EEB202H1S: PLANTS AND SOCIETY

Department of Ecology & Evolutionary Biology
University of Toronto

Course Syllabus, 2015

Course Description:

The course is divided into two equal sections; the first is taught by Spencer Barrett (EEB) and introduces the importance of plants to society with a focus on the domestication of wild plants for use in agriculture. The characteristics of three groups of plants will be highlighted in this section – cultivated species, invasive species and rare and endangered species. Contrasts between the main features of these groups will be a major theme. The course begins with establishing the basic principles of plant reproduction, Darwinian evolution and Mendelian genetics and plant reproduction, and then proceeds to issues related to the origins of agriculture and the nature of plant domestication through artificial selection. Modern approaches to plant improvement are discussed with a special focus on genetically modified crops (GMO's), and the concern that they may have environmental consequences. The topic of invasive plants is then discussed with particular attention paid to addressing questions related to the features that make them so successful and how they might be controlled. Finally, the section ends with a consideration of the chemical ecology of plants, threats posed to biodiversity, and how the new discipline of conservation biology can aid in the preservation of threatened species and plant genetic resources.

The second half of the course is taught by Jim Eckenwalder (EEB); the basic characteristics of plants will be introduced such as plant cells, tissues, and organs such as roots, stems and leaves. A special emphasis will be given to reproductive organs, where the typical construction of male and female cones in conifers (gymnosperms) will be contrasted with the flowers of flowering plants (angiosperms). Plant diversity today and in the past will be also be discussed by looking at major evolutionary groups including mosses, ferns and fern allies, gymnosperms and angiosperms. A special focus of this section will be the importance of trees to human societies in general, focusing on wood and paper, on the role of trees and forests in our landscapes and gardens, and on forest destruction and conservation in Ontario.

This course counts as a Science Distribution Requirement for students in all years and disciplines.

Time and Location:

Course lecture time: Tues and Thur 11-12 noon
Location: RW117 Ramsey Wright Laboratories
There are no labs or written assignments associated with this course.

Course Policy on e-mail Usage:

Instructors will not answer questions via email or phone. Please ask your questions before, during or after the lecture when the instructors will be available.

Course Website:
Lecture materials are provided one day before the lecture on the course website on the UofT Portal: portal.utoronto.ca. You will need your UTORid and your password to access the site via https://weblogin.utoronto.ca/. Please refer to instructions on how to use blackboard using the information at http://www.portalinfo.utoronto.ca

Readings:
There is no required reading but instructors will post articles of interest on blackboard and these should be read. For those who would like background reading for the course we recommend "Plants and Society" by Estelle Levetin and Karen McMahon (5th edition), which can be purchased in the University of Toronto bookstore costing approximately $110. There are also reserved copies in the Noranda Earth Science Library.

Evaluation:
The two sections are followed by multiple-choice exams: a midterm on February 12 and in April final exam period. Both account for 50% of the final mark. The material covered is not cumulative. i.e. questions from the first section of the course will not be tested in the final.. If you miss a test, please provide a medical note and submit it to the course instructor no later than one week after the exam.

How to succeed in the course:
Both instructors will provide their lecture materials (powerpoint presentations) as PDF's each week before class. We strongly recommend that you print the PDF's before class, study them, and then bring them with you to class. Both instructors have over 30 years of experience teaching at UofT and have found that as a general rule, students who skip lectures do poorly on the tests. This is because the material presented in the PDF's provides only a framework for the oral presentation and material will be discussed in lecture that is NOT represented on slides.

Lecture Schedule: Spencer Barrett section

Jan. 6	Introduction to the course and the lecturer
Jan. 8	Lecture 1 – Plant reproductive diversity (David Timerman)
Jan. 13	Lecture 2 – Evolution and genetics
Jan. 15	Lecture 3 – Origins of agriculture
Jan. 20	Lecture 4 – Domestication of crop plants
Jan. 22	Lecture 5 – Genetically modified crops
Jan. 27	Lecture 6 – Plant invasions 1
Jan. 29	Lecture 7 – Plant invasions 2
Feb. 3	Lecture 8 – Biodiversity and conservation biology
Feb. 5	Lecture 9 – Plant chemical diversity: Why are chillies hot? (Stuart Campbell)
Feb. 10	Lecture 10 – Review of course in preparation for mid term
Feb. 12	Mid Term 1
Feb. 17-20	Reading Week

Lecture Schedule: Jim Eckenwalder section

Feb. 24	Lecture 1 - On being a plant
Feb. 26	Lecture 2 - Photosynthesis: converting physical to biological
Mar. 3	Lecture 3 - A wet world: "algae"
Mar. 5	Lecture 4 - Covering the land: early land plants and their descendants
Mar. 10	Lecture 5 - Protecting the next generation: origin of seeds, cones and fruits
Mar. 12	Lecture 6 - Having flowers means accommodating pollinators
Mar. 17	Lecture 7 - Fruits and seeds: the underpinnings of our diet
Mar. 19	Lecture 8 - So you think you know what a leaf is
Mar. 24	Lecture 9 - Plant defense strategies: what we make of them
Mar. 26	Lecture 10 - How and why to be a tree
Mar. 31	Lecture 11 - Do names matter?
Apr. 2	Review

Final in April Exam period
Time: TBA

(Guest lecturers in parenthesis)