EARTH SC/ENVIR SC 3E03  
CLASTIC SEDIMENTARY ENVIRONMENTS  
Fall Term 2017

Instructor: Dr. Janok P. Bhattacharya, GSB210, x23528, e-mail: bhattaj@mcmaster.ca  
Lectures: Mon., Wed. 11:30am-12:20pm, HH210  
Lab: Mon. 12:30-2:20 am, BSB/343  
TA: Wen Lin, BSB 311, e-mail: linw33@mcmaster.ca

Course Objectives  
This course introduces the study of clastic sedimentary rocks and the processes and depositional environments in which they form. The course initially covers the mechanics of sediment transport and the formation of sedimentary structures and then examines specific depositional settings and their associated deposits including fluvial, deltaic, coastal and deep marine environments. The course will conclude with a consideration of larger-scale stratigraphic concepts associated with filling of sedimentary basins.

By the end of the course students should have a thorough understanding of depositional processes, the environments in which they operate and the sedimentary record they produce. Students will also develop skills in the following areas:

- Description and interpretation of sediments and sedimentary rocks
- Measuring stratigraphic sections and core analysis
- Quantitative analysis and hydrodynamic analysis
- Lab report writing and editing

Course Format  
Two one-hour lectures per week. The lab periods will introduce the fundamentals of laboratory analysis of sedimentary rocks, including: 1) sediments and sedimentary rock identification, 2) textural analysis, 3) interpretation of biogenic and sedimentary structures, 4) facies analysis and interpretation of depositional environments 5) core logging, 6) stratigraphic correlation techniques.

Course Evaluation  
Lab Projects & Field Report 20%  
Lab Quizzes 20%  
Class Quiz 10%  
Final exam 50%

Lecture and Lab Schedule:  
The following is a general outline of the planned lecture topics. We may spend more or less time on some aspects as time permits.

Quiz and Lab Exam Dates:  
Class Quiz: Monday, Oct. 16th  
Lab Quizzes: Monday, October 30th; Monday, December 4th
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<thead>
<tr>
<th>MW</th>
<th>Lecture Topics:</th>
<th>Labs:</th>
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<tr>
<td>1) Sept. 6</td>
<td><strong>Lee 1:</strong> Introduction</td>
<td>No Labs</td>
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<tr>
<td>2) Sept 11/13</td>
<td><strong>Lee 2:</strong> Sedimentary Rocks</td>
<td><strong>Lab #1:</strong> Grain size and texture</td>
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<td>3) Sept 18/20</td>
<td><strong>Lee 3:</strong> Mechanics of Sediment Transport</td>
<td><strong>Lab #1:</strong> Grain size and texture</td>
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<td>4) Sept. 25/27Sat.</td>
<td><strong>Lee 3:</strong> Mechanics of Sediment Transport</td>
<td><strong>Lab #1:</strong> Grain size and texture</td>
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<td>Sept. 30</td>
<td><strong>Field Trip - 9am-4pm</strong></td>
<td><strong>Field Trip</strong></td>
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<td>5) Oct. 2/4</td>
<td><strong>Lee 4:</strong> Bedforms &amp; Sedimentary Structures</td>
<td><strong>Lab #2:</strong> Fluid Mechanics</td>
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<td>6) Oct. 9-13</td>
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<td>7) Oct. 16/18</td>
<td><strong>Mon., Oct 16th, Class Quiz</strong></td>
<td><strong>Lab #3:</strong> Sedimentary &amp; biogenic structures</td>
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<td><strong>Lee 5:</strong> Soles &amp; Loads</td>
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<td>8) Oct. 24/26</td>
<td><strong>Lee 6:</strong> Waves &amp; Tides</td>
<td><strong>Lab #3:</strong> Sedimentary &amp; biogenic structures</td>
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<td>9) Oct. 30/Nov. 1</td>
<td><strong>Lee 7:</strong> Ichnology</td>
<td><strong>Oct. 30th - Lab Quiz #1</strong></td>
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<td><strong>Lee 8:</strong> Facies Concepts</td>
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<td>10) Nov. 6/8</td>
<td><strong>Lee 9/10:</strong> Alluvial Facies Models/Rivers</td>
<td><strong>Lab #4:</strong> Core Logging</td>
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<td>11) Nov. 13/15</td>
<td><strong>Lee 11:</strong> Coasts &amp; Shelves</td>
<td><strong>Lab #4:</strong> Core Logging (Cntd.)</td>
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<td>12) Nov. 19/21</td>
<td><strong>Lee 12:</strong> Deep Water Environments</td>
<td><strong>Lab #5:</strong> Correlation Exercises</td>
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<td>13) Nov. 27/29</td>
<td><strong>Lee 13:</strong> Base Level &amp; Sequence Stratigraphy</td>
<td><strong>Lab #5:</strong> Correlation (Cntd.)</td>
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<td>14) Dec. 4/6</td>
<td><strong>Class Review</strong></td>
<td><strong>Dec. 4th - Lab Quiz #2</strong></td>
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**Final Exam:** Scheduled by registrar

**Field Trip:** Saturday, September 30th: 9am-4pm; Niagara escarpment

**Avenue Website**  
Lecture slides will be posted periodically to Avenue in PDF format. Downloading the lecture slides is not a substitute for attending lectures; the lecture slides are only a summary of what is discussed in class - you will need to take lecture notes and read the text to expand on the lecture slides.

**Course Texts:**  

**Recommended Texts**  
Statement on Academic Dishonesty

Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g., the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university. It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at http://www.mcmaster.ca/senate/academic/ac_integrity.htm

The following illustrates only three forms of academic dishonesty:

Plagiarism, e.g., the submission of work that is not one's own or for which other credit has been obtained.

Improper collaboration in group work. Copying or using unauthorized aids in tests and examinations.

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

POLICY ON ABSENCES AND MISSED WORK

McMaster Student Absence Forms (MSAF)

If you miss a lab or test for a legitimate reason (e.g., illness or other extenuating circumstances) you must file documentation using the McMaster Student Absence Form (MSAF). The form is available online (https://pinjap01.mcmaster.ca/msaf/) and can be used to report absences of up to 3 days. A maximum of 1 MSAF may be filed per term but not during final exam periods. If you are absent for more than 3 days, or exceed 1 MSAF request per term, you must visit the Associate Dean’s Office.

Note that you do not need a doctor’s note when using the MSAF. If there are extenuating circumstances for an absence that you would like to discuss, feel free to email me or see me after lecture.

Missed Work and Tests

If you have missed a lab or a mid-term test and have submitted a MSAF, the marks will be applied to your final exam. For example, if your final exam was worth 45% and you miss one lab worth 10%, your final exam will be increased to 55% (45% + 10% = 55%). The MSAF must be submitted no more than 1 week after the absence or due date for missed work (i.e., you cannot submit the form at the end of term for missed work) and you must contact me (within 2 working days) to let me know that you intend to submit the MSAF.

A grade of zero will be given for missing work or missed tests if no MSAF (or other documentation from the Associate Dean) has been received.

Late Work

Labs or assignments submitted late will receive a penalty of 10% per day and will not be accepted more than four days beyond the deadline. Labs submitted after this time will automatically receive a grade of zero unless a MSAF has been filed. All late labs must be handed into the TA or placed in the 3E03 drop box on the 2nd floor of the General Science Building (GSB). Note: there is no access to the drop boxes after 4:30 p.m. or on weekends but there is an after-hours drop box on the 2nd floor of GSB just inside the door on the west side of the building.