Plants & Society - BIO 135 (SNT, LAB, INQ)

Fall 2014

Professor: Dr. M. Eloise Brown Carter
Office: Pierce Hall #107 (Enter on the side porch facing Humanities) **Phone:** (770) 784-8343

Lecture Hours: Monday, Wednesday, Friday: 10:45 a.m. – 11:50 a.m. **Room:** Pierce 102

Lab Hours: 2:30 p.m. – 5:30 p.m., Wednesday **Room:** Pierce 119

Office Hours: Monday – 1:30-2:30 p.m. and Thursday 3:30-4:30 p.m. Students are encouraged to see Dr. Carter during class or lab to make appointments for other times.

Required Text: Levetin, E. & K. McMahon. 2011. *Plants and Society*. 6th ed, McGraw-Hill, New York.

Required Lab Text: Levetin, E., K. McMahon and R. Reinsvold. 2003. *Laboratory Manual for Applied Biology*. McGraw-Hill, New York. (Used laboratory manuals with answers and results cannot be used in lab.)

Date	Topic	Readings and Laboratory
Aug. 27	What is a plant? Plant connections. (No lab this week)	
29	Plants synthesize the molecules of life – and pigments, resins, poisons, medicines and more……	Levetin Ch 1;
Sept. 1	**Labor Day - No class**	
3	Cell structure and function	Levetin Ch 2
3	**Lab I:** Cells of Crystal and Color Plant Dyes	Lab Manual 1, BYOP
5	Cell division and cloning	Levetin Ch 2
8	Plant tissues and stems	Levetin Ch 3
10	Roots and leaves	Levetin Ch 3
10	**Lab II:** Cell Division and Cloning Plant Tissues (Paper Making)	Lab Manual 2 & 3, BYOP
12	Materials: Fiber, wood, cloth, and paper	Levetin Ch 18

15	Review and response; Inquiry/case study	Bring Lab Manual: Lab 8, Ex.C
17	Water and transport & introduction to energy	Levetin Ch 4
17	**Lab III:** Plant Architecture and Botanical Walk	Lab Manual 4
19	Exam 1: Chapter 1-3 & selected topics in 18	
22	Photosynthesis: Do plants "make their own food?"	Levetin Ch 4
24	Respiration: Do plants respire?	Levetin Ch 4
24	Lab IV: Lab Exam I, II, III: Lab Topics 1, 2, 3, 4, Check on tissue culture & selection	
26	Plant reproduction – Oh those sexy flowers!	Levetin Ch 5
29	Flowers, pollination and fruits	Levetin Ch 5 & 6
Oct. 1	Genetics and plant breeding	Levetin Ch 7 to p. 113
1	**Lab V**: Flowers and Fruits	Lab Manual 6 & 7, BYOP
3	Plant breeding – Where did all those peppers come from?	Levetin Ch 7
6	Review DNA structure; DNA to protein	Levetin Ch 7
8	Review and response; Applications of molecular biology	
8	**Lab VI:** Leaves of Grass (Bread making);	Lab Manual 11, BYOP
10	Evolution and plant families	Levetin Ch 8
13-14	**Fall Break – no class**	
15	Healthful Living and Nutrition Project	Bring your laptops to class; Levetin Ch 10
15	**Lab VII:** Lowdown on Legumes: Lather Up!	Lab Manual 12
17	Exam 2: Chapters 4, 5, 6, 7, selected topics in 8	

20	Origins of Agriculture	Levetin Ch 11
22	Grasses, wheat, rice, corn, and more	Levetin Ch 12
22	Lab VIII: Lab Exam 2 - Labs VI, VII, XI, XII Check in on Food Unit: Nutrition, Farm & Feast	
24	Legumes and gourds	Levetin Ch 13
27	Discussion and analysis of nutrition project	
29	Plant Families and Feeding Families	Levetin Ch 14
29	**Lab IX:** Oxford Farm and CSA	
31	*Food Table* and modern farming	Levetin Ch 15
Nov. 3	Response and Review – Food Issues	
5	Herbs, spices and perfumes – Prep for Lab!	Levetin Ch 16, 17
5	**Lab X:** Our DeKalb Farmer's Market	
7	Exam 3: Chapters 10 11, 12, 13, 14, 15	
10	Stimulating beverages	Levetin Ch 16
12	The Oxford Oak Project	Levetin Ch 18
12	**Lab XI:** Botanical Feast and Creative Presentations	
14	Herbal Medicine Case Study	Levetin Ch 19
17	Medicinal Plants	Levetin Ch 19
19	Medicinal Plants	
19	**Lab XII:** Bioactive Drugs in Action	
21	Psychoactive Drugs	Levetin 20
24	Giving thanks with plants	
26-28	**Thanksgiving Holiday**	

