

## Department of Biology Course Outline

SC/BIOL 3290 4.00 Plant Ecology  
Winter 2015

### Course Description

This course reflects the diversity of topics that make up the field of plant ecology: ecosystems, plant population ecology, physiological and evolutionary ecology, plant-herbivore interactions and applied ecology. Laboratories cover field and laboratory techniques, including sampling methods. Three lecture hours, three laboratory hours. One term. Four credits.

### Prerequisites

SC/BIOL 2010 4.00; SC/BIOL 2050 4.00; SC/BIOL 2060 3.00. Course Credit Exclusion: SC/BIOL 4090 4.00; SC/ENVB 4090 4.00.

### Course Instructors and Contact Information

Professor Dawn R. Bazely  
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### Schedule

**LECTURES**  
Mondays, Wednesdays & Fridays: 1:30-2:30 SC 216: Stong College  
**LABORATORIES**  
Monday 2:30-5:30 p.m. FQN 204: Farquharson Building, Biology

### Evaluation

Written Assignments (total 40% of final grade)

- |  |                            |
|--|----------------------------|
| 1. Twitter assignment (5 hrs prep)   | 05% (2% is a Twitter quiz) |
| 2. Letters to the Editor as a blog post (4 hrs prep)   | 05%                        |
| 3. Wikipedia page entry (3 hrs prep)   | 05%                        |
| 4. Research Essay (24 hrs prep)  | 20%                        |
| 5. Seminar on any of 1-4 above in Pecha Kucha format (6m 40s) to be given in lab time (3 hrs prep) | 05%                        |

Laboratory Write-Ups (total 30% of final grade)

Project 1 is a group projects with heavily managed group dynamics, in order to reduce the possibility of one or two students in the group dropping the ball on workload. They will be presented.

Projects 2 and 3 are an individual research lab write up.

- |                                |     |
|--------------------------------|-----|
| Project #1 (10 hrs + lab time) | 10% |
| Project #2 (10 hrs + lab time) | 10% |
| Project #3 (10 hrs + lab time) | 10% |

Final exam (during exam period) 30%

**Important Dates**

- |  |                                     |
|--|-------------------------------------|
| 1. Twitter assignment (5 hrs prep)   | throughout term                     |
| 2. Letters to the Editor as a blog post (4 hrs prep)   | 22 January midnight                 |
| 3. Wikipedia page entry (3 hrs prep)   | 19 February midnight                |
| 4. Research Essay (24 hrs prep)  | 18 March midnight                   |
| 5. Seminar on any of 1-4 above in Pecha Kucha format (6m 40s) to be given in lab time (3 hrs prep) | 2 <sup>nd</sup> half of term<br>05% |

Labs are due over March

Final exam during exam period

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**

Jonathan Silvertown and Deborah Charlesworth. 2001. *Introduction to Plant Population Biology*. 4<sup>th</sup> Edition. (in the bookstore) – a great small text.

You will also learn to read and dissect the primary, peer-reviewed literature. Relevant reference articles supporting the lectures will be posted every week.

## Learning Outcomes

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

1. Clearly explain basic ecological concepts.
2. Understand the scientific method and be able to design and carry out a long-term (running over weeks) experiment.
3. Master basic science communication skills such as blogging, speaking, and social media.
4. Have basic knowledge of coding for Wikipedia and wordpress.
5. Be able to organize data into the format to run a one-way ANOVA.
6. Understand the difference between primary, secondary peer-reviewed literature and grey literature.
7. Practice working collaboratively in groups and learn how to accept, reflect on and incorporate feedback.

## Course Content

### LECTURE OUTLINE and IMPORTANT DATES for Plant Ecology

DATE TOPIC

#### Week 1

Labs start this week: see summary notes on the Moodle website and bring your laptops or tablets with you to the lab in Rm. 204 Farquharson.

In Week1 Week2, Week3 labs, we will practice various computer skills:

- A. Twitter and Social Media training.
- B. Blogging training for Letters to the Editor assignment.
- C. Wikipedia page editing training.
- D. Library Research Training with our Steacie Biology science librarian.
- E. Pecha Kucha seminar format training.

M 4 Jan Overview of ecological concepts, and course outline

W 6 Jan History of (Plant) Ecology & Current Hot Issues

F 8 Jan Succession and the ecosystem

#### Week 2

M 11 Jan Succession and the ecosystem

W 13 Jan Nutrient cycling and feedbacks

F 15 Jan Nutrient cycling and feedbacks

#### Week 3

M 18 Jan Diversity and stability

W 20 Jan Diversity and stability

F 22 Jan Past plant communities

#### Week 4

M 25 Jan Plant population ecology

W 27 Jan Variation and inheritance

F 29 Jan Evolutionary and Ecological Genetics

#### Week 5

M 1 Feb Evolutionary and Ecological Genetics

W 3 Feb Interactions: intra-specific competition

F 5 Feb Interactions: intra-specific competition

Week 6

M 8 Feb Interactions: intra-specific competition  
W 10 Feb Population dynamics  
F 12 Feb Population dynamics

