

Syllabus: BOT 2011C, Plant Diversity Spring 2015

INSTRUCTOR

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COURSE DESCRIPTION

The earth today contains a tremendous diversity of photosynthetic organisms - how did all these species evolve and why do so many persist today? In this class we survey the biological diversity of modern algae and land plants, with an eye toward understanding why studying plant diversity is important in our modern society. We consider first the traditional classification of plants, and how this system has been revolutionized by phylogenetic analyses of genetic and now genomic data. We then turn to study the evolutionary processes that generate biodiversity and the ecological processes that shape this diversity. Finally, we critically evaluate perceived threats to biodiversity, including invasive species, nitrogen deposition, climate change, and transgenic crops. Throughout the semester we read a mix of journal articles from the primary literature and as well as popular science pieces. In the laboratory students will see examples of the species we discuss in class and learn to identify key traits and species. After completing the course students will develop a timeline of the main events in the history of photosynthetic organisms, an overview of their diversity, and a conceptual understanding of the processes that generate and maintain this diversity.

LECTURES

Location and time

Larson Hall (LAR), room 310, M, W, F, period 3

LABS

Location

Rolfs Hall (ROL), room 0105

Times

Section 04D3 – T period 8-10; Section 3901 – W period 5-7; Section 3920 – W period 8-10; Section 6874 – W period 11-E2

REQUIRED COURSE MATERIALS

Primary Course Textbook

Demons in Eden: The Paradox of Plant Diversity, Jonathan Silvertown, Cambridge Univ. Press, 2008.

Optional Course Textbook

Biology of Plants, Raven et al., or any other modern botany textbook.

Lab Manual

Plant Diversity Lab Manual is available from University Copy, 1620 W. University Ave.

Digital Lecture Materials

Lecture Slides

The lectures slides will be posted online as Adobe Acrobat PDF files. You may download the slides and save them on your laptop or print them out prior to lecture so that you can use the slides to take notes in class. You will need a PDF reader, such as Adobe Reader or Foxit Reader (both of which are free) to view, print or add notes to the slides.

Taking Notes Electronically

The “Review & Comment” tools in Adobe Reader have been enabled for the lecture slides so that you can use your computer to take notes electronically, whether in class or at home. Occasionally updated slides will be posted after class.

Printing the Lecture Slides

If you choose to print the lecture slides in order take notes on them, you will probably be happiest if you print with multiple “slides” per page, if for no other reason than to save paper, ink and space in your notebook. To do this, select File from the Acrobat Reader menu, then select Print Setup and click on the Properties button. You should now be on the Paper tab. Select Portrait or Landscape orientation (it will typically default to portrait). Then, click on the Multiple Up drop-down menu and select the printing format you want to use. Depending on your eyesight, how much note-taking you do in class, how small you write, and how you feel about having your notes in portrait vs. landscape mode, you may find that 4, 6 or 8 pages per sheet will be best for you.

USE OF LAPTOP COMPUTERS IN CLASS

You are encouraged bring your laptop computer to class in order to take notes on the digital handouts. Avoiding the temptation to access email, social networking sites, and so forth during the lectures is up to you, but if such computer activities distract other students in the class, you will be considered disruptive. Multiple disruptions will be considered grounds for the assignment of a failing grade.

CLASS SCHEDULE

This is a preliminary schedule. Please check back for updates.

Month	Date	Day	Topic
	Wk 1	Readings	Silvertown 1; Freeze the footprint of food
Jan	7	Wed	Introduction: Why study plant diversity?
	9	Fri	A history of taxonomy and tree thinking
			Assignment: Convergent evolution@FLMNH
	Wk 2	Readings	Silvertown 2; Omland et al. 2008
			Lab 1: Introduction to phylogenetic methods
	12	Mon	In-class assignment 1
	14	Wed	Physical biogeography and biomes
		Fri	Biogeography continued; introduction to phylogenetic terms and concepts
	16		
	Wk 3	Readings	TBA
			Lab 2: Cyanobacteria
	19	Mon	MLK Holiday
	21	Wed	The tree of life, cyanobacteria
	23	Fri	Test I
	Wk 4	Readings	Silvertown 3; Tracing oil reserves to their tiny origins
			Lab 3: Red algae and photosynthetic protists
		Mon	Introduction to Eukaryote life cycles and endosymbiosis, and features of bacteria that are shared with chloroplasts
	26		
		Wed	Photosynthetic protists, Glaucophytes, Rhodophytes, and secondary endosymbiosis
	28		
	30	Fri	Biogeography and speciation
	Wk 5	Readings	A tale of two flagella
			Lab 4: Brown algae and Apicomplexans
Feb	2	Mon	Stramenopiles
	4	Wed	Stramenopiles, cont'd
	6	Fri	Test II
	Wk 6	Readings	Silvertown 4
			Lab 5: Symbiosis and Coevolution
	9	Mon	Dinoflagellates and Apicomplexans
	11	Wed	Chlorophytes
	13	Fri	Exponential growth

