

University of Alberta
EAS 201 Earth Sciences I (Section 800)
Fall Term 2023

Instructors: Dr. John Waldron (jwaldron@ualberta.ca)
Office Hours: Fridays, 09:00 - 10:00 (9-10 am) over ZOOM
Lab Coordinator: Darrin Molinaro (molinaro@ualberta.ca)
Course Format: Lecture and Lab (3-0-0).
Lectures: MWF 13:00 - 13:50 (1-1:50 pm) Mountain time, via Zoom video conferencing.
Laboratories: Weekly, beginning September 18, 2023. See eClass page for times and locations.

1. COURSE CONTENT

Course Description:

★ 3 (fi 6) (either term, 3-0-0) A non-laboratory introduction to the origin and evolution of the Earth and the solar system. Introduction to plate tectonics and the rock cycle. Simple energy balances and interactions between radiation and the atmosphere, land, oceans, ice masses, and the global hydrological cycle. Evolution of life, biogeography, and global climate in the context of geologic time. The carbon cycle. Human interactions with the Earth. Mineral and energy resources. This course may not be taken for credit if credit has been obtained in EAS 100 or 210. (Note: EAS 201 and EAS 200 are considered to be equivalent to EAS 100 for prerequisite purposes).

Course Prerequisites: None

Course Objectives and Expected Learning Outcomes:

EAS 201 is an introductory course that focuses on the interlinked processes that formed and continue to shape the planet on which we live. After a general introduction, the course covers major systems that include the atmosphere (composition, weather, and climate), hydrosphere (solid, liquid, and gaseous water), geosphere (solid Earth), and biosphere (evolution of life, elemental cycling, impacts of humans). The primary objective of the course is to give students a broad, integrated knowledge of Earth systems science, and a solid foundation for study in all branches of Earth science.

By the end of EAS 201 you will be able to:

- Identify the main components of the Earth's geosphere, cryosphere, hydrosphere, atmosphere, and biosphere.
- Describe the interactions between the geosphere, cryosphere, hydrosphere, atmosphere and biosphere, and the processes that modify them over geological and human time scales.
- Explain the ways in which humans interact and modify these components of the Earth system.

PANDEMIC DISCLAIMER

If university protocols change during the term, further information will be provided as it becomes available from the University and public health regulators. These evolving regulations and policies take precedence over this outline. The instructors will notify students of any pertinent changes by email and in class, but students are responsible for staying aware of new and evolving regulations.

Provisional Course Schedule:

Date	Lectures	OER Chapter Readings
Fri. Sept 1	None	None
Mon. Sept. 4	None	None
Wed. Sept. 6	Introduction	1
Fri. Sept. 8	Earth systems science	1
Mon. Sept. 11	Earth systems science	2
Wed. Sept. 13	Solar System	3
Fri. Sept. 15	Atmosphere	4 & 5
Mon. Sept. 18	Atmosphere/Weather	4, 5, & 6
Wed. Sept. 20	Weather	6
Fri. Sept. 22	Water	7
Mon. Sept. 25	Surface water	8
Wed. Sept. 27	Ground water	9
Fri. Sept. 29	Ice and glaciation	10
Mon. Oct. 2	Ice and glaciation	10
Wed. Oct. 4	Ice and glaciation	10
Fri. Oct. 6	Oceans	11
Mon. Oct. 9	Thanksgiving - None	None
Wed. Oct. 11	Review	None
Fri. Oct. 13	Midterm I	None
Mon. Oct. 16	Oceans	11
Wed. Oct. 18	Biosphere	12 & 13
Fri. Oct. 20	Biosphere	14 & 15
Mon. Oct. 23	Biosphere	16
Wed. Oct. 25	Minerals	17
Fri. Oct. 27	Minerals	17
Mon. Oct. 30	Rock cycle - Igneous	18
Wed. Nov. 1	Rock cycle - Sedimentary	19
Fri. Nov. 3	Rock cycle - Metamorphic	20
Mon. Nov. 6	Time	21
Wed. Nov. 8	Review	None
Fri. Nov. 10	Midterm II	None
Mon. Nov. 13	Reading Week - None	None
Wed. Nov. 15		None
Fri. Nov. 17		None
Mon. Nov. 20	Time	21
Wed. Nov. 22	Tectonics/Resources	22 & 23
Fri. Nov. 24	Tectonics/Resources	22 & 23
Mon. Nov. 27	Tectonics/Resources	22 & 23
Wed. Nov. 29	Climate	24
Fri. Dec. 1	Climate Change	24
Mon. Dec. 4	Climate Change	24
Wed. Dec. 6	Flex - Geo-Scavenger Hunt Due	None
Fri. Dec. 8	Review	None
Thurs. Dec. 14	Final Exam	None