Week 7

M 15 Feb Reading Week - NO CLASSES – but you should be working  
W 17 Feb Reading Week - NO CLASSES – but you should be working  
F 19 Feb Reading Week - NO CLASSES – but you should be working

Week 8

This week's lab will include 2 hours of student presentations:

M 22 Feb Age-structured and stage-structured populations  
W 24 Feb Age-structured and stage-structured populations  
F 26 Feb Population dynamics: metapopulations

Week 9

This week's lab will include 2 hours of student presentations:

M 29 Feb Population dynamics: metapopulations  
W 2 Mar Interactions: competition  
F 4 Mar Interactions: competition

Week 10

This week's lab will include 2 hours of student presentations:

M 7 Mar Interactions: competition  
W 9 Mar Plant distribution, climate and life histories  
F 11 Mar Plant life-history: breeding systems

Week 11

M 14 Mar Plant life-history – seeds & life-stages  
W 16 Mar Plant life-history – clones  
F 18 Mar Plant life-history – immortality

Week 12

M 21 Mar Interactions: predation and herbivory  
W 23 Mar Interactions: predation and herbivory  
F 25 Mar Interactions: predation and herbivory

Week 13

M 28 Mar Revisiting specific topics – student choice  
W 30 Mar Revisiting interesting topics – student choice  
F 1 Apr What is a twitter quiz and what about the questions?

Week 14

M 4 Apr Wrap-up: reflections and ecological debate: a Tweet chat quiz worth 2% of your final grade.

CLASSES END – final examination (30%) will be written during the exam period

### Experiential Education and E-Learning

Everything in the laboratories qualifies as Experiential Education.  
E-learning aspects include Wikipedia, Twitter, and Blogging assignments.  
This course makes extensive use of Moodle.

### Other Information

In 2014, I got back to teaching this course for the first time since 2005-06. I had been on secondment for 7 years, as director of York University's Institute for Research and Innovation in Sustainability. I originally designed the Plant Ecology course in 1990: well before most of you were born.

Because of the 10-year gap since I last taught this course, I spent a lot of time updating Plant Ecology with new content. I added social media and Moodle. I first used Moodle in 2010, and unlike many other course directors, I like to take advantage of its many features.

In 2013, I won the York University President's Senior Professor's Teaching Award. A whole bunch of my former students nominated me for that award which is for all tenured professors across York University. But, before that, I was regularly nominated for, and I won teaching awards, like the Faculty of Science (and Engineering) Teaching Award in 2003. This means that I take teaching, learning and pedagogy very seriously (if you don't know what pedagogy means, please don't hesitate to google it).

BIOL 3290.40, used to be listed as BIOL 4090.40, but at a 2014 Biology Department curriculum retreat, after much discussion about the undergraduate biology programme, we decided to make it a third year course. The main reason was that many of the 4<sup>th</sup> year Biology Ecology courses that were launched in the last 25 years, do not have laboratories. Yet, labs are key part of learning to do science.

So, BIOL 3290.40 provides you with important research and critical thinking skills for doing well in your 4<sup>th</sup> year Ecology, Evolution, Environmental Science and Conservation courses.

This course emphasizes showing initiative, and teamwork. You have all had at least 2 years as undergraduate students, so I expect you all to demonstrate and implement what you have learned in previous courses. This means that you should be reviewing your notes from previous courses – this is how it is in the real world – life after university. You will be expected to bring previously learned knowledge and skills to the table.

This course also transitions you from lower year courses, which are more in line with high school science thinking, to upper year courses, where we expect you to ask and find the answers to science questions that may not be straightforward. ***How much time should you expect to spend on this course?***

There are 6 hours of lectures & labs per week. In addition to attending all labs and lectures, you should expect to put in a minimum of an additional 6 hours per week. That's 12 hours per week of time spent on this course, in order to pass it with a respectable mark in the >70% range.

There are 13 weeks in the term: 12 weeks of classes and 13 of term (including Reading Week). In the course grading breakdown, I have suggested approximate times that should/could be spent on each assignment.

You have probably heard about the need to “work smarter, not harder”. There's no doubt that our top performing university students produce more, better quality work, in the same amount of time, than the rest of our students. These top students may be procrastinating less, and being more focused and better time managers. They are probably showing lots of initiative, and going above and beyond minimum expectations. Everyone can learn these skills. I address this “soft skill” side by including all kinds of skills development and training exercises in the course that is aimed at helping every student to improve her or his performance. These are also skills that you will be expected to have in the real world, after graduation.

### Course Policies

- This is an upper year course. You are all adults and I trust you. I am very flexible on extensions in this course, because I emphasize the pedagogy related to learning how to collaborate and incorporate feedback.

### 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 disabilities 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](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-and-or-harassing-behaviour-in-academic-situations-senate-policy/>