	Wk 7	Readings	TBA
	16	Mon	Lab 6: Green algae Charophytes
	18	Wed	Introduction to the land plants
	20	Fri	Test III
	Wk 8	Readings	Silvertown 5
			Lab exam (labs 1-6)
	23	Mon	Adaptations to terrestrial life
	25	Wed	Bryophytes
	27	Fri	Maintaining species diversity
March	2-6		Spring Break
	Wk 9	Readings	Silvertown 6; Rosenstiel et al. 2012
			Lab 7: Charophytes and Bryophytes
	9	Mon	Bryophytes cont'd
	11	Wed	The timescale of land plant diversification
	13	Fri	Test IV
	Wk 10	Readings	Silvertown 7; Watkins et al. 2007
			Lab 8: Lycophytes
	16	Mon	Evolution of vascular plants
	18	Wed	Lycophyte diversity
	20	Fri	Correlates of diversity: nutrition
			Assignment: field trip to find plants
	Wk 11	Readings	Silvertown 8
			Lab 9: Monilophytes
	23	Mon	Monilophytes
	25	Wed	Invasive species
	27	Fri	Test V
	Wk 12	Readings	Ellison and Gottelli 2002
			Lab 10: Seed plants
April	30	Mon	The evolution of the seed
	1	Wed	Secondary growth
	3	Fri	Gymnosperm diversity
			Assignment: carnivorous plants@FLMNH
	Wk 13	Readings	Silvertown 9;
			Lab 11: Angiosperms: vegetative adaptations
	6	Mon	Carnivorous plants
	8	Wed	Plant domestication
	10	Fri	Transgenics

Wk 14	Readings	TBA
		Lab 12: Angiosperms: flowers, fruits and seeds
13	Mon	The evolution of the carpel
15	Wed	Pollination and fertilization
17	Fri	Test VI
Wk 15	Readings	none
20	Mon	Cumulative final exam
22	Wed	Lab exam (labs 6-12)

GRADING

Assessments

Lecture Assignments	10%	These will be pre-class or in-class multiple-choice quizzes related to the lecture slides, and free-response assignments related to the readings or out of class activities
Lecture Tests, best 6 of 7	50%	Biweekly, covering lecture material and readings; Test 7 is a book review of Silvertown 2008 due on the date of the final exam. Specific guidelines for the book review are posted in the Readings page on the course Canvas site.
Cumulative final	5%	In class (see schedule of classes)
Lab Cleanliness	5%	Please make sure that you leave your space as you found it
Lab Quizzes, best 10	10%	A quiz will be given during each lab period – these may cover conceptual material from the previous lab or procedural material from the lab that you will be doing that day.
Lab Practicals	20%	Two noncumulative Lab Practicals will cover identification of organisms or key characteristics covered in lab.

Lecture assignments using Canvas and TopHat

Lecture slides and readings will be posted a week before the class when we discuss those materials. Most slides will be accompanied by a few short multiple-choice questions, and most readings will also include a few “free-response” thought questions, both of which can be answered on Canvas. You will get full credit for answering the questions. The questions will be available to answer as soon as they are posted, and will close prior to the beginning of the class when the materials are discussed.

We will use the TopHat system (for a QuickStart Guide, please see this site: <https://s3.amazonaws.com/thm-corporate/Support/Guides/Student+Quick+Start+Guide+-W2014-.pdf>) for in class assignments. TopHat (“clicker”) questions will be asked during lecture in many classes. These questions will sometimes review material that we previously covered, they may sometimes gauge the

class's knowledge of a subject, or may be used to stimulate discussion. Students will get full credit for answering the question, regardless of whether the question is answered correctly or not (although we encourage you to try your best on these questions).

