DEPARTMENT OF EARTH SCIENCE
UNIVERSITY OF TORONTO MISSISSAUGA

ERS313H5F LEC0101
Sedimentology
Course Outline - Fall 2016

Class Location & Time	Mon, 11:00 AM - 12:00 PM DV 1146 Wed, 11:00 AM - 12:00 PM DV 1146 Fri, 11:00 AM - 12:00 PM DV 1146
Instructor	Marc Laflamme
Office Location	Dv 4054
Office Hours	Mo: 1-2pm, We 1-2pm
Telephone	905-828-5228
E-mail Address	marc.laflamme@utoronto.ca
Course Web Site	https://portal.utoronto.ca/webapps/blackboard/execute/modulepage/view?course_id=_82420 8_1&cmp_tab_id=_465769_1&editMode=true&mode=cpview

Course Description

Sedimentology concerns the formation, accumulation, alteration, and preservation of sediments in the geological record. This course will focus on the reconstruction and interpretation of ancient carbonate and siliciclastic paleoenvironments based on the analysis of sedimentary structures, depositional environments, stratigraphic successions, and fossils. The interplay between biological and geological factors responsible for sedimentary deposits will form the core of the course, including the physical transport and biological accumulation of sediments, the effects of climate-driven sea-level change on sediment deposition, and how the evolution of, and innovations within, biological systems have profoundly affected sedimentary processes over the past 3.5 billion years. This course will include a laboratory component in addition to a field trip allowing for first-hand experience with describing and interpreting sedimentological units. [24L, 36P]

Prerequisite: ERS201H5, 203H5
Corequisite: none
Exclusion: ESS331H1, 332H1 (SCI)
Distribution Requirement: SCI

Textbooks and Other Materials

We will be using Principles of Sedimentology and Stratigraphy (5th Edition) by Sam Boggs Jr. extensively. It is an excellent sedimentology textbook that I would strongly recommend to anyone interested in sedimentology.

Another recommended resource is Facies Models 4 by Noel P. James and Robert W. Dalrymple. If you are a member of the Geological Association of Canada (cheap for students, and a great CV builder!), it is half price. This book is not required, but it is another excellent resource that I will be consulting throughout the semester.

Assessment and Grading

Type	Description	Due Date	Weight
Lab	Lab reports	On-going	10%
Assignment	Annotated Bibliography	2016-09-30	5%
Assignment	NSERC first draft	2016-11-11	5%
Assignment	NSERC review	2016-11-18	5%
Term Test	Term test	2016-10-07	25%
Assignment	NSERC proposal	2016-12-02	15%
Final Exam	Final exam	TBA	35%
		Total	100%

Procedures and Rules

Penalties for Lateness

Late penalty on all assignments: 20% of full mark per day.

Equity Statement

The University of Toronto is committed to equity and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect. As a course instructor, I will neither condone nor tolerate behaviour that undermines the dignity or self-esteem of any individual in this course and wish to be alerted to any attempt to create an intimidating or hostile environment. It is our collective responsibility to create a space that is inclusive and welcomes discussion. Discrimination, harassment and hate speech will not be tolerated. If you have any questions, comments, or concerns you may contact the UTM Equity and Diversity officer at edo.utm@utoronto.ca or the University of Toronto Mississauga Students' Union Vice President Equity at vpequity@utmsu.ca.

Academic Rights

You, as a student at UTM, have the right to:

- Receive a syllabus by the first day of class.
- Rely upon a syllabus once a course is started. An instructor may only change marks' assignments by following the University Assessment and Grading Practices Policy provision 1.3.
- Refuse to use turnitin.com (you must be offered an alternative form of submission).
- Have access to your instructor for consultation during a course or follow up with the department chair if the instructor is unavailable.
- Ask the person who marked your term work for a re-evaluation if you feel it was not fairly graded. You have up to one month from the date of return of the item to inquire about the mark. If you are not satisfied with a re-evaluation, you may appeal to the instructor in charge of the course if the instructor did not mark the work. If your work is remarked, you must accept the resulting mark. You may only appeal a mark beyond the instructor if the term work was worth at least 20% of the course mark.
- Receive at least one significant mark (15% for H courses, 25% for Y courses) before the last day you can drop a course for H courses, and the last day of classes in the first week of January for Y courses taught in the Fall/Winter terms.
- Submit handwritten essays so long as they are neatly written.
- Have no assignment worth 100% of your final grade.
- Not have a term test worth 25% or more in the last two weeks of class.
- Retain intellectual property rights to your research.
- Receive all your assignments once graded.
- View your final exams. To see a final exam, you must submit an onlineExam Reproduction Request within 6 months of the exam. There is a small non-refundable fee.
- Privacy of your final grades.
- Arrange for representation from Downtown Legal Services (DLS), a representative from the UTM Students' Union (UTMSU), and/or other forms of support if you are charged with an academic offence.

