

Plant Science, Spring 2012

Biol 200 Sec 006

MW 1:00-2:15 (Bradley 226)

Instructor: Mr. Bob Bundy

Office: 201A Bradley (Between 201 and 202) Enter from 201 if micro lab is going on.

Office Hours: Mon. 2:30-5:00, Wed. 8:00-10:00, Th 9:00-10:00, F 8:00-10:00

During office hours, I may be prepping one of the labs (202, 203 or 208). If you don't find me in my office just look in one of the labs. Also, we can schedule some time if you need it.

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Course Description:

As much as our lives are oriented around what happens to humans and our more obvious animal world, they are deeply dependent upon plants. In order to know more about the plants around us we will study the mechanisms that drive their growth, reproduction, and their habitat. This course will encompass plant study from the cellular through the organismic level. We will evolve into a focus on the traits of different types of plants and what distinguishes one from the other. Additionally, we will discover why certain plants are located in certain locations and develop an ecological context to plant structures and adaptations. Understanding plants and their role in our ecosystems helps us to understand the roles that we play within those same ecosystems.

Class meeting time: MW 1:00-2:15

Learning Outcomes:

1. Students will be able to distinguish plants from other parts of the ecosystem both within their structural components and their roles.
2. Students will be able to identify the various plant tissues with respect to their cell types and their function.
3. Students will be able to use the following characteristics in plant differentiation and identification:
 - a. Root structures
 - b. Stem structures
 - c. Leaves
 - d. Flowers
 - e. Fruits
 - f. Seeds

4. Students will identify mechanisms in plants that allow their adaptation to specific locations.
5. Students will be able to describe the growth mechanisms that provide for tropic movements and flowering sequences:
 - a. Phototropism
 - b. Geotropism
 - c. Photoperiodism
6. Students will be able to compare the processes of photosynthesis and respiration and discuss the requirements for each.

Text: Stern's Introductory Plant Biology, Edition Twelve. Bilack and Jansky (2011)

You will need a notebook for this class. Also, we will be outside some of the time so come to class ready to go for a walk, especially as we get on into the course.

Course Structure:

The course will consist of lecture supplemented by some materials on power point presentations. Much of your notes will be on the board but it is imperative that you read your book in order to understand much of what we cover in class. I expect you to be actively involved in the lecture by being ready to answer and propose questions. I will use power points as a frame of reference but these will NOT substitute for taking good notes. Keep a good notebook and work out a short-hand of what we cover in lecture. Remember, you cannot write all that I cover so your reading and taking down a general outline of what is covered is important.

A typical lecture session will consist of:

- Class role call
- Questions
- Lecture presentation
- Questions

In order to be successful, you must study. Because the course covers such a broad subject you need to spend at least an hour or two for each hour in class. I will be happy to meet with you for review sessions prior to tests. Remember, these will be to answer specific questions for understanding and to help you to focus your studying, not to do your studying for you or to re-teach the material from the entire section.

There will be three tests during the course and a final exam. Tests consist of 25-50 questions. Some will be multiple choice while others will be short answer and essay. Each test and the final exam will count for 20% of your final average.

There will also be one short research papers that cover current events within the realm of human biology and will each be worth 15% of your grade.

Your class attendance will be worth 5 pts.

Grades:

90-100	A
87-89	B+
80-86	B
77-79	C+
70-76	C
67-69	D+
60-66	D

3 Tests	20pts each (60pts total)
Final Exam	20pts
Research Paper	15pts
Attendance	5 pts
Total	100 pts

Research Paper:

During the course, I would like for you to identify a plant that is of particular interest to you. Identify the plant based on its structural qualities, specific processes that may take place within the plant, its ecological significance, and its economic significance. This paper is due immediately following spring break and should be about 5 or more pages and very detailed in the description of the plant. Bring in a sample if you can. You are to present this information to the class during one of our class meetings

Class conduct:

During class, this class should be the focus of your attention. Turn OFF all cell phones and such. If you want to text folks or answer the phone, then look for another class. In addition, don't talk while instruction is going on. If you disrupt the learning of others, you will be asked to leave the class. This behavior does not suit this class.

