

BIOLOGY 2F03**Fundamental and Applied Ecology**

Instructor: Dr. Patricia Chow-Fraser LSB224
chowfras@mcmaster.ca

Office hours: By appointment only via email

Undergrad Coordinator: Alison Cowie

Teaching Assistants: James Marcaccio
Prabha Rupasinghe
Nick Luymes
Tamara Fuciarelli
Alana Tedeschi

Formal Meetings **M W:** 11:30-12:20; **F:** 13:30-14:20
LWR B1007

Required Texts Although there is no required textbook for this course, you are required to use QGIS software (Free Open Online Software) in Modules 2 and 4, and you are expected to use your own computer for these components. Students must also use Avenue to download class notes and other resource information for the labs and the optional field trips.

Course objective: Students in this course will be introduced to ecological principles that will help them understand current threats to biodiversity and possible ways to protect and conserve at-risk species. There are several opportunities for students to learn sampling techniques through optional field trips and workshops. These are available for a limited number of students on a first-come-served basis.

Grade breakdown:

4 Lab Modules	35 marks
2 term tests	40 marks
Final Group Project	25 marks

Note: There is no final exam. A student will not receive a passing grade for the course without writing at least one of the two term tests, and completing the work for at least 2 of the four lab/field modules, in addition to the final presentation.

Detailed Course Outline

All classes are held in LWR B1007 unless otherwise indicated

Tentative Date	Brief Description of Topic	Presenter	Marks
Wed Sep 5	Introduction to course; pedagogical philosophy; navigating field and lab modules; final project; identification of trees on campus	Dr. Patricia Chow-Fraser	--
Fri Sep 7	Hierarchy of biogeographical divisions: Canadian Ecozones, Eco-regions (Individual, Populations, Community, Ecosystem and Biosphere; Biomes)	Dr. Patricia Chow-Fraser	--
Sep 10-Sep 21	Module 1: Identification of trees on McMaster Campus Meet with your TA outside LSB		10
Mon Sep 10	Introduction to Module 1		--
Wed Sep 12	Carolinian Canada: endemism, indicator species, habitat loss, over-harvesting, biodiversity, land trusts	Dr. Patricia Chow-Fraser	--
Fri Sep 14	Great Lakes coastal wetlands: importance and threats	Dr. Patricia Chow-Fraser	--
Mon Sep 17	Cootes Paradise Marsh Case Study 1: Long-term changes	Dr. Patricia Chow-Fraser	--
Wed Sep 19	Cootes Paradise Marsh Case Study 2: Conceptual model to aid restoration	Dr. Patricia Chow-Fraser	--
Fri Sep 21	Biodiversity: Priceless or worthless? The Anthropocene and 6th great extinction	Dr. Patricia Chow-Fraser	--
Sep 24-Oct 5	Module 2: Introduction to QGIS and using it to map trees on campus (meet in your scheduled tutorial section)		10
Mon Sep 24	Introduction to the use of QGIS	Mr. James Marcaccio, Ph.D candidate, Biology	--
Wed Sep 26	Guest lecture: Critical habitat for the noble beast: Muskellunge, Canada's largest sportfish	Mr. Dan Weller, Ph.D candidate, Biology	--
Fri Sep 28	Guest lecture: Strategies to conserve imperiled freshwater turtles in Ontario	Dr. Chantel Markle, Post-doc, S. Geog Earth Sci	--
Mon Oct 1	Amphibian ecology and vernal pools	Mr. Nick Luymes, Ph.D Candidate, Biology	--

