BOT2010C Introductory Botany

Fall 2014 - 3 credits
Lecture: Tuesdays and Thursdays, period 5 (11:45 – 12:35), Little Hall 109

Lab in Rolfs 105:
Section 0608 – Tuesday, period 7-8 (1:55 – 3:50)
Section 17F0 – Tuesday, period 9-10 (4:05 – 6:00)
Section 0607 – Wednesday, period 3-4 (9:35 – 11:30)
Section 0609 – Wednesday, period 6-7 (12:50 – 2:45)

Instructor - lecture
Dr. Christine Davis
Christine.davis@ufl.edu
Office and hours: Carr Hall 614 – T/R period 6

Instructors – lab

Mike Heaney (Wed.)	Ryan Moraski (Tues.)
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Office: Dickinson Hall	Office: Dickinson Hall
Office hours: By appt	Office hours: By appt

Our course aims to help students understand

1) The scientific method and how to formulate a testable hypothesis, design an experiment, and analyze and interpret the results;
2) How structures of molecules/cells/tissues/organs/plants enable life functions;
3) How plants grow and develop;
4) How plants obtain and use matter and energy to live and grow, and how matter is transformed in biogeochemical cycles;
5) How plants detect, process, and interpret information from the environment;
6) How plants interact with the living and non-living environment;
7) Why individuals of the same species vary in the way they look and behave and how characteristics of one generation are related to the previous generation;
8) How to use phylogenetic trees to understand and interpret the evidence for relatedness among species;
9) How the major forces of evolution change allele frequencies in natural or domesticated plant populations;
10) How plants differ from animals and how the sessile life style affects reproduction, growth, development, nutrition, and water use;
11) Plant biodiversity and how plant diversity has changed over the geologic time scale.

Further, our course will help you develop skill with

1) Evaluating current issues in botany, such as transgenic crops and climate change;
2) Finding and evaluating your botanical sense of place in Florida;
3) Working as a member of a team to solve a problem;
4) Oral and written presentation of your own work.

Specific learning outcomes - after you have completed this class, you will be able to:

1) Draw and label the basic vegetative and reproductive structures of a plant;
2) List and describe the major building blocks of cells;
3) Describe the major components of plant cells and contrast them with animal cells;
4) Predict the RNA and protein sequences that will be transcribed and translated from a given gene;
5) Predict the immediate and long term consequences of a gene mutation;
6) Diagram the steps in three different photosynthetic pathways;
7) Diagram the steps in aerobic and anaerobic respiration;
8) Describe the differences between the plant life cycle and the human life cycle;
9) Compare and contrast the morphology of the major groups of plants;
10) Give examples and explain how plants move, communicate, and respond to their environments;
11) Describe how water, minerals, and sugars are acquired and transported through a plant body;
12) Outline and discuss the relationships between genotype, phenotype, mutation, and natural selection;
13) Outline and discuss the relationship between natural selection, speciation, extinction, and phylogeny;
14) Construct a phylogeny;
15) Give examples of plant symbioses and describe their importance for plant ecology and evolution;
16) Construct models to trace carbon and nitrogen atoms through biogeochemical cycles;
17) Define “transgenic crops” and evaluate the risks and benefits of their use;
18) Identify some local plants;
19) Design an experiment to test a hypothesis and evaluate the results of the experiment;
20) Create and present a poster describing your experiment.

Texts
Berg, Linda R. 2008. *Introductory Botany*: *Plants, People, and the Environment*. 2nd edition. Belmont, Thomson Brooks/Cole.
Laboratory manual for Introductory Botany (BOT2010C), Fall 2014. Available at Target Copy.
Additional reading and in-class exercises printed from eLearning.

Course grades will be determined as follows:

<u>Lecture (60%)</u>		
3 exams @ 100 pts each	= 300 pts	~45%
10 in class exercises @10 pts each	= 100 pts	~15%
<u>Laboratory (40%)</u>		
Pre-lab questions	= 50 pts	~8%
Pre-lab questions, quizzes, and assignments	= 110 pts	~17%
1 lab project/symposium	= 100 pts	~15%
Total course points	= 660	

Grade Scale
A : > 90.0
A- : > 87.0 and ≤ 90.0
B+ : > 84.0 and ≤ 87.0
B : > 80.0 and ≤ 84.0
B-: > 77.0 and ≤ 80.0
C+ : > 74.0 and ≤ 77.0
C : > 70.0 and ≤ 74.0
C- : > 67.0 and ≤ 70.0
D+ : > 64.0 and ≤ 67.0
D : > 60.0 and ≤ 64.0
D- > 57.0 and ≤ 60.0
E = <57

Exams
Three exams will be given according to the schedule at the end of the syllabus. The exams will require drawing, labeling, and short and long written answers.