Referencing style: For your report, please use the following referencing style: https://en.wikipedia.org/wiki/Parenthetical_referencing. Taken directly from this wikipedia article:

In-text citation: The structure of a citation under the author-date method is the author's surname, year of publication, and page number or range, in parentheses, as illustrated in the Smith example near the top of this article.

- The page number or page range is omitted if the entire work is cited. The author's surname is omitted if it appears in the text. Thus we may say: "Jones (2001) revolutionized the field of trauma surgery."
- Two authors are cited using "and" or "&": (Deane and Jones, 1991) or (Deane & Jones, 1991). More than two authors are cited using "*et al.*": (Smith *et al.*, 1992).
- In some documentation systems (e.g., MLA style), an unknown date is cited as having "no date of publication" by the abbreviation for "no date" (Deane, n.d.).
- In such documentation systems, works without pagination are referred to in the References list as "not paginated" with the abbreviation for that phrase (n. pag.).

- "No place of publication" and/or "no publisher" are both designated the same way (n.p.) and placed in the appropriate spot in the bibliographical citation (*Harvard Referencing*. N.p.).
- A reference to a republished work is cited with the original publication date either in square brackets (Marx [1867] 1967, p. 90) or separated with a slash (Marx, 1867/1967, p. 90). The inclusion of the original publication year qualifies the suggestion otherwise that the publication originally occurred in 1967.
- If an author published several books in 2005, the year of the first publication (in the alphabetic order of the references) is cited and referenced as 2005a, the second as 2005b and so on.
- A citation is placed wherever appropriate in or after the sentence. If it is at the end of a sentence, it is placed before the period, but a citation for an entire block quote immediately *follows* the period at the end of the block since the citation is not an actual part of the quotation itself.
- Complete citations are provided in alphabetical order in a section following the text, usually designated as "Works cited" or "References." The difference between a "works cited" or "references" list and a bibliography is that a bibliography may include works not directly cited in the text.
- All citations are in the same font as the main text.

Reference list: Examples of book references are:

- Smith, J. (2005a). *Dutch Citing Practices.* The Hague: Holland Research Foundation.
- Smith, J. (2005b). *Harvard Referencing*. London: Jolly Good Publishing.

In giving the city of publication, an internationally well-known city (such as London, The Hague, or New York) is given as the city alone. If the city is not internationally well known, the country (or state and country if in the U.S.) is given.

An example of a journal reference:

- Maynard Smith, John (1998). "The origin of altruism," *Nature* **393**: 639-40.

Cite your sources OR How not to plagiarize: You need to be aware that plagiarism is an academic offence with associated academic regulations that might affect much more than your mark. See section B.1 in the Academic Code:

http://www.utoronto.ca/govcncl/pap/policies/behaveac.html#_Toc469656993

You need to give credit to everyone who developed an idea or an experimental/theoretical method that you are building on. You have to reference the source of an idea, even if you have put it in your own words. Be aware that the converse is also true: the mere fact that you are referencing the source of an idea *does not allow you to use the exact words* from that source. You would have to make sure that a literal quote is clearly visible as such (for example, using quotation marks). Extensive direct quotations - even if clearly marked as such - are not permissible as they are not very common in scientific writing. It is much more common that you paraphrase the idea in your own words (and reference the source where the idea originated from). Check out the U of T document "How not to plagiarize" for some common misconceptions:

http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize

Additional Dates of Significance:
September 6th, 2016: Classes Begin

Friday September 9, 2016: Laboratory in the computer room of the library

Friday September 23, 2016: How to construct an annotated bibliography, in the lab.

Friday October 7, 2016: Peer review tutorial, in the lab.

October 11-14, 2016: Fall Reading Week - No classes

December 5th, 2016: Fall Term Ends

December 6-7, 2016: Study Break

December 8-20, 2016: Examination period

Missed Term Work

Within one week of the date of the missed work, students must submit to the course instructor a signed letter explaining the reason for their absence. The letter must include the student's name, phone number, email address, student number and lab/tutorial section

number as well as the date of and the description of the missed work. A doctor's note or appropriate documentation (a UofT Verification of Student Illness or Injury form must be provided for medical absences) regarding the absence must be stapled to the letter.

