

Department of Biology Course Outline

SC/BIOL 4255 4.00 Biodiversity,
Fall 2018

Course Description

We do not know the number of species on Earth, even to the nearest order of magnitude. This course discusses the factors that influence the number of species in an area and the importance of biodiversity to humanity.

Prerequisites

Completion of 60 credits required, towards a degree in biology or environmental science or environmental studies, or permission of the Instructor

Course Instructors and Contact Information

L. Packer; 345 Lumbers, ext 66425, by appointment
S. Monckton; 345 Lumbers, ext 66425, by appointment

Schedule

Day and Time of Lectures, T&R 11:00am
Tutorials, Labs T&R&F 2:30pm
(for tutorial and labs you can refer to course website, lab manual and/or York Courses Web Site as appropriate.)

Evaluation

First mid term 15%
Second midterm 15%
Final exam 20%
Lab module 1 10%
Lab module 2 10%
Lab module 3 10%
Assignment 1 10%
Assignment 2 10%

Important Dates

First midterm 2.x
Second midterm 6.xi
Final exam 3.xii
Module 1 16.x
Module 2 13.xi
Module 3 3.xii
Assignment 1 20.ix
Assignment 2 30.x
NOTE: for additional important dates such as holidays, refer to the "Important Dates" section of the Registrar's Website at <http://www.yorku.ca/yorkweb/cs.htm>

Resources

Text, Website, and related information such as Clicker information, lab manual

none

Learning Outcomes

Upon successful completion of this course, students should be able to:

Cognitive: understand the principles of classification, the difficulties associated with the term "species" and estimating how many species there are on earth, DNA barcoding – how it works and what the results show, how species are described, how to assess species richness from the fossil record, mass extinctions – patterns and processes, evidence for and causes of the Pleistocene megafaunal extinctions, historical extinctions and their causes, the special case of islands, how extinction actually happens, conservation genetics, predicting future extinction rates, the impact of deforestation and climate change, practical uses of biodiversity, biodiversity statistics, construct a phylogeny, perform biodiversity statistical analyses, perform computer simulations, prepare a debate without knowing which side you will be on

Psychomotor: use a computer, be able to sort plastic dinosaurs and put them into different places, perform rhetorical gestures, adopt parliamentary postures

Affective: obtain an appreciation of the beauty and academic interest of biodiversity, to obtain a deep caring for life on our planet, to be able to cope with the deep depression that current political-environmental policies are causing through mass extinction and predicted social unrest and mass deaths

Course Content

Details of what will be taught in the course

Introduction

Collecting methods

Principles of classification

Origin of insects and early insect phylogeny

Fossils, character mapping, fossils

Insect life cycles and phenology

Ephemeroptera, Odonata, origin of flight, mating strategies

Dictyopteroid orders, evolution of sociality in termites

Orthoptera and sound production in insects

Hymenoptera, haplodiploidy, social evolution, conservation genetics

Agricultural entomology

Lepidoptera, passive defence mechanisms

Coleoptera, fireflies, bark beetles

Diptera, forensic entomology

Experiential Education and E-Learning

The slide shows are aimed at promoting an affective appreciation of wildlife in all its diversity
The computer simulations provide an interesting experience in terms of understanding how extinction occurs

Other Information

Students will arrive on time as the first few minutes of lectures appear disproportionately on the exams and each laboratory session starts with a quiz that contributes to the overall lab marks, is based on reading of the relevant lab handout and takes place in the first two minutes of the lab session
Students often find this course difficult because it requires a deep understanding of concepts
The drop-out rate is often unusually high after the first midterm
The professor meets with the students one-on-one at least twice during the course to give direction on how to do well/better in the class

Course Policies

- One make-up exam per exam
- Late handed-in on time may not be marked
- Late attendance is penalized due to the choice of exam questions for lectures and lab quizzes for lab sessions
- Lectures may be recorded

University Policies

Academic Honesty and Integrity

York students are required to maintain the highest standards of academic honesty and they are subject to the Senate Policy on Academic Honesty (<http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/>). The Policy affirms the responsibility of faculty members to foster acceptable standards of academic conduct and of the student to abide by such standards.

There is also an academic integrity website with comprehensive information about academic honesty and how to find resources at York to help improve students' research and writing skills, and cope with University life. Students are expected to review the materials on the Academic Integrity website at - <http://www.yorku.ca/academicintegrity/>

Access/Disability

York University is committed to principles of respect, inclusion and equality of all persons with disabilities across campus. The University provides services for students with disabilities (including physical, medical, learning and psychiatric disabilities) needing accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and programs at York University.

Students in need of these services are asked to register with disability services as early as possible to ensure that appropriate academic accommodation can be provided with advance notice. You are encouraged to schedule a time early in the term to meet with each professor to discuss your accommodation needs. Please note that registering with disability services and discussing your needs with your professors is necessary to avoid any impediment to receiving the necessary academic accommodations to meet your needs.

Additional information is available at the following websites:

Counselling & Disability Services - <http://cds.info.yorku.ca/>

Counselling & Disability Services at Glendon - <http://www.glendon.yorku.ca/counselling/personal.html>

York Accessibility Hub - <http://accessibilityhub.info.yorku.ca/>

Ethics Review Process

York students are subject to the York University *Policy for the Ethics Review Process for Research Involving Human Participants*. In particular, students proposing to undertake research involving human participants (e.g., interviewing the director of a company or government agency, having students complete a questionnaire, etc.) are required to submit an *Application for Ethical Approval of Research Involving Human Participants* at least one month before you plan to begin the research. If you are in doubt as to whether this requirement applies to you, contact your Course Director immediately.

Religious Observance Accommodation

York University is committed to respecting the religious beliefs and practices of all members of the community, and making accommodations for observances of special significance to adherents. Should

any of the dates specified in this syllabus for an in-class test or examination pose such a conflict for you, contact the Course Director within the first three weeks of class. Similarly, should an assignment to be completed in a lab, practicum placement, workshop, etc., scheduled later in the term pose such a conflict, contact the Course director immediately. Please note that to arrange an alternative date or time for an examination scheduled in the formal examination periods (December and April/May), students must complete an Examination Accommodation Form, which can be obtained from Student Client Services, Student Services Centre or online at http://www.registrar.yorku.ca/pdf/exam_accommodation.pdf (PDF)

Student Conduct in Academic Situations

Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and other academic settings, and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. The policy and procedures governing disruptive and/or harassing behaviour by students in academic situations is available at - <http://secretariat-policies.info.yorku.ca/policies/disruptive-andor-harassing-behaviour-in-academic-situations-senate-policy/>