Laboratory
Your laboratory grade will be based upon pre-lab questions, quizzes, assignments, and your lab project and its presentation in a course symposium. Please see your lab instructor for details concerning preparation for the lab quizzes and completing assignments. Details regarding the lab project and symposium will be provided as the time approaches.

Course attendance, curves, and make up policy
Attendance is required and essential for success in this course. I understand that absences happen, but if you make this a habit, you are guaranteed to perform poorly. There will be NO curve applied to grades. If you have a **valid documented excuse and notify us in advance**, you may be able to make up missed graded assignments, quizzes, or exams. We will determine this on an as-needed basis.

Policy on electronic devices
Use them if you want, but if they become distracting to your classmates, you will be asked to leave. Also, please note that the use of devices for socializing during class is very obvious to your classmates and your instructors. We'll make a mental note of it as disrespectful, and it leaves a negative impression.

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/.

Academic 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: https://catalog.ufl.edu/ugrad/current/advising/info/student-honor-code.aspx#honesty.

Important – Plagiarism

Plagiarism is a serious violation of the Student Honor Code. It includes:

- Submitting all or part of someone else's work as if it is your own
- "Borrowing" without crediting the source
- Submitting duplicate assignments
- Collaborating or receiving substantive help in writing your assignment unless we require such collaboration as part of the work
- Failing to cite sources, or citing them improperly

Consequences of plagiarism:

- Failing grade on assignment AND
- Course grade penalty of one letter grade AND
- Report to the Office of the Dean of Students.

Please review plagiarism and how to avoid it:
http://web.uflib.ufl.edu/msl/07b/studentplagiarism.html

Accommodations 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/drc/. Note that the student should provide documentation of a requirement for accommodation by the second week of classes. No accommodations are available to students who lack this documentation. 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.

Lecture and laboratory schedule (always subject to changes)

Day	Date	Lecture topic	Homework assigned (HW) or in-class activity (A)	T or W laboratory activity	Notes on lab
T	August 26	Introduction	**HW: Biological molecules**	No lab this week	
R	28	Chemistry of life			
T	September 2	Cells	**HW: DNA structure tutorial**	Introduction to plants	
R	4	DNA and protein synthesis	A: Strip sequences		
T	9	Scientific method; group assignment and topic selection for plant growth project	**HW: meet with group to develop a hypothesis and an experimental design for plant growth project**	Ecology	**Lab held at NATL**
R	11	Genotype to phenotype	A: Mutations problems		
T	16	Evolution and natural selection		Plant growth project - set up experiment	
R	18	Evolution and natural selection			
T	23	Speciation, phylogenetics, and diversity		Plant interactions	**Lab held at NATL**
R	25	**Exam 1**			
T	30	Water		Plant diversity	
R	October 2	Enzymes and metabolism			
T	7	Shoot structure and function	**HW: Photosynthesis overview**	Water	
R	9	Photosynthesis and phloem function	A: Photosynthesis worksheet **HW: Aerobic respiration overview**		
T	14	Aerobic respiration	A: Aerobic respiration worksheet	Enzymes	
R	16	ATP	A: ATP exercise		
T	21	Root structure and function, mineral nutrition and xylem function		Photosynthesis and respiration	
R	23	Mitosis and primary growth, hormonal control	A: Movement video		
T	28	**Exam 2**		Flowers and fruit	
R	30	Meiosis and alternation of generations	A: Genetics problem set		
T	November 4	Flower structure and sexual reproduction		Genetics (week 1)	Final plant growth measurements and harvest
R	6	Pollination and reproductive symbioses			
T	11	**Veteran's Day - NO CLASS**		No lab this week	**No lab BUT meet with lab instructors regarding plant project data!**
R	13	Mineral nutrition and symbiosis	**HW: Carbon and climate change**		
T	18	Biogeochemical and hydrologic cycling	A: Seedling problem	Genetics (week 2)	
R	20	Biogeochemical and hydrologic cycling	A: Modeling		
T	25	Florida's flora and ecosystems	A: Florida's history - "held" at FLMNH - details TBA	No lab this week	
R	27	**Thanksgiving - NO CLASS**			
T	December 2	Poster symposium		No lab this week	
R	4	Poster symposium			
T	9	**Exam 3**		No lab this week	