Geo-Scavenger Assignment: In addition to the 10 weekly laboratory exercises, you will complete a Geo-Scavenger Hunt assignment worth 10% of your final course grade. The Geo-Scavenger Hunt assignment requires you to venture out into your surroundings to locate, document, and describe a variety of Earth phenomena in your neighbourhood. The assignment can be completed any time from September 25, 2023 at 08:00 to December 06, 2023 at 18:00 (6 pm) mountain time. You must complete the assignment to be eligible to pass the course. If you cannot complete this assignment on time, you must contact the laboratory coordinator, Darrin Molinaro, within 48 hours of the missed assignment to make arrangements.

As the Geo-Scavenger Hunt assignment requires you to venture out into your surroundings to locate and photograph examples it is strongly recommended that you complete the assignment when weather is favorable in your location. The time-window for the assignment is large enough that poor weather conditions (or other circumstances limiting you from accessing examples) will not be permitted as reasons for seeking extensions or accommodations in completing this assignment. To ensure that you undertake the activity safely and fully informed of risks, please review the University of Alberta's [Remote Learning Lab-Based](#)

[Assignment Information Advisory](#). If you have questions or concerns, contact the lab coordinator or instructors.

2. LEARNING RESOURCES

Required Textbook: Planet Earth - Lecture Notes on Earth System, J. Waldron - Open Educational Resource (Free) - <https://openeducationalberta.ca/planetearth/>

Optional Reading Resource: The Blue Planet, 3rd Edition by Skinner and Murck. eBook license is most economical (150 days for \$48).

Essential Resources: Important course information, including the course outline, lecture and laboratory files, and sample examination materials, will be posted on eClass at <https://eclass.srv.ualberta.ca>.

Required Laboratory Materials: All laboratory information and exercises will be provided weekly on eClass. To access, complete, and submit laboratory work students will need a device capable of accessing eClass, internet access, the ability to print worksheets, and a device to take and upload photographs (e.g., digital camera or film camera in combination with a scanner). In addition, the following items will also be beneficial to have on hand when completing lab exercises: notepaper, pens, pencils, erasers, metric ruler, protractor, and a compass (for drawing circles).

Academic Success Centre: The [Academic Success Centre](#) provides professional academic support to help students strengthen their academic skills and achieve their academic goals. Individual advising, appointments, and group workshops are available year round in the areas of Accessibility, Communication, Learning, and Writing Resources. Modest fees apply for some services.

3. GRADE EVALUATION

Assessment	Weight	Date
Midterm 1 Examination	20%	Friday, October 13, 2023
Midterm 2 Examination	20%	Friday, November 10, 2023
Geo-Scavenger Hunt Assignment	20%	Wednesday, December 6, 2023
Final Examination**	40%	Thursday, December 14, 2023 @ 1400-1600

**Students must verify this date on BearTracks when the Final Exam Schedule is posted.

Because it is necessary to understand the material covered early in the course to complete later parts successfully, the examinations will be cumulative. The final examination will test material in both the lecture and lab components of the course. In order to test all parts of the course with approximately equal weight, the final examination will put additional emphasis on material in the last third of the course.

