

Biology 3EI3 Ecological Indicators

Professor: Dr. Patricia Chow-Fraser (LSB Rm 224)

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Office consultation by appointment only

Course Description:

For over two decades, ecologists and managers have routinely used ecological indicators and indices (including several parameters) to evaluate the condition or health status of an ecosystem, to assess the effectiveness of management actions, and to track changes in ecosystem response to major environmental disturbances. This course will introduce students to some of the indicators and indices that have been developed for use in aquatic ecosystems including streams, wetlands and lakes. Several case studies will be used to illustrate how indicators have been used to guide ecosystem restoration and management of sensitive fish and wildlife taxa, including those occurring within the local community and within the Great Lakes basin. The associated laboratory exercises will reinforce in-class presentations and discussions and allow students to process field samples, analyze data, perform statistical tests and conduct GIS analyses. By the end of the course, students will be familiar with use of various indicators (e.g. water quality information, abundance or presence of biota, percentage land use and landscape features) to monitor the health of different types of aquatic ecosystems.

Required text: There is no recommended textbook. The course will rely on the exclusive use of on-line primary and secondary literature, as well as data and samples assembled specifically for students' use. Students will be required to use two software, **QGIS**, which is provided without any fees, downloadable from <https://qgis.org/en/site/forusers/download.html> for both Mac and Windows OS, as well as **SAS JMP**, \$USD 29.95 downloadable from https://www.jmp.com/en_us/software/how-to-get-jmp.html, which is valid for 6 months.

Presentation Format: Mondays 11:30-1:20 BSB 238 and Thursdays 2:30-5:20

Avenue to Learn will be used to communicate with students throughout the course. Students are expected to consult this regularly (before weekly lectures and lab) for updates and instructions.

Grading Scheme:

Lab assignments and in-lab quizzes	35%
Midterm Exam (February 28, 2018)	25%
Final Project Presentation	20%
Final Lab Practical Exam (Mar 29)	15%
Class and lab participation	5%
Total	100%

Policy regarding class and lab attendance and exams:

- This is an inquiry-style course with a large dose of experiential learning. It is designed to give students a taste of real-world data and case studies that will prepare them for both research and future employment. Although the 2-h time slots are used for lecture presentations, while the 3-h time slots are used to reinforce the lecture material through practical applications, both conceptual and applied material can and will be presented interchangeably throughout the term within the class and lab times. Therefore, **attendance at labs and classes are mandatory in this course**. Students will not do well if they regularly skip classes, and they **must get caught up on their own if they miss a class** (i.e. do not expect a private lesson). **Students must also provide a valid MSAF (see below) to be excused from any scheduled lab.**
- There are **four lab assignments** that must be submitted for grading by the scheduled due date, even if the student misses the associated labs. Depending on the circumstances for missing the lab in question, an extension of up to 24 hours *may be* granted.
- There are **six scheduled in-lab quizzes**. Provided there is a valid MSAF, marks for any missed quiz prior to the midterm will be put towards the midterm exam. Any marks for quizzes after the midterm will be put towards the lab practical exam. *Students generally score lower grades in the exams.*
- The **midterm exam** is mandatory and will be held outside of regularly scheduled class time on **February 28, 2018 from 7-9 pm**. ***There will be no re-write for this midterm exam.*** With a valid MSAF, any student who misses the midterm exam will be examined orally by the Professor and TA of the course at the earliest opportunity. *I greatly discourage you against missing the midterm exam.*
- The **lab practical exam** is mandatory and will be held during the last lab of the course on **April 5, 2018**. ***There will be no re-write for this lab practical.*** With a valid MSAF, any student who misses the lab practical exam will be examined orally by the Professor and TA of the course at the earliest opportunity. *I greatly discourage you against missing the lab practical.*
- In keeping with the experiential-learning style, students are expected to participate actively in both class and labs. Accordingly, 5% of the final grade will be given for the degree of student participation. Participation includes attending classes and labs regularly, answering questions during classes and labs, listening attentively to instructions during labs, sharing opinions and giving feedback on student presentations at the end of the term, volunteering for demonstrations, and working collaboratively with classmates during labs.

This course has no final exam. Students are evaluated throughout the term through weekly assignments, lab quizzes, midterm exam, lab practical exam and a final project presentation.

POLICY REGARDING MISSED WORK IN THE FACULTY OF SCIENCE (MSAF)

If you are absent from the university for a minor medical/personal reason, lasting fewer than 3 days, you may report your absence, once per term, without documentation, using the **McMaster Student Absence Form (MSAF)**. Absences for a longer duration or for other reasons must be reported to your Faculty/Program office, with documentation, and relief from term work may not necessarily be granted. Please note that the MSAF may not be used for term work worth 25% or more, nor can it be used for the final examination. Immediately after using the online tool, students **MUST contact the instructor of this course** regarding the nature of the relief. Failure to do so may negate the opportunity for relief.

ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca. For further information, consult McMaster University's Policy for Academic Accommodation of Students with Disabilities. <http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicAccommodation-StudentsWithDisabilities.pdf> Once your accommodation was being acknowledged by the instructor, please contact the instructor to discuss your accommodation needs in the course.

CHANGES TO THE COURSE OUTLINE:

At certain points in the course it may make good sense to modify the schedule outlined. The instructor reserves the right to modify elements of the course and will notify students accordingly, both in class and on Avenue to Learn). Posted changes take precedence over this course outline. 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.

ACADEMIC DISHONESTY:

You are expected to exhibit honesty and use ethical behavior in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behavior 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 types of academic dishonesty please refer to the Academic Integrity Policy, located at <http://www.mcmaster.ca/academicintegrity> The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work. While we encourage you to work with your peers in solving problems on your assignments, copying of answers is not acceptable. Your final work must be your own.
3. Copying or using unauthorized aids in tests and examinations.

Grades obtained in 3E13 will be converted according to the following scheme, which is the one in general use at McMaster University.

90 – 100%	A+	12
85 – 89%	A	11
80 – 84%	A-	10
77 – 79%	B+	9
73 – 76%	B	8
70 – 72%	B-	7
67 – 69%	C+	6
63 – 66%	C	5
60 – 62%	C-	4
57 – 59%	D+	3
53 – 56%	D	2
50 – 52%	D-	1
0 – 49%	F	0

When the final marks are obtained, ALL borderline cases will be reviewed and, where warranted, adjustments will be made in the final mark.