Dec. 1	Wicked Plants	Levetin 21
3	*The Drunken Botanist*	Levetin 24
3	**Lab XIII:** Forest Restoration & Invasive Plants	
5	Sustainable Living with plants	Levetin 26
8	Wow! Plants and cultural connections	
16	**Final Exam: Tuesday, Dec. 16th @ 2 p.m.**	

"If you take a flower in your hand and really look at it, it's your world for the moment."

Georgia O'Keefe

Course Objectives: The first three objectives are knowledge based, the fourth is the essence of all laboratory courses, and the remainder I consider to be the "hidden objectives" for the course. They have more to do with process than content. Students completing this course should be able to:

- Appreciate plants and their connections to society, including the ecological, economic, and aesthetic contributions.
- Identify and demonstrate basic concepts in biology using plants, including the relationship of structure and function and examples of unity and diversity.
- Recognize major plant families, representative plants, and their cultural uses.
- Understand science as a "way of knowing" by participation in scientific investigations in the laboratory.
- Use information resources and materials from many disciplines to pursue topics independently based on knowledge and interests.
- Explore the connections between plants, food, and nutrition through explorations of the farm, food families, markets and cuisine.
- Inquire creatively!

"The word for world is forest." Ursula Le Guin 1972

Tips for Success: Biology 135 is a comprehensive laboratory science course. To perform well in this course, you must develop a proper plan for managing your time and your work, beginning from the first day of class. The following are some good study habits that will help you succeed:

- **Keep up with assigned readings.** The readings listed for each lecture in the syllabus must be done BEFORE the lecture. Always come to class prepared; know the fundamentals.

- **Take good notes.** In lecture, I will explain the most significant concepts from your readings and present examples that may not be in your textbook. You are responsible for all of this information. *Detailed and well-organized notes are critical for studying and learning in this course*. Ask questions in class to help you connect the concepts. Since some classes use inquiry, case studies, or other activities, it is important to review the class material and annotate your notes after each class. Review your notes after every lecture and before the next class.

- **Connect the lecture notes to your readings.** For the test, you are responsible for information in the textbook as well as the lecture notes. Use the summary and review sections of your textbook as well as images and diagrams from your text and the textbook website. In addition, connect the concepts learned in lecture to the lab exercises.

- **Review material on a regular basis.** Study the diagrams in your text and handouts. Practice annotating figures, applying information to problems, writing and answering questions. Studying for exams should begin at least a week in advance. Really, you are studying for the next exam –every day! Take advantage of my office hours to get individual assistance.

- **Keep two things in mind**. One - learn terminology and the basics of plant biology, then connect that knowledge the uses of plants. Second – Memorizing facts is important to establish a basis for your knowledge, but it is *not* sufficient. You must be able to use your knowledge to think logically and analytically. Many of the test questions will revolve around applying your knowledge.

- **Be an active learner.** Develop study guides, comparison charts, and concept maps. Use the web resources provided with your textbook. Use the summary and review sections of your textbook as well as your lab manual to test your ability to apply your knowledge. *Organize your own active study group*.

- **Lab is equally important!** The laboratory component of this course is significant and requires time and preparation. Please read your lab manual BEFORE lab and pay attention to the details. Take good notes and make detailed observations. Answer all questions in the lab manual either during lab or immediately following lab. *Review the objectives and prepare a study guide for the lab materials and activities on a weekly basis.* Learn to manage your time well and prepare in advance for the lab. Pay attention to information about lab exams.

