

## Earth System Through Time ERTH 1009

**Objectives:** Understand how the earth works as a system. Understand why the earth and life are as they are today. Understand and discuss current, major hypotheses about the origin of the universe, earth and life. Realize co-evolution and interaction of earth and life. Understand biological evolution, diversity of life and extinction. Know chronology of major events in the history of life.

We will describe:

First, the components of the system,  
Describe some ways in which components interact, and  
Finally, reconstruct the history of Earth

### Learning outcomes:

By the end of this course,...

you will be able to **understand** and **interpret** evidence for the origin of the Universe, Earth, Life.

you will be able to **describe** various Earth processes.

you will be able to **integrate** the evolution of Earth and Life.

you will be able to **implement** observations and **infer** past environments.

you will be able to **recall** major events in the history of Earth and Life.

Jan 14: Lecture 1A & B – Introduction & Origin of the Solar system, Earth and moon

Jan 21: Lecture 2A & B – Plate tectonics & Earth materials

Jan 28: Lecture 3A & B – Rock cycle and sedimentary facies & Atmosphere and hydrosphere

Feb 4: Lecture 4A & B – Dating, time sequences & Origin of Life and fossils

Feb 11: Lecture 5A & B – Classification and Systematics & Diversity

Feb 18: Lecture 6A & B – Evolution & Extinction

Mar 11: Lecture 7A & B – Life environments & Biogeochemical processes

Mar 18: Lecture 8A & B – Hadean and Archean & Proterozoic

Mar 25: Lecture 9A & B – Cambrian explosion & Paleozoic oceans

Apr 1: Lecture 10A & B – Paleozoic land & P-T Extinction

Apr 8: Lecture 11A & B – Triassic recovery & Cretaceous

Apr 15: Lecture 12A & B – KT Extinction, Cenozoic & Ice Age and the end

### Mark breakdown

Midterm – 20%

Lab activities – 30% (5 labs worth 6% each)

Online quizzes – 20% (5 quizzes worth 4% each)

Final lecture exam – 30%

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### **Midterm date**

Friday March 4<sup>th</sup>, 6-8pm. Will cover lectures 1AB to 6AB.

### **Final exam date**

To be scheduled by the University, will cover all lectures.

### **Procedure this year**

Due to continued closure of the University, we will be conducting our course remotely this year. Each week a lecture video will be released at class time (Friday 2:35pm). These lecture videos will remain available to you throughout the term. It is highly recommended that you keep up with the lectures, as weekly lab activities may draw from content in the lectures.

**\*IMPORTANT\*** The lecture videos/slides are pre-recorded by Dr. Hillary Maddin, and any dates for assignments, quizzes, etc mentioned within them will correspond to those from the previous Winter 2021 semester offering of this course. So, you do not become confused, please make sure to refer to the Announcements page on the Brightspace module for this course for the proper dates for this Winter 2022 semester version.

Labs will be conducted remotely this year, no in-person labs will be happening. Each lab will be released after the related topics are covered in the lectures. The labs must be done within the time period allotted (approximately 1 work week for each). Make sure to confirm the due dates on each lab assignment when you access it to ensure you deliver them on time.

Our midterm will be held on Friday March 4<sup>th</sup>, 6-8pm, as is typical for normal years. This year the midterm will be completed entirely online during the scheduled time. No extensions (unless prescribed by the PMC) or changes to the time will be permitted without extenuating reasons. The final exam will also be a live, online exam during the formal exam period. Changes to the scheduled date must be pursued through the University.

### **People**

Instructor: Dr. Thais Condez ([ThaisCondez@cunet.carleton.ca](mailto:ThaisCondez@cunet.carleton.ca))

Lab coordinator: Dr. Geoff Pignotta ([geoffrey.pignotta@carleton.ca](mailto:geoffrey.pignotta@carleton.ca))

TAs: Grayson Bilak ([GraysonBilak@cunet.carleton.ca](mailto:GraysonBilak@cunet.carleton.ca)), Zifang Xiong ([zifangxiong@cmail.carleton.ca](mailto:zifangxiong@cmail.carleton.ca)), and Jeffrey Yee ([jeffreyyee@cmail.carleton.ca](mailto:jeffreyyee@cmail.carleton.ca)).