If the explanation for the missed work is deemed reasonable after verification of the documentation, the final exam mark will be used as the mark for the missed work. If the explanation is considered unreasonable or no letter is submitted within one week of the missed work, a mark of zero will be assigned for the missed work.

Missed Final Exam

Students who cannot write a final examination due to illness or other serious causes must file anonline petition **within 72 hours of the missed examination**. Original supporting documentation must also be submitted to the Office of the Registrar **within 72 hours of the missed exam**. Late petitions will **NOT** be considered. If illness is cited as the reason for a deferred exam request, a U of T Verification of Student Illness or Injury Form must show that you were **examined and diagnosed at the time of illness and on the date of the exam, or by the day after at the latest**. Students must also record their absence on ACORN on the day of the missed exam or by the day after at the latest. Upon approval of a deferred exam request, a non-refundable fee of $70 is required for each examination approved.

Email Contact Policy

Check your @mail.utoronto.ca email accounts regularly. All official communication from the university to students regarding class assignments, courses, grades, academic administration, and other matters ***are sent only to email addresses that end in @mail.utoronto.ca***. Messages from other email providers can experience problems in both sending to and receiving from @mail.utoronto.ca addresses.

It is mandatory for all students to use their @mail.utoronto.ca email address to ensure that they do not miss important course information, requests, or announcements regarding academic matters.

Communications Policy

Students are welcome and encouraged to visit me during my posted office hours. Visits outside of regularly scheduled office hours can be made by appointment. Correspondence by e-mail is also acceptable. It is mandatory for all students to check their @mail.utoronto.ca email accounts regularly. All official communication from the university to students regarding class assignments, courses, grades, academic administration, and other matters are sent only to email addresses that end in @mail.utoronto.ca. Messages from other email providers can experience problems in both sending to and receiving from @mail.utoronto.ca addresses. You must use your @mail.utoronto.ca email address to ensure that you do not miss important course information, requests, or announcements regarding academic matters. You will be held accountable if you miss any information because you did not check your @mail.utoronto.ca account.

In all email correspondence regarding this course, please note the following:

1. Please send email only from your @mail.utoronto.ca account.
2. In the Subject line of your message, please include the course code and a brief description of the topic, e.g. "[Course code] - Request for an appointment".
3. Please include your full name and student number in all correspondence.
4. Please consult the course syllabus and course website before sending questions by email.
5. Please indicate what steps you took to attempt to answer your question on your own prior to emailing me.

I typically respond to e-mails within 24 hours or within two workdays at the latest. Students are responsible for all information posted to the course Blackboard site (as accessed through http://www.portal.utoronto.ca), and e-mails sent by the Course Instructors and teaching assistants. Please check these regularly to ensure that you do not miss important course information, requests, or announcements regarding academic matters.

Final Exam Information

Duration:	2 hours
Aids Permitted:	None

Other Information

Topics:

1. Weathering and Soils

2. Transport and Deposition of Siliciclastic Sediments

3. Sedimentary Textures

4. Sedimentary Structures

5. Siliciclastic Rocks

6. Carbonate Rocks.

7. Chemical/Biochemical/Carbonaceous Rocks

8. Fossil Tools

9. Fossil Preservation

10. Terrestrial Environments

11. Marginal Marine Environments.

12. Siliciclastic Marine Environments

13. Carbonate Factory and Evaporitic Environments

Academic Skills Workshops

A workshop on literature research, scientific writing and presentation skills will be offered by the Science Liaison Librarian and/or representatives from the Robert Gillespie Academic Skills Centre. Students are highly encouraged to attend. The workshop will be held during the tutorial and will be instrumental in completing the final research assignment.

1) How to identify a research topic and how to find primary literature: With Science Librarian Mindy Thuna **Friday September 9, 2016**. **Laboratory in the computer room of the library**.

2) How to construct an annotated bibliography, and tutorials on primary vs. secondary literature on **Friday September 23, 2016** with Science Librarian Mindy Thuna.

3) Peer review tutorial on **Friday October 7, 2016** with Science Librarian Mindy Thuna.

Essay: NSERC Research Grant:

I have always valued tasks that were grounded in real-world problems. Since my arrival at UTM, I have designed and implemented assignments that resulted in the transmission of life-learning skills - most notably effective writing. To this end, I have implemented a term project that recreates the excitement of scientific research through the real-world experience of applying for grant funding. I chose to emulate applying for a National Science and Engineering Research Council (NSERC) of Canada graduate student grant. As students, you are tasked with developing a unique research project grounded in primary scientific literature. Complementing the proposal is the development of a curriculum-vitae (CV), which will aid you in identifying professional strengths and shortcomings. Finally, you will seek out two academic references who would write a letter of reference on your behalf.

