



ECOLOGY AND SUSTAINABLE DEVELOPMENT IN COSTA RICA
IFSA Universidad Nacional Partnership

Suggested US semester credit hours: 3

Contact hours: 45

IFSA Course Code: BI306-02/ENV306-02

Delivery method: Face to Face

Host institution affiliation: Universidad Nacional, Costa Rica

Language of instruction: Spanish

COURSE DESCRIPTION

This optional course is offered to students of the School of Environmental Sciences and to American students in the context of the IFSA-Butler program, in order to promote a more comprehensive training with international perspectives for analysis and discussion. The course will be co-taught in Spanish language and the Spanish syllabus is the program contract. Although the course devotes part of the time to the deepening of theoretical content, it also gives an important place to the practical development with the completion of fieldtrips.

Costa Rica has a significant percentage of its territory under some category of protection, which has also increased thanks to the private reserves dedicated to ecotourism and research. A challenge for society is to raise awareness to conserve these natural resources in the long-term, where the knowledge inventories and their valuation by society, are necessary and urgent. The course will address aspects of the history of ecology, as well as conceptual components of the ecosystems and the ways they interact in the environment. This requires an approach to ecology as interdisciplinary science enabling to understand its importance in the recovery, preservation and protection of the environment.

The course includes the development of a practical assignment by students, which helps to put into practice the concepts and skills developed in the course. Students are organized according to their interests, although they will follow the standards established under this program and other instruments that will be provided later. Through this process, we hope to achieve the following objectives:

STUDENT LEARNING OBJECTIVES

GENERAL OBJECTIVE

- To familiarize students with the tropical ecosystems, their importance, functionality and interrelationship with sustainable development in Costa Rica and the global society.

SPECIFIC OBJECTIVES

- To contribute to the understanding of the ecological principles that governs tropical ecosystems.
- To expand the domain of the theoretical foundations of ecology as a science aimed at the conservation and sustainable use of natural resources in Costa Rica.
- To familiarize students with the socio-economic, political, and environmental conditions of Costa Rica and how these conditions promote or prevent sustainable use of ecosystem goods and services.

TOPICAL CONTENTS

I. Concept of ecosystem

- Chains, networks and ecological pyramids
- Cycle of matter and biogeochemical cycles
- Interspecific relations: competition and coexistence, predation, commensalism, cooperation and mutualism.
- Plant-animal interactions: plants and microorganisms, phytophagous, and direct and indirect defenses of plants, ecology of pollination and dispersal.

II. Tropical ecosystems

- Abiotic component: Geology and climate
- Dynamics of tropical ecological systems: Dynamics of the forest, phenological, ecological succession patterns
- Tropical biomes: Holdridge Life zones
- Tropical biogeography
- Tropical forests and climate change

III. Ecological resources in Costa Rica

- Basic concepts: natural resources and biological diversity
- Types of vegetation and its associated fauna: composition, dominance, stratification and evolutionary adaptations
- Populations of plants and animals threatened with extinction, fragmentation of habitat, endemism, contemporary human influence

IV. Historical and current socio-economic and environmental situation of Costa Rica

- Introduction to sustainability
- Globalization and socio-economic transition from Costa Rica
- Social, economic, and environmental challenges currently

V. Protected areas for the conservation of biodiversity

- Protected areas management categories
- The National System of Conservation Areas: concept and organization

- Social participation in the management of protected areas: local experiences

VI. Use of ecosystem services in Costa Rica

- Relationship of the human being and the ecosystem.
- Ecosystem services: estimation, valuation and certification
- Program of Payment for Environmental Services

PEDAGOGICAL STRATEGY

The teaching team facilitates the learning process, enabling students to be active members in the different activities. The course will be co-taught where facilitators organize, coordinate, and evaluate the course in a shared manner. With the use of creative strategies, the teaching team promotes moments of reflection, analysis, criticism and reasoning for the construction of a meaningful learning. In this way, the student must participate in investigating, providing, analyzing, and generating feedback from the process of teaching and learning, with the teaching staff and their partners.