I don't know if you have noticed but the students who do best usually sit in the front and both ask and answer questions. Being attentive allows you to learn better, stay focused and be less distracted.

I want you to be successful in this class and to learn some material that may make it easier for you to succeed in your profession or in making personal medical decisions. Use your opportunity and learn as much as you can.

I shouldn't have to talk about cheating but it will not be tolerated. I usually make out several tests and hand them out. This makes it close to impossible to look on someone else's paper or such. If you should have the answers to the other test on your paper, then you will receive a zero, be recommended to the academic dean for disciplinary action. Look at the honor code (www.sc.edu/academicintegrity/honorcode.html). As has already been expressed, texting or such is forbidden and if you should happen to be caught doing such during a testing situation, you will receive a zero and be recommended to the academic dean for disciplinary action.

Attendance is mandatory. If you are not here, then you don't get the benefit of the interchange between the instructor, your class mates and you. You really miss out. You will not receive any grade reduction for absences unless you miss over 3 classes. The 4th class will result in a reduction of your grade by one point and an additional point for each following absence up to 5. The key is, don't miss.

Schedule for class:

This is a general outline and schedule for our class meetings. I am sure that there will be some adjustment as time goes on.

Jan 9: Read Chapter 1 Introduction, Syllabus, texts, requirements for class. What is plant biology?	Jan 11: Begin reading Chapter 2 Characteristics of living things. Chemical basis of life. Atoms and compounds.
Jan 16: MLK Holiday	Jan 18: Make sure you have read the rest of Chapter 2. Begin reading Chapter 3 Carbohydrates, lipids, proteins, and nucleic acids.
Jan 23: Cells Microscopes Cell parts – cell walls, plasmodesmata, cell membrane, ER, Ribosomes, dictyosomes...	Jan 25: Cell parts continued. Cellular reproduction – cell cycle and mitosis. Plant cells/animal cells.
Jan 30: Plant tissues Meristematic tissues – apical, lateral and intercalary meristems. Simple tissues – parenchyma, collenchymas, sclerenchyma.	Feb 1: Complex tissues – xylem, phloem, epidermis, periderm, secretory cells.
Feb 6: Test 1 Chapters 1-4.	Feb 8: Read Chapter 5 Roots and soils Root structure, development, functions, and types.
Feb 13: Finish with roots. Soils – composition of soil, water content, pH, amendments.	Feb 15: Chapter 6 Walk outside day. Dress appropriately for the weather.
Feb 20: Stems – structure, origin and development, woody and herbaceous stems.	Feb 22: Stems Continued: Monocotyledons/dicotyledons Specialized stems
Feb 27: Wood Chapter 7 Leaves – arrangement and types, internal structure, stomata, and mesophyll. Specialized leaves. Leaves continued. Read	Feb 29: Chapter 8 Begin Flowers, Fruits and Seeds Monocots/dicots, flower parts and arrangements.
Mar 5: Spring Break	Mar 7: Spring Break
Mar 12: Fruits – kinds of fruits (fleshy/dry, dehiscent/indehiscent).	Mar 14: Seed dispersal mechanisms. Seeds – structure, germination. Review for test2.
Mar 19: Test on chapters 5-8	Mar 21: Chapter 9 Water in plants. Diffusion/osmosis, active transport, 3 part movement of water, regulation.

Mar 26: Transport of food and minerals. Nutrient content.	Mar 28: Chapter 10 Background – red-ox, essentials. Photosynthesis – Light dependent reactions PSII and PSI
Apr 2: Light independent reactions – Calvin cycle, CAM plants, C ₄ plants	Apr 4: Respiration – parallels with photosynthesis, major steps (glycolysis, Krebs cycle, electron transport) aerobic/anaerobic
Apr 9: Test 3	Apr 11: Papers due. Class presentations of your specific plant.
Apr 16: Chapter 11 Growth and plant hormones – auxins, gibberellins, cytokinins, abscisic acid, ethylene.	Apr 18: Hormonal interactions – apical dominance, senescence, growth movements (tropisms), photoperiodism.
Apr 23: Exam review.	
April 30: Final Exam	