Ways of Inquiry (INQ): Biology 135 is designated as a "Ways of Inquiry" or INQ course. In INQ courses, students "understand and question the way knowledge is sought by actively learning and practicing the discipline's approaches to inquiry" (INQ Vision Statement). In Biology 135, you will have many opportunities to engage in biological inquiry by asking questions, reading and writing critically, and working independently to seek knowledge.

Sustainability: Life in Balance. This year many members of the Oxford College community are exploring the theme of Sustainability: Life in Balance. In this course you will have the opportunity to connect the theme to your investigations in plant biology and ethnobotany.

Nutrition, Food, Farm, and Feast: The unit on Nutrition, Food, and Farm, includes several components: a nutrition assessment and report, participation in a lab working on the farm, assisting with the CSA, and researching a crop plant and the plant family that is growing on the Oxford Farm. These will culminate in a Botanical Feast for which you will prepare a dish featuring your plant and family, as well as a creative product for the unit. The details will be provided in class.

Absences: Absences or a failure to follow the procedures outlined in Absence Policy handout will result in a *significant* reduction in your grade. Any questions about absences should be asked immediately. Any questions about absences should be asked immediately. It is your responsibility to be aware of the policy.

Cell Phones: The use of cell phones is strictly prohibited in the classroom and the laboratory. Please turn off your phone before you come to class and leave your phone at the front during exams. Photography with camera phones is also *prohibited* in lab.

Personal Computer: If you would like to take notes on your personal laptop in class, you must seek special permission from the instructor. Use of laptops to surf the web, login to Facebook, answer email, or other networking/chat during class is completely unacceptable.

Honor Code: All examinations and all work for credit in this course fall under the regulations of the Honor Code. Your signature on your work attests to your upholding the Honor Code. Please read the information on plagiarism on the Library web page and always ask if you have any questions about assignments. Note that writing assignments will be submitted to SafeAssign on Blackboard.

Office Hours: I encourage you to meet with me in person about any questions during the semester. I have scheduled specific office hours, but please do not hesitate to make an appointment with me for a different time.

Blackboard Site: Blackboard will have announcements, handouts, additional readings, resources, animations, and more! Your Instructor and TA will email you from Blackboard. You will upload all written assignments on Blackboard. The syllabus and other assignments for lecture and lab will be posted on Blackboard.

Exam Protocols: Do not come to any exam with notecards or other papers in your pockets or on your person. All cell phones are to be turned off and either in your bag in the front of the room or on the instructor's bench. Do not write notes, study material, abbreviations, or material that can be construed to be these on your body. Check for such notations and remove before the exam time. *These are considered to be breaches of the Honor Code.*

Evaluation Criteria:

- *Examinations* - There will be three lecture exams, each worth 100 points, including multiple choice, short answer and short essay questions. Exams will cover all material in lecture in addition to assigned textbook readings and other supplemental materials. Use the knowledge you gain in lab to help with understanding the lecture material. The final examination, worth 175 points, is comprehensive. Two laboratory exams, each worth 50 points, will be given in this course. Each lab exam will cover the material from the lab exercises. The lab exams will include a practical and a written portion.

- *Feast, Projects, and Writing* – This work will be assigned throughout the semester. See the handouts on nutrition, food, farm and feast for details. Throughout the course you will be asked to write and think about plants and their uses. This work will contribute to your grade. Although this is not a writing course, excellent writing is expected. Your work must be based on evidence and that research should be cited. All written work turned in for a grade must be your own. Case studies, lab projects, and inquiry activities may also have "products" that will be evaluated critically.

Evaluation:* Students are evaluated on their performance in the classroom and laboratory. The ***proposed*** assignment of points will be:

300 points	3 lecture exams
100 points	2 laboratory exams
175 points	final examination
50 points	Food and Feast (5 points CSA, 20 Feast & Creativity, 10 Farmer's Market, 15 Nutrition Project)
25 points	Projects and writing (10 bioactive lab, 10 case studies, 5 Reflection)
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650 points	total

*Total points may change based on assignments and opportunities.

Final grade determination:

90 - 100%	A
80 - 89%	B
70-79%	C
60-69%	D
<60	F

Plus and minus grades are given.

"It's humbling to think that all animals, including humans, are parasites of the plant world."

Isaac Asimov