BIO 31 Course Outline as of Fall 2014

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:
This course will survey the diversity of tropical rainforests. It is designed from a natural history perspective and is typically taught abroad. Topics will include ecology, flora and fauna of rainforests, cloud forests and dry forests. Emphasis will be placed on the effects of deforestation, balancing the needs of wildlife and people, establishment of park and preserve systems, and sustainable resource use. Countries such as Costa Rica are used to illustrate both the current extinction crisis and conservation efforts. Tropical field work is included.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 1A or equivalent

Limits on Enrollment:

Schedule of Classes Information:
Description: This course will survey the ecology, flora and fauna of rainforests, cloud forests, and dry forests. 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

Outcomes and 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.
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 the 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 decision-making
   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 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

VII. Causes and processes of clearance
- A. Fuel wood gathering
- B. Shifting cultivation
- C. Land distribution
- D. Resettlement
- E. Commercial logging
- F. Plantations and cash-cropping
- G. Cattle ranching
- H. Development projects

VIII. Value of intact forest and costs of destruction
- A. Ways to assign value
- B. Loss of biodiversity
- C. Loss of resources
- D. Loss of environmental services
- E. Local, regional, and global change

IX. Indigenous cultures
- A. Tribal forest populations
- B. Threats and pressures
- C. Impact on biodiversity

X. Potential solutions to ecological challenges
- A. Immediate action
- B. Constraints
- C. Protection and conservation
- D. Restoration and reforestation
- E. Sustainable use
- F. Tropical timber trade

G. Debt for nature swaps

XI. Species identification
   A. Dominant plants
   B. Common animals

Assignment:

Assignments may include:
1. Assigned reading from texts and other reading, 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. Attendance and participation in class and 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.

Written homework, 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.

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

Representative Textbooks and Materials:
(Classic Texts)

The Diversity of Life, Wilson, Edward O., W.W. Norton and Company: 2010
The Mammals of Costa Rica: A Natural History and Field Guide by Wainwright, M. Zona Tropical, Comstock Publishing Associates, Cornell University Press: 2007.
Travellers' Wildlife Guides: Costa Rica, Beletsky,L.,Interlink Publishing: 2005

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

An Introduction to Tropical Rain Forests, 2nd edition. Whitmore, T.C.,Oxford University Press: 1998
Breakfast of Biodiversity: The Political Ecology of Rainforest Destruction. Vandermeer, John and Perfecto, Ivette, Institute for Food and Development Policy: 2005
Rainforest Destruction: Causes, Effect, and False Solutions. World Rainforest Movement: 1990

The Rainforest Book: How You Can Save the World's Rainforests, Lewis, Scott. Living Planet Press: 1993
The Song of the Dodo: Island Biogeography in an Age of Extinction. Quammen, David, Touchstone: 1996
Tropical Rainforests. Park, Chris C., Routledge: 1992
Tropical Rainforests: Diversity and Conservation (Memoirs of the California Academy of Sciences, Volume 12). Almeda, Frank and Pringle,
Catherine, editors. California Academy of Sciences: 1988

Instructor prepared materials