My goal with this exercise is to familiarise you with the procedural details associated with applying for research money. From the NSERC website: "Provide a detailed description of your proposed research project. Be as specific as possible. Provide background information to position your proposed research within the context of the current knowledge in the field. State the objectives and hypothesis, and outline the experimental or theoretical approach to be taken (citing literature pertinent to the proposal), and the methods and procedures to be used. State the significance of the proposed research to a field or fields in the natural sciences and engineering (NSE)." All this in 1500 words!

I understand that this is daunting, but with the help from experts at the library and the Robert Gillespie Academic Skills Centre, we will be providing you with all the tools you need to succeed with this. The total project is worth 30%, divided into scaffolded components that build upon each other.

1) Identification of a research topic - With the help of a librarian, we will explore how scientists build a testable hypothesis that will form the cornerstone of your research grant. We will have a special session in the dedicated computer center at the library with the academic librarian to help you learn best practices when it comes to using an academic library database to find peer-reviewed

primary literature.

2) Production of an annotated bibliography (5%) - This will consist of a commented review of the literature you found on your research topic. Some will be useful, others will not. It is up to you to pull out the key components of each paper - the important information that you will want to use in your research grant.

3) Writing a first draft (5%) - A first draft of your proposal will be reviewed by a student colleague, TA, and I for feedback. This exercise is to simulate the review process, and will allow you to make changes to your proposal before the final deadline. You will be encouraged to incorporate as many of the changes as you can to your final proposal, however it is your responsibility to weigh the value of the comments, and to refuse any you do not agree with. It is our goal to help you produce a final draft you are proud of.

4) Peer review of the first draft (5%) - As mentioned above, each student will also review another student's work. Peer review is a fundamental aspect of scientific literacy, and ensure proper checks and balances in all fields of research. Conducting a review is not easy - it requires you to become familiar with the topic you are reviewing, as well as providing insight into the validity of the research manuscript. I found this blog to be very helpful when working on a review:

http://violentmetaphors.com/2013/12/13/how-to-become-good-at-peer-review-a-guide-for-young-scientists/.

For the purpose of this course, your review will be limited to constructive criticism to improve your peers work. Reviews will be restricted to a single page (500 words max). Start by providing a short synopsis of the proposal, then itemize any comments you have. This can include scientific comments (is the project well defined? did you understand their purpose and goals? Are they testing a hypothesis?), comments on the methodology (was it clear? do you understand how they will be gathering data? is it realistic?), or even on the writing style (are there a lot of mistakes? were any sentences confusing? do they use too much undefined terminology or abbreviations?). Do your best to make their project better, and you will be rewarded for your efforts. We will also be employing the help from experts at Robert Gillespie Academic Skills Centre and the Library.

5) Building a professional curriculum vitae - All research grants are accompanied by a professional curriculum vitae that documents all of your academic achievements. Experts from the Career Center will help us with this. You are not expected to include this with your proposal - it is only to help with your future career.

6) Submission of a final document (15%) - Following the reviews, you will have two weeks to perfect your proposal. A good proposal will require the following:

1. A detailed hypothesis outlining what you hope to accomplish, how you expect to conduct your research, where you expect to collect your data, when (and for how long) you will be collecting data, and most importantly, why you believe this research is essential to the betterment of society.

2. Five (5) primary scholarly research articles from any scientific publication. This does NOT include websites or textbooks. Please consult a librarian should you need any help in researching your topic. They will gladly assist you.

Always remember the 5 "Ws".

Who: Who will be conducting the research? On your own, or part of a team? What skills does your team have?

What: What will your research be about? What is your hypothesis or goals?

When: When will you be conducting the research? Weather and field seasons? Geological timescale?

Where: Where will your research take you? Be as specific as possible

Why: Most important, WHY is your research important? Why should anyone care? How do you make it accessible to a broad audience?

… And the all-important HOW:

How will you be collecting data? You must have specific methodologies proposed based on previously successful experiments (i.e. that you found in your literature search). BUT! Your research must be novel, and not simply repeating something you read in a paper.

How will you be interpreting the data you collect? What methods will you apply to the data? Statistics? Advanced machinery and instrumentation?

All components must be submitted to me by the deadline provided. Late penalty is 20% of the full mark per day.

Last Date to drop course from Academic Record and GPA is November 9, 2016.