El Paso Community College
Syllabus
Part II
Official Course Description

SUBJECT AREA	**Biology**
COURSE RUBRIC AND NUMBER	**BIOL 1411**
COURSE TITLE	**General Botany I**
COURSE CREDIT HOURS	**4 (Credits) 3 (Lec) 3 (Lab)**

I. Catalog Description

Provides fundamental biological concepts relevant to plant physiology, life cycle, growth and development, structure and function, and cellular and molecular metabolism. The role of plants in the environment, evolution, and phylogeny of major plant groups, algae, and fungi. (This course is intended for science majors.) **Prerequisites: BIOL 1306 and 1106. (3:3). Lab fee.**

II. Course Objectives

A. Unit I. The Plant Cell and Tissues.

1. Explain and introduce the structure and function of organelles within the typical plant cell.
2. Discuss the basic structure of flowers and differences in various adaptations in flowers.
3. Explain the different tissue types found in plants.
4. Discuss the basic structures of stems, roots and leaves in monocot and dicot plants.

B. Unit II. Plant Metabolism

1. Explain the concept of photosynthesis in plants
2. Discuss C_4 and CAM photosynthesis and the ecological aspects of these metabolic pathways.
3. Explain the principles of cellular respiration in plants.
4. Explain the accumulation of greenhouse gases and the effects on plant growth.

C. Unit III. Genetics and Evolution.

1. Discuss gamete formation in plants in regards to polyploidy.
2. Explain asexual and sexual reproductive strategies in plants.
3. Discuss population genetics and the evolutionary principles involved in plant populations.
4. Discuss the role of hybridization events in plants.

D. Unit IV. Diversity of Plants.

1. The classification, structure and function, general characteristics, life cycle and importance of the following groups: Bacteria and Cyanobacteria, Bryophytes, primitive vascular plants, seedless vascular plants, and seed plants.

E. Unit V. The Plant Body of Angiosperms.

1. Discuss the embryonic development in Angiosperm plants.
2. Discuss the cells, tissues, roots, and shoots in Angiosperms.
3. Discuss secondary growth in xylem and phloem tissue in Angiosperm plants.

F. Unit VI. Growth, Regulation and Responses.

1. Discuss growth, regulation and responses in plants (hormonal regulation).
2. Discuss nutrients, vitamins and photoperiodism and the effects of these conditions on growth and metabolism.
3. Discuss dormancy and quiescence in plants.

G. Unit VII. Water and Soil relationships.

1. Discuss the methods employed by plants in the uptake of water and nutrients from the soil.
2. Discuss water's movement through a plant.
3. Discuss the regulation of transpiration in plants in various ecosystems.

H. Unit VIII. Ecology.

1. Explain the ecological relationships between plants and the ecosystems.
2. Discuss the ecological principles of plants including the inter-relationships with the community, ecosystem and biosphere.

III. THECB Learning Outcomes (ACGM)

Upon successful completion of this course, students will:

1. Compare and contrast the structures, reproduction, and characteristics of plants, algae, and fungi.
2. Describe the characteristics of life and the basic properties of substances needed for life.
3. Identify the principles of inheritance and solve classical genetic problems.
4. Describe phylogenetic relationships and classification schemes.
5. Identify the major phyla of life with an emphasis on plants, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
6. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
7. Identify the substrates, products, and important chemical pathways in photosynthesis and respiration.
8. Describe the unity and diversity of plants and the evidence for evolution through natural selection.
9. Compare different sexual and asexual life cycles noting their adaptive advantages.
10. Describe the reasoning processes applied to scientific investigations and thinking.

Learning Outcomes (Lab)

1. Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
2. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
3. Communicate effectively the results of scientific investigations.
4. Compare and contrast the structures, reproduction, and characteristics of plants, algae, and fungi.
5. Describe the characteristics of life and the basic properties of substances needed for life.
6. Identify the principles of inheritance and solve classical genetic problems.
7. Describe phylogenetic relationships and classification schemes.
8. Identify the major phyla of life with an emphasis on plants, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
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10. Identify the substrates, products, and important chemical pathways in photosynthesis and respiration.
11. Describe the unity and diversity of plants and the evidence for evolution through natural selection.
12. Compare different sexual and asexual life cycles noting their adaptive advantages.
13. Describe the reasoning processes applied to scientific investigations and thinking.

IV. Evaluation

A. Objective and short essay exams

B. Grading will follow current El Paso Community College catalog standards.

90 –100	= A
80 –89	= B
70 –79	= C
60 –69	= D
Below 60	= F

V. Disability Statement (American with/Disabilities Act [ADA])

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024)

VI. 6 Drop Rule

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.