BOTANY 10 Course Outline as of Fall 2013

CATALOG INFORMATION

Dept and Nbr: BOTANY 10 Title: PLANT BIOLOGY
Full Title: Plant Biology
Last Reviewed: 1/28/2019

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	4.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	4.00	Lab Scheduled	3.00	17.5	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	6.00		Contact Total	105.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00 Total Student Learning Hours: 210.00

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
A general education course in plant biology emphasizing the structure and function of seed plants. Includes genetics, ecology, evolution, reproduction and diversity of plant life forms.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 1A

Limits on Enrollment:

Schedule of Classes Information:
Description: A general education course in plant biology emphasizing the structure and function of seed plants. Includes genetics, ecology, evolution, reproduction and diversity of plant life forms. (Grade or P/NP)
Prerequisites/Corequisites:
Recommended: Eligibility for ENGL 1A
Limits on Enrollment:
Transfer Credit: CSU;UC.

Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**		Effective:	Inactive:
	C	Natural Sciences	Fall 1981	
CSU GE:	**Transfer Area**		Effective:	Inactive:
	B2	Life Science	Fall 1981	
	B3	Laboratory Activity		
IGETC:	**Transfer Area**		Effective:	Inactive:
	5B	Biological Sciences	Fall 1981	
	5C	Fulfills Lab Requirement		

CSU Transfer:	Transferable	Effective:	Fall 1981	Inactive:
UC Transfer:	Transferable	Effective:	Fall 1981	Inactive:

CID:

Certificate/Major Applicable:
Major Applicable Course

COURSE CONTENT

Outcomes and Objectives:
Upon completion of this course students will be able to:
1. Outline the history of plant science.
2. Explain the methods of scientific investigation.
3. Categorize and explain the multiple factors associated with plant ecology, especially human impact on natural landscapes.
4. Examine plant morphology and anatomy, including cell structure and function, vegetative and reproductive morphology, major tissue systems and anatomy of roots, stems, leaves, flowers, fruits and seeds.
5. Describe plant physiological mechanisms, including metabolism, water relations, transport, nutrition, photosynthesis, growth and development.
6. Explain the basis of plant inheritance, including Mendelian, chromosomal and molecular genetics.
7. Describe plant evolution and phylogeny, including variation, natural selection, genetic drift, speciation, macroevolution and major phylogenetic trends.
8. Compare and contrast the morphology and phylogenetic relationships of algae, bryophytes, seedless vascular plants and seed plants.
9. Evaluate the relevance and importance of plants to human cultures.
10.Evaluate the importance of biodiversity and conservation efforts.

Topics and Scope:

I. Botany as Science:
  A. Course introduction
  B. The methods of natural science
  C. Brief history of plant sciences

II. Plant Ecology:
  A. Environmental constraints to plant distribution
  B. Plant adaptation and evolutionary history
  C. Vegetation types and communities
  D. Ecosystem structure and function
  E. Ecological succession
  F. Ecosystem management
III.Plant Structure:
  A. Cell structure and cell division
  B. Major cell and tissue types
  C. Morphology and anatomy of roots, stems, leaves, flowers, fruits and seeds
  D. Functional morphology and adaptation
IV. Plant Physiology:
  A. Diffusion, osmosis and passive transport
  B. Plant water relations and xeric adaptations
  C. Plants and soils - mineral nutrition
  D. Plant metabolism and energetics
  E. Photosynthesis
  F. Cellular respiration
  G. Internal and external regulation of growth and development.
V. Plant Inheritance and Evolution:
  A. Mendelian patterns of inheritance
  B. Chromosomal genetics
  C. Polyploidy in plants
  D. Mechanisms of evolution - microevolution and macroevolution
  E. Plant phylogeny - major evolutionary patterns
VI. Plant Diversity:
  A. Algae
  B. Bryophytes
  C. Seedless vascular plants
  D. Seed plants
VII.Conclusion:
  A. Summary of plant relevance to humans, both economical and ecological
  B. Plant biodiversity and conservation
  C. Why study Botany?

Assignment:

1. Assigned readings, approximately 20-40 pages weekly
2. Lab reports (12-15 per semester)
3. Research paper on botanical topic, 3-6 pages, may be required
4. Quizzes (2-10); lab practical exams (1-3); 1 midterm and 1 final exam

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Research paper	Writing 0 - 20%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Lab reports	Problem solving 10 - 20%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Midterm, lab practical, and final exams: objective and essay questions	Exams 60 - 80%

Other: Includes any assessment tools that do not logically fit into the above categories.

None	Other Category 0 - 0%

Representative Textbooks and Materials:
Botany: An Introduction to Plant Biology, J. D. Mauseth, 5th edition, Jones & Bartlett Publishers, 2014
Instructor prepared lab manual
Instructor prepared materials