



SIERRA COLLEGE

BIO. SCI. 2 - BOTANY Spring 2004

Instructor: Shawna Martinez
Phone: 916-789-2975
E-mail: smartinez@sierracollege.edu
Office: S117A (under the mountain lion)
Lecture: S112 TTH 8 – 8:50
Lab: S112 TTH 9-12

Text: Biology of Plants by Peter Raven, Ray Evert, and Susan Eichhorn, Sixth Edition, 1999
Lab Manual: Laboratory Topics in Botany, Evert and Eichhorn, 1999
Course Syllabus: Botany Course Pack, Shawna Martinez 2004
Materials for Course: 1” 3 ring hard-bound binder, Botany/Biology drawing paper, hard pencils, color pencils.

Pre-requisite: Successful completion of Bio Sci. 1 or college level majors biology.

Course Description: A detailed survey of the Kingdoms Protista, Fungi, and Plants with emphasis placed on the Plant Kingdom. Includes plant structure, function, diversity, ecology, and evolution.

Useful Web Links: The Web has many useful plant links: use any of the below, plus conduct searches using vocabulary used in class. The textbook has a great website that you should be viewing frequently. If you find others that may be useful, please let me know.

- ❖ <http://www.whfreeman.com/raven/> - flash cards, interactive exercises, video clips
- ❖ <http://www.calparks Mojave.com/poppy/> - wildflower site
- ❖ <http://www.calflora.net/botanicalnames/index.html> - name meanings
- ❖ <http://www.calacademy.org/research/botany/wildflow/index.html> - wildflower images
- ❖ <http://www.mykoweb.com/CAF/> - fungi of CA
- ❖ <http://www.calflora.org/> - Calif. Flora
- ❖ <http://glossary.gardenweb.com/glossary/> - plant glossary
- ❖ <http://www.cnps.org> – Calif. Native plant society and links to others
- ❖ <http://www.erowid.org> – poisonous, medicinal plants
- ❖ http://www.ucjeps.berkeley.edu/interchange/I_treat_indexes.html – Jepson herbarium website
- ❖ <http://elib.cs.berkeley.edu/photos/flora> - photo database

EXAMS AND GRADES: There will be unannounced short answer essay quizzes at the beginning of some lecture periods. Typically, there will be a weekly quiz or when a topic is finished. These quizzes will cover the prior topic's lecture, text, and/or lab material. In addition, you will be required to accumulatively identify prior “plants of the week”. You must take all exams and quizzes. **No make-ups will be allowed for quizzes!** There will be 3 midterm exams and a cumulative final as specified in the lecture schedule. You will need a Scantron #882 for these exams. The midterms are non-accumulative type exams, however the final will be a midterm exam covering material from the last quarter of the semester, plus selected questions from past material. Grades are based on a percentage of your total semester points from exams, quizzes, projects, etc.:

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|------------------|---|--------------|--------|
| TESTS: | Quizzes = 10 – 25 pts ea. | = 70-150 pts | (~15%) |
| | Lecture Exams = approx. 100 pts ea. x 3 | = 300 pts | (30%) |
| | Final Exam = approx. 150 pts | = 150 pts | (15%) |
| OTHER: | 1 FIELD TRIP notes | = 10 pts | (2%) |
| PROJECTS: | 1 Semester Project/Collection | = 50 pts | (5%) |
| | 1 Midterm Poster Presentation | = 30 pts | (3%) |
| LAB: | Reports = 5 pts ea. x 23 reports | = 105 pts | (10%) |
| | Lab Practicum = approx. 50 pts ea. X 4 | = 200 pts | (20%) |

(Extra credit may be earned. A maximum of 20 points is possible.)

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|-------------|-----|
| 90 + | = A |
| 80% - 89% | = B |
| 70% - 79% | = C |
| 60% - 69% | = D |
| 59% - below | = F |

ASSIGNMENTS / ATTENDANCE

It is very likely that you will be able to earn a passing grade in this course if you attend all the lectures and labs and turn in your work. Your success in this course depends critically on keeping abreast of the readings and lecture materials. Reading the text in advance of the lecture will aid in your understanding of the lecture material. The best way to earn an "A" is to attend lecture and lab, listen critically, and read assignments in a timely manner as the course progresses. **Last-minute cramming for exams is not a successful strategy.** Synthesis and construction of linkages among concepts requires time and familiarity with the material.

You are responsible for attending all lectures. You are responsible for all assignments. **Make-ups for exams are only allowed with the approval of the instructor.** You must contact me prior to the exam if you are to make up the exam. No make-ups for quizzes will be allowed. If accommodations are needed for disabilities, I will be happy to work with you individually or through the Student Services center on campus.