- This course will be offered in Spanish. The analysis of readings will be mostly in Spanish, and occasionally in English. There will also group activities, discussion of videos and readings related to the topics covered in the course.
- Lectures by teacher or guests are intended to guide the discussions and sort the contents according to the objectives of the course.
- There will be four fieldtrips to experience aspects related to the topics covered in classroom and to learn about projects or experiences.
- The students must perform a final practical work on a topic shortlisted at the beginning of the session. This work must be presented in written and oral form.

EVALUATION

General course evaluation criteria:

Activity	%
Analysis of 4 readings <i>-2.5% each</i>	10 %
Examination I	15 %
Examination II	15 %
Reports of fieldtrips <i>-5% each</i>	15 %
Short project 1	15 %
Short project 2	15%
Attendance and participation	15 %
Total	100 %

The following table is used for rounding the final mark. Note that a minimum of 7.0 is required to pass the class.

EVALUATION SCALE		
From 0.10 to 0.24, corresponds to 0.25	E.g. 7.22	Rounding 7.25
From 0.26 to 0.49, corresponds to 0.50	E.g. 8.28	Rounding 8.50
From 0.51 to 0.74, corresponds to 0.75	E.g. 8.53	Rounding 8.75
From 0.76 to 0.99, corresponds to the upper	E.g. 9.76	Rounding 10

Reading analyses: Readings will be evaluated with quizzes, discussions in class or any other means which determined by the instructor. This involves reading materials for each session with sufficient detail to be able to ask penetrating questions and participate on intelligent discussions on the key issues.

Examinations: There will be two short examinations on the basis of the topics covered in the lectures, readings and field experiences. Request corrections to the qualification of these examinations should be written in less than 24 hours since the exams are returned. Corrections requested after this time would not be taken into consideration.

Reports of fieldtrips: according to the instructions, students will present a report for each fieldtrip, whether they are product of the experiences learned through the cases presented or field exercises. Each student must participate in scheduled fieldtrips and submit a single report (**printed, two-page maximum**) next week, which summarize their experiences and more significant learning. Hand-written reports will not be accepted, neither after the due date.

Scheduled of fieldtrips *

Location	Purpose
Cerro de la Muerte	Introduction to the concepts of ecosystem.
Sarapiquí	Learn and understand the dynamics of tropical ecosystems
TBD. Carara or Poas Volcano National Park	Explore a protected area, its managerial challenges for tourism and neighboring communities.

* The University only covers transportation. Students pay for food and lodging. *For reasons beyond control, fieldtrips could be cancelled, rescheduled to another date or the same date to another location.*

Short projects: We'll execute two projects to put in practice concepts developed throughout the course. Specific guides will be made available by the instructors ahead of time.

Attendance and participation: fieldtrips and class attendance is mandatory. After two unexcused absences in class, or an unjustified fieldtrip, students will lose the course. In terms of participation, all students should come prepared for each session. If an assignment is missed on a justified absence, students have a single opportunity to bring it at the beginning of the following class.

COURSE SCHEDULE

Week	Theme	Chapter	Activities	Supporting materials
1	Presentation program Introduction to concepts of ecosystem	I	Presentation of program Presentation of professor Lecture and discussion	Program of course Class notes
2	Ecological inter- specific interactions	I	Lecture and discussion Analysis of reading 1	Class notes Multimedia Reading 1: <i>Montagnini, Florencia & Jordan, C. 2002. Reciclaje de nutrientes. In: Guariguata, M. & Kattan, G. Ecología y Conservación de Bosques Neotropicales. p:167-191.</i>
	Ecology and plant- animal relations		Lecture and discussion	Class notes
3	Tropical ecosystems abiotic components	II	Lecture and discussion Fieldtrip 1	Class notes Guide for fieldtrip report
Off week	No classes. National holiday			
4	Tropical biomes and life zones	II	Analysis of reading 2	Reading 2: <i>Adler, G. 2002. La regulación de las poblaciones de mamíferos. In: Guariguata, M. & Kattan, G. Ecología y Conservación de Bosques Neotropicales. p:329-343.</i>
5	Tropical ecosystems and the influence of climate change	II	Lecture and discussion Fieldtrip 2	Class notes Guide for fieldtrip report
6	Ecological resources in Costa Rica	III	Case study and discussion	Multimedia Case study
7	Project 1		Students hand-in and present report	Guide for Project 1
8	Examination I			
9	Globalization and socio-economic transition from Costa Rica.	IV	Presentation of the Professor Lecture and discussion	Class notes Reading
10	Social, economic, and environmental challenges currently	IV	Case study: socio-economics of climate change Analysis of reading 3	Multimedia Case study