Wed Oct 3	Strategy to control invasive <i>Phragmites</i> in Ontario's roadsides	Mr. James Marcaccio, Ph.D Candidate, Biology	
Fri Oct 5	Remote sensing approaches to map <i>Phragmites</i> in wetlands	Ms. Prabha Rupasinghe, Ph.D Candidate, Biology	
Oct 8- Oct 12	Midterm break--No classes		
Mon Oct 15	Reports from students attending Opwall Field Courses (Sample term test questions will be shared)	Dr. Patricia Chow-Fraser	--
Wed Oct 17	Term Test 1 (Multiple choice format)	Dr. Patricia Chow-Fraser during class time; locations to be announced	20
Fri Oct 19	Class is cancelled Optional field trip to sample in local stream Note: besides this day, there are other opportunities during the week	Ms. Alana Tedeschi, M.Sc. Candidate, Biology	--
Oct 22 - Nov 2	Module 3: Conservation ethics In-class quiz, students choose at-risk species for final project		5
Mon Oct 22	Love it or lose it: IUCN strategies to save species at risk—final project	Dr. Patricia Chow-Fraser	--
Wed Oct 24	Alternate Term Test 1 (Short answer format)	Dr. Patricia Chow-Fraser During class time in LRW B1007	--
Fri Oct 26	Introduction to migratory song birds and bird banding	Dr. Patricia Chow-Fraser	--
Sat Oct 27	Optional banding field trip to Ruthven Banding Station: Available for up to 20 students (~7:00-12:00). NOTE: this trip is weather dependent.		
Mon Oct 29	Populations and Communities 1	Dr. Patricia Chow-Fraser	--
Wed Oct 31	Populations and Communities 2	Dr. Patricia Chow-Fraser	--
Fri Nov 2	Use of diversity indices in ecology	Dr. Patricia Chow-Fraser	--
Nov 5 - Nov 16	Module 4: Use of QGIS to analyze distribution of trees on campus and to determine movements of turtles across roads		10
Mon Nov 5	Introduction to QGIS assignment	James Marcaccio, Ph.D candidate	--
Wed Nov 7	Eutrophication in streams and lakes: habitat loss and degradation	Dr. Patricia Chow-Fraser	--
Fri Nov 9	Effects of land use on stream quality	Ms. Alana Tedeschi, M.Sc. candidate, Biology	--
Mon Nov 12	Environmental monitoring and citizen science (URBAN)	Dr. Patricia Chow-Fraser	--

Wed Nov 14	Invasion of asian carp 1	Ms. Alana Tedeschi, M.Sc. candidate, Biology	--
Fri Nov 16	Invasion of asian carp 2	Dr. Patricia Chow-Fraser	--
Sat Nov 17	Optional workshop to process water samples	Ms. Alana Tedeschi & Dr. Patricia Chow-Fraser	
Nov 19 - Nov 30	Module 5: Presentations of group projects in classrooms scheduled by Registrar		25
Mon Nov 19	Term Test 2 (Multiple choice format)	Dr. Patricia Chow-Fraser during class time; locations to be announced	20
Wed Nov 21, Fri. Nov 23	No scheduled class		--
Mon Nov 26	Alternate Term Test 2 (Short answer format)	Dr. Patricia Chow-Fraser LWR B1007 during class	--
Wed Nov 28, Fri. Nov 30 Mon Dec 3	No scheduled classes		--
Wed Dec 5	Presentation of best group presentations		--
Total Marks			100

Accommodation for missed components or tests:

- If students have a valid MSAF for any presentation or assignment associated with any of the modules, the corresponding mark allocation will be added to the closest term test yet to be given. Therefore, marks for Modules 1 and 2 will go towards Term Test 1 while marks for Modules 3 and 4 will go towards Term Test 2.
- With a valid MSAF for missing Term Test 1, a student may write the alternate Term Test 1. If both Term Test 1 and the alternate Term Test 1 are missed, the corresponding mark allocation will be added to Term Test 2. With a valid MSAF for missing Term Test 2, a student may write the alternate Term Test 2. If both Term Test 2 and the alternate Term Test 2 are missed, and the student wrote Term Test 1 or the alternate Term Test 1, the student will receive a grade equal to that of the written test. ***If neither of the term tests are taken, the student will not pass the course.***

NOTE: The information to be tested is the same for both regular and alternate term tests; however, the regular test is multiple-choice whereas the alternate term test will be short answers.

Please note that the topics for each class is tentative and may change to accommodate cancellations of classes or labs due to inclement weather and/or other unanticipated events. Students will be notified on Avenue if any portion of the grade assessment is affected by such unplanned disruptions and how the new marking scheme will be altered.