BIO 31 Course Outline as of Fall 2016

CATALOG INFORMATION

Dept and Nbr: BIO 31 Title: TROPICAL BIODIVERSITY
Full Title: Tropical Biodiversity and Conservation
Last Reviewed: 10/11/2021

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	2.00	Lecture Scheduled	1.50	17.5	Lecture Scheduled	26.25
Minimum	2.00	Lab Scheduled	0	6	Lab Scheduled	0
		Contact DHR	1.50		Contact DHR	26.25
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 52.50 Total Student Learning Hours: 105.00

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:
Survey of the ecology, flora, and fauna of rainforests, cloud forests, and dry forests. Typically taught abroad. Countries such as Costa Rica are used to illustrate both the current extinction crisis and conservation efforts.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 1A or equivalent

Limits on Enrollment:

Schedule of Classes Information:
Description: Survey of the ecology, flora, and fauna of rainforests, cloud forests, and dry forests. Typically taught abroad. Countries such as Costa Rica are used to illustrate both the current extinction crisis and conservation efforts. (Grade or P/NP)
Prerequisites/Corequisites:
Recommended: Eligibility for ENGL 1A or equivalent
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 2016	
CSU GE:	**Transfer Area**		Effective:	Inactive:
	B2	Life Science	Fall 2016	
IGETC:	**Transfer Area**		Effective:	Inactive:
	5B	Biological Sciences	Fall 2016	

CSU Transfer:	Transferable	Effective:	Summer 2007	Inactive:
UC Transfer:	Transferable	Effective:	Summer 2007	Inactive:

CID:

Certificate/Major Applicable:
Major Applicable Course

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Apply the scientific method and critical thinking techniques to evaluate biological information from the popular media.
2. Explain the patterns of biodiversity and species interaction found in tropical biomes in general, and in one country in particular.
3. Evaluate the impacts of human population growth and resource use on tropical rainforests.

Objectives:
Upon successful completion of the course, students will be able to:
1. Apply the scientific method to problem solving.
2. Explain the principles of evolution, including natural selection and speciation, relate them to genetics, and be able to differentiate these principles from faith-based belief systems.
3. Describe the geological history, climate, and principle weather features of tropical rainforests.
4. Explain the patterns of biodiversity and species interaction found in tropical biomes and compare them to other geographical biomes.
5. Contrast the historical and contemporary rates of rainforest clearance.
6. Evaluate the immediate and underlying causes of tropical rainforest destruction.
7. Explain the economic, political, cultural, and ecological value of intact rainforests.
8. Explain the impacts of indigenous forest cultures on disturbances to the forest flora and fauna.
9. Use case studies of conservation programs in different countries to describe potential solutions to worldwide tropical deforestation.
10. Identify common species of flora and fauna found in the tropical rainforests of a particular country.

Topics and Scope:

Topics will include but not be limited to:

I. Scientific method versus other methods of processing knowledge and making decisions
   A. What is science and how is the scientific process conducted?
   B. Science versus pseudoscience
II. Principles of evolution
   A. Natural selection and other mechanisms of evolution
   B. Speciation
   C. Adaptations
   D. Relationship to biodiversity and the current extinction crisis
III. Tropical rainforests
   A. Geological history
   B. Climate and weather patterns
   C. Moist versus dry forests
IV. Biodiversity
   A. Species richness and measurements of diversity
   B. Tropical rainforests compared to other biomes
   C. Carrying capacity
V. Species interactions
   A. Niche partitioning
   B. Competitive exclusion
   C. Trophic relationships
   D. Pollination and dispersion
   E. Co-evolution
   F. Keystone species
VI. Threats and changes to rainforests
   A. Historical versus contemporary versus projected rates of destruction
   B. Extinction
   C. Succession
   D. Causes and processes of clearance
VII. Value of intact forest and costs of destruction
   A. Ways to assign value
   B. Loss of biodiversity, resources, and environmental services
   C. Local, regional, and global change
VIII. Indigenous cultures
   A. Tribal forest populations
   B. Threats and pressures
   C. Impact on biodiversity
IX. Potential solutions to ecological challenges
   A. Immediate action
   B. Constraints
   C. Protection and conservation
   D. Restoration and reforestation
   E. Sustainable use
   F. Debt for nature swaps
X. Species identification
   A. Dominant plants
   B. Common animals

Assignment:

Assignments may include:
1. Assigned reading from texts and other sources, 20-30 pages per class meeting
2. Response papers and other written homework
3. In class work: exercises, oral presentations, class discussions
4. Field notes
5. Participation in class (including field trips)
6. Formal assessment: quizzes and 2-4 exams including objective and essay questions

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.

Response papers, written homework, and field notes	Writing 20 - 40%

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

In class exercises,	Problem solving 5 - 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.

Multiple choice, true/false, matching items, completion, essay, quizzes	Exams 50 - 70%

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

Participation, oral presentations, and class discussions	Other Category 5 - 20%

Representative Textbooks and Materials:
The Diversity of Life, Wilson, Edward O., W.W. Norton and Company: 2010 (classic)

The Mammals of Costa Rica: A Natural History and Field Guide by Wainwright, M. Zona Tropical, Comstock Publishing Associates, Cornell University Press: 2007 (classic)

Travellers' Wildlife Guides: Costa Rica, Beletsky,L.,Interlink Publishing: 2005 (classic)

Foundations of Tropical Forest Biology. Chazdon, R.L. and Whitmore, T.C.. University of Chicago Press: 2001 (classic)

Tropical Ecology, Kricher, John, Princeton University Press: 2011 (classic)

An Introduction to Tropical Rain Forests, 2nd edition. Whitmore, T.C.,Oxford University Press: 1998 (classic)

Breakfast of Biodiversity: The Political Ecology of Rainforest Destruction. Vandermeer, John and Perfecto, Ivette, Institute for Food and Development Policy: 2005 (classic)

The Song of the Dodo: Island Biogeography in an Age of Extinction. Quammen, David, Touchstone: 1996 (classic)

Instructor prepared materials