Week	Theme	Chapter	Activities	Supporting materials
				Reading 3: Myers, CM. 2001. <i>Economic development policy and the protected areas system in Costa Rica: A historical review and prospects for the future.</i> <i>Vida Silvestre Neotropical</i> 10 (1-2), 3-19.
11	Social participation in the management of protected areas: local experiences	V	Class presentation	Class notes
12	Protected areas management categories The national system of conservation areas: concept and organization	V	Lecture and discussion Fieldtrip 3	Class notes Guide for fieldtrip report
13	Relationship of the human being and the ecosystem: uses and threats	VI	Lecture and discussion Analysis of reading 4	Class notes Reading #4: <i>Wunder, S. 2006. Pagos por servicios ambientales: Principios básicos esenciales.</i> Español: http://www.cifor.org/publications/pdf_files/OccPapers/OP-42S.pdf English: http://www.cifor.org/publications/pdf_files/OccPapers/OP-42.pdf
14	System of payment for environmental services: case studies	VI	Natural Capital game simulation on ecosystems services	Multimedia
15	Project 2		Students hand-in and present report	Guide for Project 2
16	Examination II			
17	Extraordinary examination			

RULES GOVERNING THE COURSE

- **For purposes of this course, attendance at all classes and academic activities scheduled during the same period, is mandatory (agreement Council University, art. Third, subparagraph IV, 1927 session).**
- This course by nature is theoretical- practical, which includes in the scheduling of an extraordinary examination.
- All the jobs that are scheduled as part of the evaluation of the course must be original, produced by the students of the course with up-to-date and relevant information. **Plagiarism of work shall be punishable as set forth in article 24 of the General Regulation of teaching and learning that indicates the following:**

"Is considered plagiarism the partial or total reproduction of documents non-presenting them as their own. In the case which proves the plagiarism by students, you will lose the course. If he does it will be suspended by a school career, and if the situation repeats itself once again, he will be banned from the University"."

- This article shall apply in the various activities scheduled in the course, such as tasks, group work, tour report and research work, if these do not have the respective citations (according to the IICA rules) and are presented as homemade.
- The delay in the delivery of reports and documents shall be penalized with 10%, and 10% for each day up to a maximum of 72 hours. After this period reports or documents are not accepted. As with critical analyses of reading the delivery of documents must be at the beginning of the lesson.
- Remember that **the use of cell phone in class is not allowed unless it is for academics activities proposed by the instructors.**
- Article 16. Assessment procedures included in the program of the course only may be varied by justified reasons and by agreement of the teacher and students, established at least one week prior to the implementation of the change in the evaluation.
- Article 20. Professor shall designate, in writing, in the corresponding evaluation document, the relevant observations and must deliver and discuss with students the results of the evaluation, within one period not to exceed eight calendar days from the date on which took place.
- Article 21. Evaluations shall be carried out in the hours corresponding to the course or other previously established in the program dates. If you require a change in the schedule and dates, there should be agreement between professors and students for the new assigned date.

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English: http://www.cifor.org/publications/pdf_files/OccPapers/OP-42.pdf

Timely Submissions

Assignments submitted after the deadline will be accepted at the discretion of the course instructor and generally only in the event of a documented illness or emergency.

ACADEMIC INTEGRITY

Any academic endeavor must be based upon a foundation of honesty and integrity. Students are expected to abide by principles of academic integrity and must be willing to bear individual responsibility for their work while studying abroad. Any academic work (written or otherwise) submitted to fulfill an academic requirement must represent a student's original work. Any act of academic misconduct, such as cheating, fabrication, forgery, plagiarism, or facilitating academic dishonesty, will subject a student to disciplinary action.

IFSA-Butler takes academic integrity very seriously. Students must not accept outside assistance without permission from the instructor. Additionally, students must document all sources according to the instructions of the professor. Should your instructor suspect you of plagiarism, cheating, or other forms of academic dishonesty, you may receive a failing grade for the course and disciplinary action may result. The incident will be reported to the IFSA-Butler resident director as well as your home institution.