

Biology 271: Introduction to Plant Biology
Lecture schedule, Spring 2009

Date	Topic	Assigned Reading
M, Jan. 12	General Introduction, what is a plant? Basic plant groups Recognizing and describing plants	Ch. 1, Ch. 12
W, Jan. 14	Plant organization: plant cells <i>What features or structures are unique to plant cells?</i> <i>What is endosymbiosis?</i>	Ch. 3 to p. 58
F, Jan. 16	Guest presentation- RefWorks BRING COMPUTER!!	
M, Jan. 19	Holiday	
W, Jan. 21	Plant cells, continued; cell connections <i>Are plants aggregations of cells or simply one much-compartmentalized cell?</i> <i>How does the cell wall allow materials to move in and out of cells?</i>	Ch. 3, pp. 83-85
F, Jan. 23	Chemistry of cells <i>1) what are the major compounds found in plants;</i> <i>2) distinguish primary from secondary metabolites,</i> <i>3) what are the functions of these compounds?</i> <i>4) what is co-evolution?</i>	Ch. 2; pp. 471-2
M, Jan. 26	Mitosis and cytokinesis in plants <i>Assignment: review mitosis and determine: 1) 2-3 ways plant cells differ from animal cells, in structure or process during mitosis</i>	Ch. 3, pp. 58-66
W, Jan. 28	Cell differentiation, cell types, seeds	Ch. 22, 23
F, Jan. 30	Stages in plant growth- seed to seedling	as above, pp. 637-8
M, Feb 2	Seed to seedling, contd. Primary tissues	as above
W, Feb. 4	Movement across membranes, turgor and cell elongation <i>Why is turgor so important in plants? Plasmodesmata?</i> <i>What happens when a plant wilts?</i>	Ch. 4
F, Feb. 6	EXAM 1: INTRODUCTION THROUGH MOVEMENT..	
M, Feb. 9	Building a plant/ how plants work: The primary plant body-roots <i>For this and next topic, what are the major cells and tissues in a root, a shoot, a leaf? How do they differ?</i>	Ch. 24
W, Feb. 11	The primary plant body- shoots <i>Is a tree trunk a shoot?</i>	Ch. 25 to p. 559

F, Feb. 13	Leaves and reproductive structures BRING IN ONE OR TWO FLOWERS IF POSSIBLE	Ch. 25, pp. 436-442
M, Feb. 16	Flowers cont'd; Secondary growth in plants <i>When does secondary growth occur? Where in the plant does it occur? What tissues are produced? Of what significance to plants, to humans, is the production of these tissues?</i>	Ch. 26
W, Feb. 18	Secondary growth, cont'd.; adaptations	Ch. 26 contd.
F, Feb. 20	Transport of water in plants <i>How do materials move around in plants?</i>	Ch. 30 through p. 680
M, Feb. 23	Transport of photosynthate	Ch. 30, p. 680-end
W, Feb. 25	Growing plants well: plant nutrition and soils <i>Why is it so important to have the correct type of soil when growing plants?</i>	Ch. 29
F, Feb. 27	Nutrition, contd	
M, Mar.2	EXAM 2: ROOTS THROUGH TRANSPORT OF NUTRITION	
W, Mar. 4	Growth and development: hormones <i>What is a hormone/plant growth regulator? Do plants have glands? What are some of the main controls of growth and development in plants?</i>	Ch. 27 to p. 693
F, Mar. 6	Hormones, cont'd.; tropisms <i>Arrive in class with definition of tropism, circadian rhythm, Day-neutral</i>	Ch. 28 through p. 627
Mar. 8-15	SPRING BREAK	
M, Mar. 16	Circadian rhythms, control of flowering <i>What is the ABCDE model of flowering?</i>	Ch. 28 to end
W, Mar. 18	Metabolism: Plants' major contribution to the biosphere: photosynthesis <i>How do plants counteract the tendency towards entropy/ What is/are the essence of the photosynthetic processes?</i>	Ch. 5, 7
F, Mar. 20	Photosynthesis, continued	
M, Mar. 23	Photosynthesis-C4, CAM, adaptations <i>These appear to be adaptations- to what, how?</i>	Ch. 7, p. 130-end
W, Mar. 25	Sexual reproduction: Meiosis, genetic variation, life cycles <i>Review meiosis; bring questions about it</i>	Ch. 8

LABORATORY SCHEDULE

* indicates you should be prepared to go outdoors

Jan 12, 14—Basic plant features*- **MEET AT COKER ARBORETUM AT 1 PM; will be in lab too (140 Wilson)**

