

# ERTH 3206

## Sedimentary Depositional Systems



*Peritidal dolostone (brown) with quartz arenite forming interlaminae and filling syndimentary fractures. Tidal and syntectonic influences, Middle Ordovician (Providence Island Formation), eastern Ontario.*

*Lecture / Lab / Seminar Course by Remote Learning,  
Fall 2020*

*Instructor*  
**Prof. George R. Dix**  
*Department of Earth Sciences  
Carleton University, Ottawa, Canada*

## What is EARTH 3206 all about?

The course introduces the concept of sedimentary depositional systems and the relationship to oceanographic conditions through study of carbonate and siliciclastic facies. Outside of the COVID pandemic, we could investigate field expression of a wide range of sedimentary facies exposed in the Ottawa region. However, with remote learning, some of this will be brought to you through virtual field trips, along with mini-lectures, class discussions, and peer seminars in November.

This is another layer of your growing database related to the origin, deposition, classification, and (sequence) stratigraphic architecture of sediments and rocks that you first learned in EARTH 2314. Neither course stands alone, you **MUST** incorporate what you learned previously, including topics from other 2<sup>nd</sup> year courses (e.g., paleontology, mineralogy), in order to develop greater maturity in confidently resolving sedimentary geological problem/questions.

*Prerequisite Knowledge Base: everything from EARTH 2314*

The course format is a single day each week (0830 – 1600 hrs) in order to allow you to focus entirely on this subject material. CuLearn's Big Blue Button will be used to establish synchronous support throughout the day, as well as enable class discussion and seminars. Given remote learning, we will take breaks through the day.

***WHAT'S EXPECTED OF YOU? . . HOW TO APPROACH THE COURSE? . .  
WHAT TO WRITE DOWN? . . HOW WILL YOU BE ASSESSED?***

### ***LEARNING OUTCOMES***

1. Recognize the range of sedimentary (physical, chemical, biological) attributes associated with a variety of sedimentary depositional systems.
2. Develop understanding of the dynamics of sedimentary systems in response to change in tectonics, climate, and oceanography.
3. Synthesize the range and any signature feature of sedimentary attributes for a given environment to enable critical comparison among depositional systems.
4. Work in a team to reinforce the ability to critically assess geological field data and published (literature) information.
5. Reinforce presentation (written, oral) skills.

### **There is reading: please prepare for each week by reading ahead of time**

This is your primary reference source, and active learning is essential; this means, reading the required sources of information in a timely manner so that you are prepared for the field each week.

### **This course is not about competitions for marks.**

You are part of a group that, collectively, needs to gain understanding about depositional systems and reinforcement in sedimentary facies analysis. Support each other, talk to each other remotely. Offer guidance where needed or asked for. As the group improves, so do you.

**FINAL GRADE ASSESSMENT**

Your assessment is based on

(1) participation in remote-learning class discussion

- this means contributing to online discussions; there is no absolute % applied to this; instead I use your participation to move your final mark across any significant boundary (e.g., B+ to A-) if you are close to such a boundary

(2) lab assignments: Lab 01-04; each assignment is worth 5%.

(3) sketchbook note submissions

- if we were in the field, I would expect that you would summarize your observations in series of notes and sketches that illustrate the critical features of a stratigraphic succession and attributes of the depositional environments represented in the field.

(4) seminar

- participation in presenting a seminar to the class involving a PPTx presentation to the class

(5) term project (due Dec 01, 1600 hrs): *Summary of Depositional Environments*

Produce a table that summarizes the key attributes of depositional systems examined in this course:

Depositional System	Lithology (or range)	Sediment Texture/Fabric	Sedimentary Structures	Interpreted Processes	Stratigraphic Geometry	Other notes
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This is but *one* example, and you are encouraged to develop your own design and column types; for example, you might think that it is very important to incorporate tectonic (trailing, foreland) setting. Although there are many environmental settings defined in the field guide, you should try to group them as subsets under more general environmental headings, if appropriate.

**Late submissions are not accepted**

**Course Evaluation: total % of final mark**

1. Lab assignments    20 (made up of 4 assignments)
2. Sketchbook notes    10 (made up of 4 submissions)
3. Seminar                20 (same mark is given to a group)
4. Term project         50 (individual submission)

## **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 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)

## **ERTH 3206 Lecture / Lab Itinerary**

all work is carried out remotely but with synchronous support through Big Blue Button

**Sept 15**      **Course Overview, Re-introduction of Sedimentary Facies**

**Sept 22**      **Aeolian Systems**

**Sept 29**      **Marine Transgressive Systems**

*Sept 30 is final date for selection of seminar topic*

**Oct 06**      **Fluvial and Glacial Systems**

**Oct 13**      **Estuarine Systems**

**Oct 20**      **Depositional Cycles (shelf, outer platform)**

**Nov 03**      **Bioturbation;  
Wave and Storm Influenced Systems**

**Nov 10**      **Seminars**  
topics will have been selected by end of Sept

**Nov 17**      **Seminars (cont.)**

**Dec 01**      **due date for Term Project**