments and exams. Any marks lost from not properly following the instructions provided herein and in the assignment outlines themselves are nonnegotiable.**

In Case of Illness or Other Serious Circumstance (i.e., What to do if you Miss an Exam or Miss an Assignment Deadline)

If you are unable to meet a course requirement due to illness or other serious circumstances, you **must** provide **valid medical or other supporting documentation to the Academic Counselling team in Dean's office of your home Faculty (or Affiliate College) as soon as possible. If you are a Science student, the Academic Counselling Office of the Faculty of Science is located in WSC 140, and can be contacted at scibmsac@uwo.ca. Also, contact your instructor immediately to notify him/her of your absence and that you have arranged a meeting with Academic Counselling to present your documentation for academic accommodation.** In the event of a missed exam, a "Recommendation of Special Examination" form must be obtained from the Dean's Office immediately. For further information please see:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf

A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or request a Records Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found here:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf

It is YOUR responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed.

Procedures for Reporting a Missed Exam or Missed Labs

For missed exams: If you miss an exam (midterm, lab exam or final exam) due to legitimate circumstances, please take appropriate documentation to Academic Counselling in the Dean's office of your home Faculty or Affiliate College. If you miss the Final Exam, please contact your faculty's Academic Counselling Office as soon as you are able to do so. They will assess your eligibility to write the Special Exam (the name given by the university to a makeup Final Exam). You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (see

http://www.registrar.uwo.ca/examinations/exam_schedule.html). University regulations on the handling of confidential student information are such that instructors cannot view such documentation; all such documentation must be handled by Academic Counselling. For a legitimate claim, your counselor will contact Alysha directly to recommend accommodation to write a make-up exam at an alternate date. **Being 'very busy' or 'I planned my vacation during that time' are not considered valid excuses.**

The deadlines in this course are set well in advance and it is up to you to manage your time in a way that allows you to meet them; you are at university and your studies are assumed to be your first priority.

For missed labs: Please note the number of students in each lab section is limited by health and safety regulations (as a consequence, make-up lab sessions cannot be run). All seven labs will count toward your lab assignment mark. If you miss a lab due to a serious health or other exceptional circumstance (with approval from your Dean's Office), please bring this to the attention to your instructor so that appropriate alternate arrangements can be made.

Statements Required by the Faculty Senate

Prerequisites: Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

Exams: "Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating."

Conduct: "Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

Plagiarism: It is mandated by the University that the following statement on plagiarism be added to all course outlines: "Plagiarism: Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar)." Cheating on exams (including both lecture and lab exams) will also not be tolerated. **And pertaining specifically to ES1081A lab assignments...** please note that although you are encouraged to work cooperatively with your classmates in the lab periods, especially in terms of discussing aspects of geologic materials and processes, it is expected that the written answers you provide in your lab assignments will be entirely your own (obvious similarities in the wording of multiple-word answers between students may be subject to academic penalty (at the discretion of your Instructor and/or TAs)).

The website for Registrarial Services is <http://www.registrar.uwo.ca>

In accordance with policy, <http://www.uwo.ca/its/identity/activatenonstudent.html> the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

Support Services:

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 ext. 82147 if you have questions regarding accommodation.

The policy on Accommodation for Students with Disabilities can be found here:

www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_disabilities.pdf

The policy on Accommodation for Religious Holidays can be found here:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

Learning-skills counsellors at the Student Development Centre (<http://www.sdc.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Students who are in emotional/mental distress should refer to Mental Health@Western

http://www.health.uwo.ca/mental_health for a complete list of options about how to obtain help.

Additional student-run support services are offered by the USC, <http://westernusc.ca/services>

And lastly...

If you have ANY problems **following the course material, please make sure you come talk to Alysha (or the TAs), or email us (Again, please include 'ES 1081a' in the subject line of all emails about this course), to go over the material with you and help you understand the concepts better. If you are needing extra help or have questions, PLEASE SAY SO before it becomes a bigger problem. Please do not feel intimidated about asking questions about concepts you are struggling with-** that's what we're here for!