Representative evaluative materials: Representative evaluative materials, including sample questions and examination format details, will be posted on the course website at least a week prior to the midterm and final examinations. Note that actual exam questions are different from the sample questions. Do not focus on the sample questions when choosing material to review before exams, as the exams will cover the breadth of course content.

Method of grade assignment: A letter grade will be assigned for your performance in this course. Grades will be based on the weighted sum of raw marks from exams and subsequent analysis of the class grade distribution. The letter grades will be based on identification of natural breaks in the distribution of marks and instructors' experience with student achievement in this and similar courses; no pre-determined distribution of grades will be imposed. Thus, your grade will reflect a combination of absolute achievement and relative standing in the class. Historically, the median letter grade for this class **is in the B- to B range.** Note that final grades will remain unofficial until approved by the Department and/or Faculty offering the course.

Re-examination:

A student who writes the final examination and fails the course may apply for a re-examination. Re-examinations are rarely granted in the Faculty of Science. Re-examinations are governed by [university-wide Academic Regulations](#) and [Faculty of Science Academic Regulations](#). Misrepresentation of Facts to gain a re-examination is a serious breach of the *Code of Student Behaviour*.

4. POLICIES FOR LATE AND MISSED WORK

Assignment Policy: If you cannot complete the Geo-Scavenger Hunt assignment on time you must contact the eClass administrator, Darrin Molinaro, within 48 hours of the missed assignment to make arrangements. Failure to contact Darrin within 48 hours may result in a grade of 0 for any missed work.

Missed Midterm Examination: If you cannot take a Midterm Examination due to incapacitating illness, severe domestic affliction or other compelling reasons, you can apply for an excused absence. (Note: given the COVID-19 situation, even mild cold- or flu-like symptoms will justify requesting an excused absence from an in-person Midterm Examination.) To apply for an excused absence, you must contact the instructor within two working days of missing the assessment or as soon as possible. If an excused absence is granted, then the weight of the examination will be transferred to other assessed components of the course including the Final Examination. An excused absence is a privilege and not a right. There is no guarantee that an absence will be excused. Misrepresentation of facts to gain an excused absence is a serious breach of the Code of Student Behaviour. In all cases, instructors may request adequate documentation to substantiate the reason for the absence at their discretion.

Missed Assessments Where the Cause is Religious Belief: For an excused absence where the cause is religious belief, a student must contact the instructor(s) within two weeks of the start of Fall or Winter classes to request accommodation for the term (including the final exam, where relevant). Instructors may request adequate documentation to substantiate the student request. Students who failed at the start of term to request exam accommodations for religious beliefs are expected to follow the deferred final examination process outlined below.

Missed Term Work or Final Exam Due to Non-medical Protected Grounds: When a term assessment or final exam presents a conflict based on [non-medical protected grounds](#), students must apply to the Academic Success Centre for accommodations via their [Register for Accommodations website](#). Students can review their eligibility and choose the application process specific for *Accommodations Based on Non-medical Protected Grounds*. It is imperative that students review the dates of all course assessments upon receipt of the course syllabus, and apply **AS SOON AS POSSIBLE** to ensure the timely application of the accommodation. Students who apply later in the term may experience unavoidable delays in the processing of the application, which can affect the accommodation.

Deferred Final Examination: A student who cannot write the final examination due to incapacitating illness, severe domestic affliction or other compelling reasons can apply for a deferred final examination.

Such an application must be made to the student's home Faculty office within two working days of the missed examination and must be supported by appropriate documentation or a Statutory Declaration (see calendar on [Attendance](#)). Deferred examinations are a privilege and not a right; there is no guarantee that a deferred examination will be granted. The Faculty may deny deferral requests in cases where less than 50% of term work has been completed. Misrepresentation of facts to gain a deferred examination is a serious breach of the Code of Student Behaviour.

