

**BIO 15 Course Outline as of Summer 2011****CATALOG INFORMATION**

Dept and Nbr: BIO 15 Title: FUTURE OF RAINFORESTS  
 Full Title: The Future of Rainforests  
 Last Reviewed: 9/11/2006

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

Total Out of Class Hours: 105.00

Total Student Learning Hours: 157.50

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 broad overview of the biodiversity and ecology of tropical rainforests, including their distribution, causes and effects of their destruction and the analysis of conservation strategies. Case studies from different countries are presented to examine the integration of conservation solutions with human well-being and the site-specific circumstances of history, culture, poverty, land use, politics and economics.

**Prerequisites/Corequisites:****Recommended Preparation:**

Eligibility for ENGL 1A or equivalent

**Limits on Enrollment:****Schedule of Classes Information:**

Description: A broad overview of the biodiversity and ecology of tropical rainforests, including their distribution, causes and effects of their destruction and the analysis of conservation strategies. Case studies from different countries are presented to examine the integration of conservation solutions with human well-being and the site-specific circumstances of history,

culture, poverty, land use, politics and economics. (Grade or P/NP)

Prerequisites/Corequisites:

Recommended: Eligibility for ENGL 1A or equivalent

Limits on Enrollment:

Transfer Credit:

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

### **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>		<b>Effective:</b>	<b>Inactive:</b>
	C	Natural Sciences	Fall 2001	Summer 2011
	H	Global Perspective and Environmental Literacy		
<b>CSU GE:</b>	<b>Transfer Area</b>		<b>Effective:</b>	<b>Inactive:</b>
	B2	Life Science	Spring 2007	Summer 2011
	E	Lifelong Learning and Self Development		
	E	Lifelong Learning and Self Development	Fall 2001	Spring 2007
<b>IGETC:</b>	<b>Transfer Area</b>		<b>Effective:</b>	<b>Inactive:</b>
	5B	Biological Sciences	Spring 2007	Summer 2011
<b>CSU Transfer:</b>			<b>Effective:</b>	<b>Inactive:</b>
<b>UC Transfer:</b>			<b>Effective:</b>	<b>Inactive:</b>

**CID:**

**Certificate/Major Applicable:**

Major Applicable Course

### **COURSE CONTENT**

**Outcomes and Objectives:**

Upon completion students will be able to:

1. Critically evaluate what they read, write and hear in scientific literature as well as popular media.
2. Apply the scientific method to solving ecological problems.
3. Analyze the basic principles and assumptions of ecology, including the cellular nature of life, correlation of structure and function, energy transformation, evolution, and characteristics of systems.
4. Describe the tropical rainforest ecosystem.
5. Explain the effect of climate on the distribution of biodiversity.
6. Describe the complexity of plant-animal interconnections in tropical rainforests and compare this to other biomes.
7. Discuss the social political and economic forces that threaten rainforests and propose amelioration.
8. Compare the site-specific conservation solutions and assess their probable outcomes.
9. Explain how rainforest destruction has local, regional and global implications.
10. Evaluate the impacts of human population growth and resource use on tropical rainforests, with a focus on

identifying the immediate and underlying causes of forest disturbance and destruction and the current extinction crisis.

## **Topics and Scope:**

1. Ecology as science
  - a. Scientific approaches to problems
  - b. Scientific method
2. Foundational principles
  - a. Cellular nature of life
  - b. Structure and function; physiological and anatomical adaptors
  - c. Evolution: species adaptations, speciation, evolution of ecosystems
  - d. Characteristics of an ecosystem
3. Definition of tropical rainforests
  - a. Tropical moist forests and their climates
  - b. Forest formations
  - c. Growth cycle
4. Plant life
  - a. Climbers and epiphytes
  - b. Trees
5. Rainforest animals
  - a. Richness and diversity of animals
  - b. Modes of coexistence
  - c. Carrying capacity
6. Interconnections between plants and animals
  - a. Animals as pollinators
  - b. Animals as dispersers
  - c. Food webs and keystone species
  - d. Co-evolution
7. Tropical forests through time
  - a. Paleogeography
  - b. Paleoclimates
  - c. Pleistocene refugia
8. Forest dynamics
  - a. Forest microclimates
  - b. Pioneer and climax species
  - c. Seed and seedling ecology
  - d. Species richness
9. Nutrients and their cycles
  - a. Shifting agriculture
  - b. Nutrient pools and cycles
10. The tropical rainforest yesterday and today
  - a. Indigenous cultures
  - b. Colonial era
  - c. Post-Colonial era
11. Destruction of rainforests
  - a. Past rates
  - b. Present rates
  - c. Future prospects
12. Causes and processes of clearance

- a. Fuel/wood gathering
  - b. Shifting cultivation
  - c. Land distribution and population
  - d. Resettlement
  - e. Commercial logging
  - f. Plantations and cash-cropping
  - g. Cattle ranching
  - h. Development projects
13. Impacts and costs of destruction
- a. Loss of biodiversity
  - b. Loss of resources
  - c. Loss of environmental services
  - d. Local and regional climate change
  - e. Global climate change
14. Forest peoples
- a. Tribal people and the rainforest
  - b. Decline and fall
  - c. Threats and pressures
15. Possible solutions
- a. The need for action
  - b. Constraints
  - c. Protection and conservation
  - d. Restoration and reforestation
  - e. Sustainable use
  - f. Tropical timber trade
  - g. Debt for nature swaps

### Assignment:

1. Read text and other assigned readings, 30-40 pages per week.
2. Homework: written responses to scientific journal articles and written analysis of websites that address rainforest issues relevant to the class.
3. Preparation of group project to design a written conservation plan for an assigned rainforest site.
4. In class work: exercises, presentations, class discussions.
5. 4-14 Quizzes and 3-5 Exams.

### 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, Group conservation plan	Writing 20 - 40%
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**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

None	Problem solving 0 - 0%
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**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

Exams  
40 - 60%

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

Class participation

Other Category  
0 - 20%

**Representative Textbooks and Materials:**

An Introduction To Tropical Rain Forests, by T.C. Whitmore, 2nd Edition, Oxford University Press, 1998.

Tropical Rainforests, by Chris C. Park, Routledge Publishing, 1994.

The Diversity of Life, by Edward O. Wilson, W.W. Norton and Company, Inc., 1999

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

Classic texts