Jan 19—MLK Day

Jan 26, 28—Plant Cells

Feb. 2, 4---- Winter botany *

Feb 9, 11—Seeds and Seedlings

Feb 16, 18—Roots and Shoots

Feb 23, 25—Leaves, Inflorescences and Flowers

Mar 2, 4—Secondary Tissues

Mar 9—(Spring Break)

Mar. 16, 18- Growth and Propagation

Mar 23, 25—Water Transport

Mar 30, Apr1—Botanical Garden Trip *

Apr 6, 8—Bryophytes and Ferns

Apr 13, 15—Gymnosperms*

Apr 20, 22— Angiosperms (Flowers & Fruits)

Apr 27--pollination presentations

Biology 271: Introduction to Plant Biology: Policies

MWF, 10 AM in 202 Wilson Hall

Lab 1: M, 1-4 PM; Lab 2: W, 1-4PM, both in 140 Wilson

Instructor: Dr. Patricia Gensel
email: pgensel@bio.unc.edu

Office: 405 Coker Hall
Tel. 962-6937

Lab Instructor: Jeff Ott

Objectives of the course: The purpose of this course is to acquaint you through a variety of activities with the group of organisms termed plants. These organisms are distinctive relative to other types in the following ways:

- 1) They have indeterminate growth, localized in specific regions termed meristems;
- 2) plants don't move (although their reproductive cells might);
- 3) plants are the major organisms that convert carbon dioxide into sugar, using the energy of the sun. Plants, chemoautotrophic bacteria and photosynthetic protists are the primary producers and only organisms that pull new energy into the biosphere;
- 4) plants exhibit many adaptations to cope with survival on land in their structural organization, their methods of reproduction, and their biochemistry/metabolism that add to our understanding of biological processes;
- 5) plants are of major importance to humans as a source of food, clothing, shelter, fuel, medicines, etc.

We will examine these many facets of plants and by the end of the course, you should be able to

- 1) list the distinctive features of plants
- 2) describe and understand how a typical plant is constructed
- 3) describe how plants photosynthesize and generate energy
- 4) discuss aspects of structure and function that makes up the diversity of plants present in the world
- 5) describe and understand the various ways plants live and reproduce, how they maintain or promote variation, and ways they are adapted to particular environments
- 6) know important facts about how to grow plants and what their nutritional requirements are
- 7) recognize the major groups of plants and assess their relationships
- 8) know several ways plants are used by people

Lectures will be designed to facilitate these objectives; you are strongly encouraged to take an active part in discussions during lecture. To prepare, you should read the assigned reading BEFORE the given lecture, look up unfamiliar terms, and consider any questions that have been posed. I will ask questions during class, or arrange other means of active involvement. I encourage you to study in small groups and to share information with each other. Labs are designed to illustrate topics covered in lecture- and usually occur after the topic is presented in lecture. Read lab handouts BEFORE the laboratory itself and prepare by referring to text or notes about that particular topic. Some labs involve exploring plant structure, others explore functions or processes. A few, hopefully short, extra reading assignments may be given to supplement the text, especially in areas of ongoing research.

Text: *Biology of Plants* by P. R. Raven, R. Evert, and S. Eichorn. 1999. 7th edition. Freeman and Worth, publishers.

Expectations: I expect that you will be prepared for lectures, participate, ask questions when you don't understand a concept, and work towards applying concepts or tying together different topics.

Projects: There will be two formal projects during the semester, each worth 20 points: 1) human uses of plants and 2) a case study of plant pollinator interactions. Both will require research, either independently or in teams, a brief oral presentation with graphics, and a brief, but comprehensive report. Details will be provided in class.

Exams and Grading: There will be three full period lecture exams, each worth 50 points and one final exam worth 75 points. The final exam will be cumulative. I plan to give a short quiz in class on most Fridays that covers the material we have discussed that week, worth a total of 20 points. Also, lab quizzes will be given at times indicated by the TA. The lowest quiz grade will be dropped, so lab quizzes will total 100 pts. The projects total 40 points.

Total points to be earned from lecture tests:	225
Total points to be earned on quizzes	20
Total points earned in lab	100
Projects	40
Total points possible	385

Your final grade will be determined as the points earned out of 385. A letter grade will be based on the following APPROXIMATE scale: A= 90-100%, B= 80-90%, C= 70-80%, D= 60-70%, F= less than 60 %. I usually end up scaling the grades.