Students who are granted permission to write a deferred final examination must do so on *Saturday, January 06, 2023, starting at 09:00 am.*

Deferred examinations are a privilege and not a right; there is no guarantee that a deferred examination will be granted. Misrepresentation of facts to gain a deferred examination is a serious breach of the Code of Student Behaviour.

5. Exam and Laboratory Completion CONSIDERATIONS

Technology for Completion:

To successfully participate in exams and laboratory exercises in this course, it is required that you have access to a computer with an internet connection that can support the tools and technologies the University uses to deliver content, engage with instructors, TAs, and fellow students, and facilitate assessment and examinations. Please refer to [Technology for Remote Learning - For Students](#) for details. If you encounter difficulty meeting the technology recommendations, please email the Dean of Students Office (dosdean@ualberta.ca) directly to explore options and support.

Please contact the lab coordinator, Darrin Molinaro, by the add/drop deadline (September 18, 2023) if you do not have access to the minimum technology recommended. The instructor will make arrangements for accommodating students who contact the instructor before this date. Failure to do so may result in a zero in any assessment that depends on the minimum technology.

Remote Proctoring Consideration:

We may use a remote proctoring service for exams. Your computer and environment will be monitored during exams.

- You should arrange for a place to write timed exams without interruption.
- Tablets and mobile devices are incompatible with remote proctoring services.

Recordings of Synchronous Activities:

- Please note that lectures for this course will be recorded. Recordings of this course will be used for the purposes of asynchronous learning and remote learning for students who need to quarantine and will be accessible to other students enrolled in this section of the class, other instructors, and Teaching Assistants.
- Students have the right to not participate in the recording and are advised to turn off their cameras and audio prior to recording; they can still participate through text-based chat. It is recommended that students remove all identifiable and personal belongings from the space in which they will be participating.
- Recordings will be made available until January 31, 2024 and accessible on eClass. Please direct any questions about this collection to the instructor of this course.

Student Resources for Remote Learning:

Online learning may be new to you. Check out tips for success and find out more about online learning on the [Campus Life](#) page, and specifically on the [Academic Skills Online & Remote Delivery Resources](#) page.

6. STUDENT RESPONSIBILITIES

Safe and Healthy Learning Environment: Section 30.3.4(6) c of the Code of Student Behaviour states: “No Student shall create a condition which endangers or potentially endangers or threatens the health, safety or well being of other persons.” Accordingly, students with symptoms of *any* respiratory illness should avoid attending in-person activities for this class.

Academic Integrity: The University of Alberta is committed to the highest standards of academic integrity and honesty, as well as maintaining a learning environment that fosters the safety, security, and the inherent dignity of each member of the community, ensuring students conduct themselves accordingly. Students are expected to be familiar with the standards of academic honesty and appropriate student conduct, and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the [Code of Student Behaviour](#) and the [Student Conduct Policy](#), and avoid any behaviour that could potentially result in suspicions of academic misconduct (e.g., cheating, plagiarism, misrepresentation of facts) and non-academic misconduct (e.g., discrimination, harassment, physical assault). Academic and non-academic misconduct are taken very seriously and can result in suspension or expulsion from the University.

All students are expected to consult the [Academic Integrity website](#) for clarification on the various academic offences. All forms of academic dishonesty are unacceptable at the University. Any suspected academic offence in this course will be reported to the College of Natural and Applied Sciences. Suspected cases of non-academic misconduct will be reported to the Dean of Students. The College, the Faculty of Science, and the Dean of Students are committed to student rights and responsibilities, and adhere to due process and administrative fairness, as outlined in the Code of Student Behaviour and the Student Conduct Policy. Anyone who is found in violation is likely to receive a sanction. Typical sanctions for academic misconduct include conduct probation, a mark reduction or a mark of 0 on an assessment, a grade reduction or a grade of F in a course, a remark on the transcript, and a recommendation for suspension or expulsion. Sanctions for non-academic misconduct include conduct conditions, fines, suspension of essential or non-essential University services and resources, and suspension or expulsion from the University.

Appropriate Collaboration: You must work independently on your laboratory exercises and term assignment, submitting your own work for all items.