Geoff will oversee all issues concerning the completion of activities related to labs, so he should be your primary contact for lab-related questions. Thais and Grayson may also be able to assist you with questions related to lecture content, quizzes, exams, or overall course concerns.

### **Textbook (recommended)**

“Earth System History” by Stanley – highly recommended as much course content is covered in this textbook. This is also a good resource for the lab activities.

### **Activity Schedule**

Quiz 1 – open from Jan 21-28 [covers lectures 1A, 1B, 2A, 2B]  
Lab 1 – open from Jan 28-Feb 4 [Origins of life]  
Quiz 2 – open from Feb 4-11 [covers lectures 3A, 3B, 4A, 4B]  
Lab 2 – open from Feb 11-18 [Diversity & evolution]  
Quiz 3 – open from Feb 25-Mar 4 [covers lectures 5A, 5B, 6A, 6B]  
MIDTERM EXAM – Mar 4 [covers lectures 1A-6B]  
Lab 3 – open from Mar 4-11 [Extinction]  
Lab 4 – open from Mar 18-25 [Invertebrate fossils]  
Quiz 4 – open from Mar 25-Apr 1 [covers lectures 7A, 7B, 8A, 8B, 9A, 9B]  
Lab 5 – open from Apr 8-15 [Vertebrate fossils]  
Quiz 5 – open from Apr 15-22 [covers lectures 10A, 10B, 11A, 11B, 12A, 12B]  
FINAL EXAM – To be scheduled [covers all lectures]

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### **Policies**

Missed lab activities/quizzes: A missed lab activity or quiz will receive a mark of zero. Any missed activity or quiz should be discussed with Dr. Pignotta. Missed quizzes will not be permitted for retaking. Missed quizzes cannot be reopened. If you miss the quiz, you will miss the opportunity to view the questions in the future.

Missed midterm: An email alerting to the instructor should be sent as soon as possible if the midterm will be missed (either due to scheduling conflict or illness the day of). A deferred midterm may be available to individuals with appropriate reasons.

### **Academic Integrity**

Academic integrity is taken very seriously in the Department of Earth Sciences, and Carleton University in general. Refer to the following document for policies and explanations of activities included with academic integrity.

<https://carleton.ca/registrar/academic-integrity/>

Some examples of violations that will not be tolerated include:

**Plagiarism:** submitting work written in part or whole by someone else, failing to acknowledge sources through proper use of citations.

**Resubmission:** resubmitting work from another or the same course (if repeated).

**Test/exam behavior:** attempting to read another student's paper, speaking/messaging with another student during the exam, using material not authorized by examiner.

**Improper/unauthorized dissemination:** providing access or receiving access to confidential materials (e.g. exam questions), and distribution of course materials.

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Violations will be taken very seriously and may involve the Department Chair, and/or the Dean. Sanctions for such violations may include grade of zero, decreased course grade, remediation, withdrawal from the course, or more.

### **Requests for Academic Accommodation**

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

#### **Pregnancy obligation**

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: [carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

#### **Religious obligation**

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: [carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

### **Academic Accommodations for Students with Disabilities**

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. [carleton.ca/pmc](https://carleton.ca/pmc)

### **Survivors of Sexual Violence**

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and is survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: [carleton.ca/sexual-violence-support](https://carleton.ca/sexual-violence-support)

### **Accommodation for Student Activities**

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after

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the need for accommodation is known to exist. <https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

For more information on academic accommodation, please contact the departmental administrator or visit: [students.carleton.ca/course-outline](https://students.carleton.ca/course-outline)