A word on classroom respect:

1. Please do not be late, if you are late, quietly sit and open your books.
2. Please do not leave class early, if you have to, notify me at the beginning of class.
3. Please wait until class is over before closing your binders.
4. Please do not carry on conversations during class, if you have something important to say to your neighbor, write it on a piece of paper or wait until class is over.
5. Please **do not copy** material from other students unless assigned. This is cheating and will not be tolerated (please review policies in S.C. catalogue on this matter).
6. No hats during tests and quizzes.
7. No cell phones, beepers, pagers, or other noise-makers!

EXTRA CREDIT: In order to encourage learning outside of the classroom, I will allow a maximum of 20 extra credit points. You must do a community service project that is botanically related to earn extra credit. Each hour plus a written summary of what you did counts for 5 points for a maximum of 4 hours (20 points) of service credit. You must document your hours. (Of course, you may always choose to do more!). I will have some projects on campus.

Another extra-credit activity you may do is build a model.

Model or display: Devise an altruistic project that would be beneficial to future students and/or the community. Design, layout, and materials require prior approval. You must complete a poster to be presented to the class.

- A. Update models for classroom use.
- B. Sewell Hall permanent exhibits
- C. Work with another Natural History Museum in the area.

COURSE OBJECTIVES:

A. Laboratory: The student will be able to:

1. Use microscopes proficiently enough to investigate plant cell structures under a compound microscope and dissect fresh plant specimens under a dissecting microscope.
2. Illustrate cellular and larger structures accurately enough to recognize them later.
3. Identify and locate major stem, root, leaf, and reproductive tissues.
4. Differentiate the distinguishing features of selected representatives of the following groups of organisms: bacteria, archaea, protista, fungi, lichens, bryophytes, ferns, gymnosperms, and angiosperms (monocots and dicots).
5. Categorize and identify plant specimens according to taxonomy, family, and species.
6. Analyze experimental data regarding plant physiology, hormones, water relations, and nutrient requirements

B. Theory/textbook/lecture: The student will be able to:

1. Correlate the basic chemical and structural features of plant cells with the functions of the chemicals and structures.
2. Diagram the major features of life cycles in algae, bryophytes, ferns, horsetails, gymnosperms, and angiosperms
3. Distinguish the fundamental characteristics of viruses, prokaryotes, protists, plants and fungi.
4. Compare and contrast structure and function of major tissue types in stems, roots, leaves, and reproductive organs.
5. Identify the major pathways of water and dissolved substances in plants.
6. Categorize and describe the factors controlling plant growth.
7. Compare and contrast C3, C4 and CAM photosynthesis.
8. Outline and describe the events and cite examples of evolution in the plant kingdom.
9. State and apply major features of currently accepted plant classification.
10. Identify ways in which plants interact with their environment, and implications of these interactions.
11. Critique the effects that botany has had upon man and society

SEMESTER PROJECT: There are two choices for a semester project. The project is worth 50 points. You must either submit a project plan or see me in person for approval and guidance in advance. All projects must be plant related.

1. **Plant Collections:** Collect, press, identify, mount, and label 25 specimens (unless otherwise approved). You must include with your collection: 1) Short summary (1 page) with a description and location for your project, 2) Table of Contents with alphabetical listing taxonomically and by family, 3) correctly identified to genus, pressed, and labeled (I will provide plant press, paper, labels)

Choose A, B, or C

- A. Choose a group of plants as a collection: showy wildflowers, a specific family, a specific group such as ferns, shrubs, oaks, willows, mosses, etc.
- B. Choose a location/region to collect: campus nature area, Griffith quarry, etc. (No urban areas unless approved)
- C. Choose a habitat type: Oak forests, pine forests, vernal pools, etc.

THE COLLECTED PLANTS MUST BE SUBMITTED IN THE PRESS BY EXAM 2 (10 points)

Tips:

1. Take pictures of the plant in its habitat
2. Collect 35 plants to ensure you end up with 25 good ones
3. Make sure it has flowers (if herbaceous); trees and shrubs are O.K. without flowers.
4. Absolutely NO urban areas will be allowed (unless approved).

2. **Experiments:** Devise a semester-long experiment to perform such as germination rates, ecological experiments, soils, growth, propagation, physiology, pollination biology, weeds, etc. The paper must be 6-7 pages, technical in nature, correctly cited, and must include all of these:

A. Abstract

B. Introduction (Background)

C. Materials and Methods

D. Data Presentation (Pictures, Tables, Figures, Measurements, etc.)

E. Discussion

F. Conclusion

G. Literature Cited

YOU MUST SUBMIT SOME DATA COLLECTION BY EXAM 2 (10 points)