

Botany—BSC 226

Textbook: Plant Biology, 2nd ed., by Rost, Barbour, Stocking, and Murphy

Course objectives. Upon successful completion of this course you will have a basic understanding of botanical terms, plant anatomy and morphology, plant ecology, plant life history strategies, and evolutionary relationships among major groups of plants. You will also have an introduction to protist, fungal, and moneran groups traditionally studied by botanists.

Topic

About Plant Biology

The Chemistry of Life

The Plant Cell and the Cell Cycle

Organization of the Plant Body: Cells, Tissues, & Meristems

The Shoot System I: The Stem

The Shoot System II: The Form and Structure of Leaves

The Root System; Examination I (35 pts)

Concepts of Metabolism

Respiration

Photosynthesis

Absorption and Transport Systems

Last day to drop without academic penalty

Life Cycles: Meiosis and Alternation of Generations

The Flower and Sexual Reproduction

Seeds and Fruits; Examination II (35 pts)

Control of Growth and Development

Genetics

Biotechnology

Evolution and Systematics

Archea, Bacteria, and Viruses

Kingdom Fungi

The Protists; Examination III (35 pts)

Bryophytes

The Early Tracheophytes

Gymnosperms

Angiosperms

Ecology, Ecosystems, and Plant Populations

Ecology and Plant Communities; Examination IV (30 pts)

A mock quiz has been posted so that you can experience the mechanics of taking a quiz online. You are encouraged to take the mock quiz, although you will not receive credit for it toward your final grade. The points associated with the quiz are just to let you know how well you did.

A quiz will be associated with each chapter in the syllabus. Each quiz will comprise five multiple choice questions, graded at one point each, covering material in the assigned chapter. Each quiz will start online at 9:00 AM and continue until the next scheduled quiz at 9:00 AM.

Twenty-seven quizzes will be given through the semester for a total of 135 points.

Four examinations (135 points total) will start online at 9:00 AM on the days indicated and end just before the next quiz begins (9:00 AM). Each examination will comprise five multiple choice questions per chapter, graded at one point each.

If your computer fails during a quiz or examination, let me know immediately via email within Blackboard, by telephone, or by coming to my office. I shall reset your test if it is still available for the class. Obviously if you wait to take the test just before next class, that option cannot apply.

Occasionally students miss or do poorly on quizzes and examinations for reasons beyond their control. You may retake up to 35 points which is one examination or up to seven quizzes. You must send me a list of the examination or quizzes you wish to retake during the last week of the semester using email within Blackboard. Note that when you retake an examination or a quiz, you will receive the higher of your two scores.

The following grading scale will be applied to the total number of points available in the course. Laboratory will be a separate grade.

Lecture

A: 90% (243–270)

B: 80% (216–242)

C: 70% (189–215)

D: 60% (162–188)

Botany—BSC 226L

Support Reference: Plant Biology, 2nd ed., by Rost, Barbour, Stocking, and Murphy

Topic

Introduction to the Course

Cells, Tissues, and Meristems

Shoot Systems: Stems

Shoot Systems: Leaves

Root Systems

Flowers and Sexual Reproduction

Seeds and Fruits

Hormones: Plant Growth Regulators I

Hormones: Plant Growth Regulators II

Fungi

Protists (Algae)

Bryophytes

Early Tracheophytes (Cryptogams)

Gymnosperms and Angiosperms (Phanerogams)

A mock quiz has been posted so that you can experience the mechanics of taking a quiz online. You are encouraged to take the mock quiz, although you will not receive credit for it. The points associated with the quiz are just to let you know how well you did.

Each of the 12 exercises (13 meetings excluding the introductory meeting) includes activities to be completed in the laboratory. You are graded for participation at up to six points per laboratory (12 exercises x 6 points = 72 points total).

Each of the laboratories except plant growth regulators begin with an introduction to material you can observe online. The introduction is a slide presentation also available online for you to study for an online quiz over the material. Quizzes are multiple choice format with six questions per quiz graded for up to two points per question (11 exercises x 12 points = 132 points total).

The hormone laboratory requires two weeks to complete. You receive up to three points for participating in each part. A laboratory report is required for this exercise in which you report the results and significance of the exercise. The format for the report is available online (Blackboard). Reports submitted by the first submission date will be graded for up to 24 points and may be rewritten and submitted for regrading. Rewritten and original reports submitted by the final submission date will be graded for up to 24 points with the grade for your rewritten laboratory report replacing the grade for the original submission. Reports will not be accepted after the second submission date.

Occasionally students miss or do poorly on quizzes for reasons beyond their control. You may retake any two quizzes. You must send me a list of the quizzes you wish to retake during the last week of the course using email within Blackboard. Note that when a quiz is reset, any points you had earned are voided. The new score, for better or worse, is the score you will receive.

Occasionally students miss laboratory for reasons beyond their control. You may

substitute the accompanying optional laboratory exercise for up to 12 points to replace a missed laboratory. You cannot earn extra points with this exercise, only replacement points.

Below is a list of twelve sets of collections you may submit for one point each to replace a missing laboratory attendance grade. You must collect the items on the list from “nature” and not from a grocery store or other commercial source. The point of the exercise is to afford you the opportunity to look at the botanical world around you. Everything on the list can be found on campus without resorting to use of the cultivated plants. Each numbered set must be submitted as a whole set. No partial credit is given and you may not mix and match parts of sets for credit.

1. Roots
 - a. fibrous root system
 - b. tap root system
 - c. adventitious root
2. Stems
 - a. stem with alternate phyllotaxy
 - b. stem with opposite phyllotaxy
 - c. rhizome
3. Leaves
 - a. simple leaf
 - b. palmately compound leaf
 - c. pinnately compound leaf
4. Flowers
 - a. hypogynous flower
 - b. epigynous flower
5. Flowers (p. 204)
 - a. spike or raceme
 - b. umbel or head
 - c. cyme or panicle
6. Fruit
 - a. pod/legume
 - b. capsule
 - c. achene
7. Fungi
 - a. ascomycete
 - b. basidiomycete
8. Protista (collect any two)
 - a. crustose lichen
 - b. foliose lichen
 - c. fruticose lichen
9. Bryophytes
 - a. moss sporophyte
 - b. moss gametophyte
10. Cryptogams (collect a or b)
 - a. fern
 - b. lycopod or horsetail
11. Phanerogams: Gymnosperms
 - a. male pine cone
 - b. female pine cone
 - c. sample of a gymnosperm that is not a pine
12. Phanerogams: Angiosperms
 - a. three different orders of dicots
 - b. two different orders of monocots

Your collections must all be submitted at one time during the last week of laboratory. You may submit them in the laboratory during the your scheduled session or deliver them to JST 410.

The following grading scale will be applied to the total number of points available in the course. Lecture will be a separate grade.

- Laboratory
- A: 90% (205–228)
 - B: 80% (182–204)
 - C: 70% (160–183)
 - D: 60% (137–159)