GRADING SCALE

Point Range (%)	Letter Grade	GPA equivalent
≥ 90.00	A	4.0
86.7 – 89.9	A-	3.67
83.3 – 86.6	B+	3.33
80.0 – 83.2	B	3.0
76.7 – 79.9	B-	2.67
73.3 – 76.6	C+	2.33
70.0 – 73.2	C	2.0
66.7 – 69.9	C-	1.67
63.3 – 66.6	D+	1.33
60.0 – 56.7	D	1.0
56.7 – 59.9	D-	0.67
< 56.7	E	0

Note that a "C-" will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit:

<http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html>

Grades will not be assigned to a curve, but the grade cutoffs will be adjusted downward if the quizzes turn out to be more difficult than anticipated. In other words, if your final point accumulation is 90%, then you are guaranteed to receive an A. The absence of a curve means that there is no upper limit to the number of A grades that can be given out.

YOUR RESPONSIBILITIES

Expectations

You are solely responsible for reading and following the instructions, guidelines and schedules in this syllabus. Not having read the information in this syllabus will not constitute an excuse.

Time Commitment

The UF College of Liberal Arts and Sciences assumes that you will devote 3-4 hours per week per credit-hour to each course, including time in lectures and labs. Because this course is 4 credits, you should therefore expect to devote 12 – 16 hours per week to this course. A recommended allocation of your time is below.

Activity	Hours per Week
Lectures	3
Readings before lecture	3
Review of Readings and Lecture Notes	3
Lab	3
Preparation before lab	1

If you find yourself spending more than 16 hours per week on average on these activities, discuss this with your course instructor to see if you can refine your study habits. If you find yourself spending substantially fewer than 10 hours per week on average, you should recognize that you may have difficulty fully learning and comprehending the material in this time, which will probably be reflected in poor performance on the various assessments, causing you to receive a lower overall course grade.

PREREQUISITES

BOT2010 or BSC2010 are required.

POLICIES

Absences

Attendance in lectures is optional, but you must attend the lectures to complete the assignments. If you must miss a test due to an allowable scheduled absence (for example, to participate in a sanctioned university function), you must notify the instructor as soon as the event is scheduled or during the first week of classes. If you miss an exam due to an allowable unscheduled absence (e.g., illness), contact the instructor as soon as possible. All such absences will require documentation. In the case of illness, you must provide a signed note from your primary care provider indicating that you were unable to attend class on the day(s) in question; it is not sufficient for the note to simply indicate that you were seen in a clinic on a given day.

There will be no make-up tests as a dropped test is built in to the syllabus. Contact the instructor as soon as you know that you will miss an exam. There are no make-up labs given the time necessary to prepare the material. Due to space limitations you may only attend your scheduled lab.

Mobile Phones and Other Electronic Devices in Class

The use of cell phones, video recorders and other unapproved electronic devices is not allowed in class. Currently approved electronic devices are laptop computers (when used to take notes or participate in classroom activities) and voice recording devices. Students may take photographs in lab. Students who use cell phones in class will be considered disruptive. Multiple disruptions will be considered grounds for the assignment of a failing grade.

Honesty Policy

All students registered at the University of Florida have agreed to comply with the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University."

In addition, on all work submitted for credit the following pledge is either required or implied: "*On my honor I have neither given nor received unauthorized aid in doing this assignment.*"

If you witness any instances of academic dishonesty in this class, please notify the instructor or contact the Student Honor Court (392-1631) or Cheating Hotline (392-6999). For additional information on Academic Honesty, please refer to the University of Florida Academic Honesty Guidelines at: <http://www.dso.ufl.edu/judicial/procedures/academicguide.html>.

UF Counseling Services

Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.

Career Resource Center, Reitz Union, 392-1601, career and job search services.

Many students experience test anxiety and other stress related problems. "A Self Help Guide for Students" is available through the Counseling Center (301 Peabody Hall, 392-1575) and at their web site: <http://www.counsel.ufl.edu/>.

Accommodation for Students with Disabilities

Students who will require a classroom accommodation for a disability must contact the Dean of Students Office of Disability Resources, in Peabody 202 (phone: 352-392-1261). Please see the University of Florida Disability Resources website for more information at: <http://www.dso.ufl.edu/drp/services/>.

It is the policy of the University of Florida that the student, not the instructor, is responsible for arranging accommodations when needed. Once notification is complete, the Dean of Students Office of Disability Resources will work with the instructor to accommodate the student.

Software Use

All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.