Exam Conduct:

- Your student photo I.D. is required at exams to verify your identity.
- Students will not be allowed to begin an examination after it has been in progress for 30 minutes. Students must remain in the exam room until at least 30 minutes has elapsed.
- All cell phones must be turned off and stored in your bags.

Cell Phones: Cell phones are to be turned off during lectures.

Students Eligible for Accessibility-Related Accommodations: In accordance with the University of Alberta’s [Discrimination, Harassment, and Duty to Accommodate policy](#), accommodation support is available to eligible students who encounter limitations or restrictions to their ability to perform the daily activities necessary to pursue studies at a post-secondary level due to medical conditions and/or non-medical protected grounds. Accommodations are coordinated through the [Academic Success Centre](#), and students can learn more about eligibility on the [Register for Accommodations website](#).

It is recommended that students apply as early as possible in order to ensure sufficient time to complete accommodation registration and coordination. Students are advised to review and adhere to published deadlines for accommodation approval and for specific accommodation requests (e.g., exam registration submission deadlines). Students who request accommodations less than a month in advance of the academic

term for which they require accommodations may experience unavoidable delays or consequences in their academic programs, and may need to consider alternative academic schedules.

Recording and/or Distribution of Course Materials: Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s). No materials related to this course are to be uploaded to third-party content providers or study help sites such as OneClass, Chegg, Course Hero, etc.

Learning and Working Environment:

The Faculty of Science is committed to ensuring that all students, faculty and staff are able to work and study in an environment that is safe and free from discrimination, harassment, and violence of any kind. It does not tolerate behaviour that undermines that environment. This includes virtual environments and platforms.

If you are experiencing harassment, discrimination, fraud, theft or any other issue and would like to get confidential advice, please contact any of these campus services:

- [Office of Safe Disclosure & Human Rights](#): *A safe, neutral and confidential space to disclose concerns about how the University of Alberta policies, procedures or ethical standards are being applied. They provide strategic advice and referral on matters such as discrimination, harassment, duty to accommodate and wrong-doings. Disclosures can be made in person or online using the [Online Reporting Tool](#).*
- [University of Alberta Protective Services](#): *Peace officers dedicated to ensuring the safety and security of U of A campuses and community. Staff or students can contact UAPS to make a report if they feel unsafe, threatened, or targeted on campus or by another member of the university community.*
- [Office of the Student Ombuds](#): *A confidential and free service that strives to ensure that university processes related to students operate as fairly as possible. They offer information, advice, and support to students, faculty, and staff as they deal with academic, discipline, interpersonal, and financial issues related to student programs.*
- [Office of the Dean of Students](#): *They can assist students in navigating services to ensure they receive appropriate and timely resources. For students who are unsure of the support they may need, are concerned about how to access services on campus, or feel like they may need interim support while you wait to access a service, the Dean of Students office is here to help.*

Feeling Stressed, Anxious, or Upset?

It's normal for us to have different mental health experiences throughout the year. Know that there are people who want to help. You can reach out to your friends and access a variety of supports available on and off campus at the [Need Help Now](#) webpage or by calling the 24-hour Distress Line: 780-482-4357 (HELP).

Student Self-Care Guide:

This [Self-Care Guide](#), originally designed by the Faculty of Native Studies, has broader application for use during students' learning. It provides some ideas and strategies to consider that can help navigate emotionally challenging or triggering material.

Policy about course outlines can be found in [Course Requirements, Evaluations Procedures and Grading](#) of the University Calendar.

Land Acknowledgement:

The University of Alberta respectfully acknowledges that we are situated on Treaty 6 territory, traditional lands of First Nations and Métis people.

To learn more about the significance of this land acknowledgement, please read [this](#) useful article and associated links to more information.

Disclaimer:

Any typographical errors in this Course Outline are subject to change and will be announced in class. The date of the final examination is set by the Registrar and takes precedence over the final examination date reported in this syllabus.

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