

BIOLOGY 2F03**Applied and Fundamental Ecology**

Instructor: Dr. Patricia Chow-Fraser LSB224
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Office hours: By appointment only via email

Course Coordinator: Marvin Gunderman

Teaching Assistants: James Marcaccio
 Dan Weller
 Prabha Rupasinghe
 Tamara Fuciarelli

Formal Meetings Monday, Wednesday and Thursdays, 1:30-2:20
 LWR B1007

Required Texts There is no required textbook for this course. However, use of a computer (preferably laptop) is mandatory and students must be able to download QGIS software (Free Open Online Software) and install it on their laptops *before* the beginning of Module 4 (see detailed schedule on the following pages). Students must also use Avenue to obtain class notes and other resource information for the labs and field trip.

Course objective: Students in this course will be introduced to ecological principles that will help them understand current threats to biodiversity and ecosystem resilience. There are opportunities outside the classroom for students to examine current issues through field trips, peer presentations, and group discussions. Optional field opportunities to band birds at the Ruthven Bird Banding station will be organized 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.*

Detailed Course Outline

All classes are held at 1:30-2:20 in LWR B1007 unless otherwise indicated

Tentative Date	Brief Description of Topic	Presenter	Marks
Wed Sep 6	Introduction to course; pedagogical philosophy; Field and lab modules Identification of trees on campus	Dr. Patricia Chow-Fraser	--
Thur Sep 7	Hierarchy of biogeographical divisions: Canadian Ecozones, Eco-regions (Individual, Populations, Community, Ecosystem and Biosphere; Biomes)	Dr. Patricia Chow-Fraser	--
Sep 11-Sep 22	Module 1: Identification of trees on McMaster Campus Meet outside LSB		10
Mon Sep 11	No scheduled class		--
Wed Sep 13	Carolinian Canada: endemism, indicator species, habitat loss, over-harvesting, biodiversity, land trusts	Dr. Patricia Chow-Fraser	--
Thur Sep 14	Cootes Paradise Marsh Case Study I: long-term changes in ecosystem health	Dr. Patricia Chow-Fraser	--
Mon Sep 18	Cootes Paradise Marsh Case Study 2: Conceptual model to aid restoration	Dr. Patricia Chow-Fraser	--
Wed Sep 20	Sustainability, cycle of adaptive change and ecosystem resilience	Dr. Patricia Chow-Fraser	--
Thur Sep 21	Priceless or worthless? The Anthropocene and 6th great extinction	Dr. Patricia Chow-Fraser	--
Sep 25-Oct 6	Module 2: Priceless or Worthless: species at risk In-class quiz, presentations and discussions in classrooms scheduled by the Registrar		7.5
Mon Sep 25- Thur Sep 28	There will be no scheduled classes this week: Use this time to informally meet up to organize for Modules 2 and 3		--
Mon Oct 2	Bringing nature home: sustaining wildlife populations with small acts of planting	Dr. Patricia Chow-Fraser	--
Wed Oct 4-	Facilitating the recovery of the Blanding's turtle (Part 1)	Dr. Chantel Markle	--

Thur Oct 5	Facilitating the recovery of the Blanding's turtle (Part 2)	Dr. Chantel Markle	
Oct 9- Oct 13	Midterm break--No classes		
Mon Oct 16	Reports from students attending Opwall Field Courses (Sample term test questions will be shared)	Dr. Patricia Chow-Fraser Mr. Marvin Gunderman	--
Wed Oct 18	No class: Term Test 1 (Multiple choice format)	Dr. Patricia Chow-Fraser T13 123 and LWR B1007 during class time	20
Thu Oct 19	Introduction to banding of migratory song birds	Dr. Patricia Chow-Fraser	--
Sat Oct 21	Optional banding field trip to Ruthven Banding Station: Available for up to 20 students for morning and evening (7:00-12:00 and 19:00-22:00+ for saw whet owls). This trip is weather dependent.		
Oct 23 - Nov 3	Module 3: Conservation ethics In-class quiz, presentations and discussions in classrooms scheduled by Registrar		7.5
Mon Oct 23	Impacts of climate change on phenological traits	Dr. Patricia Chow-Fraser	--
Wed Oct 25	No class: Alternate Term Test 1 (Short answer format)	Dr. Patricia Chow-Fraser LWR B1007 during class time	--
Thu Oct 26	The game changer: can species adapt to climate change	Dr. Patricia Chow-Fraser	--
Mon Oct 30	Principles of ecosystem stewardship	Dr. Patricia Chow-Fraser	--
Wed Nov 1	Social-ecological systems in practice	Dr. Patricia Chow-Fraser	--
Thu Nov 2	Uses of diversity indices in ecology	Dr. Patricia Chow-Fraser	--
Nov 6 - Nov 17	Module 4: Use of QGIS to map trees of McMaster campus and to analyze road mortality data of the Cootes Paradise Snapping Turtle population in classrooms scheduled by Registrar		10
Mon Nov 6	Strategy to control invasive <i>Phragmites</i> in Ontario's roadsides	James Marcaccio, Ph.D candidate	--
Wed Nov 8	Remote sensing approaches to map <i>Phragmites</i> in wetlands	Prabha Rupasinghe, Ph.D candidate	--
Thu Nov 9	Ecology of amphibians and vernal pools	Nick Luymes, Ph.D candidate	--
Mon Nov 13	Critical habitat of muskellunge, Canada's largest sportfish	Dan Weller, Ph.D candidate	--
Wed Nov 15	Urban ecology	Dr. Patricia Chow-Fraser	--

Thu Nov 16	Urban stream syndrome and citizen science	Dr. Patricia Chow-Fraser	--
Mon Nov 20	No scheduled class		--
Wed Nov 22	Term Test 2 (Multiple choice format)	Dr. Patricia Chow-Fraser T13 123 and LWR B1007 during class time	20
Thu Nov 29	Alternate Term Test 2 (Short answer format)	Dr. Patricia Chow-Fraser LWR B1007 during class time	--
Nov 20 - Dec 1	Module 5: Presentations of group projects in classrooms scheduled by Registrar		25
Mon Dec 4-6	Presentation of best group presentations		--
Total Marks			100

Accommodation for missed components or tests:

- If students have a valid MSAF for any missed presentation or late 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.
- **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.