

SAN JOAQUIN DE FLORES INSTITUTE

COURSE	Tropical Ecology
CREDITS	3
CLASS HOURS	48
CLASS SCHEDULE	
PERIOD	
COURSE START AND END DATE	
PROFESSOR (include email address)	
OFFICE HOURS	

DESCRIPTION:

This course will provide students with the basis to understand the ecological processes that take part inside an ecosystem. In order to accomplish this, the main ecological theories that explain the distribution and abundance of organisms in function of abiotic resources, environmental conditions and the interactions between species (competition and predation) are reviewed. Additionally, the way in which these factors alter the functioning of the ecosystem as a whole will be studied. The intervention of human beings will be studied in different subjects, considering how this is altering the dynamics of populations and natural ecosystems and even human survival.

OBJECTIVES

GENERAL:

Acquire general knowledge about life zones in Costa Rica, endemic populations, endangered populations and the potentialities and problems developed around these populations. Students will understand the importance of anticipating the phenomena that have altered and related these species inside tropical ecosystems.

SPECIFIC:

- Understand the fundamental concepts and principles of ecology.
- Define the attributes of the ecosystem.
- Apply classical and contemporary methodological approaches to ecological phenomena.
- Learn about the factors that affect the distribution, abundance and dynamics of populations.

- Learn about the factors that affect the functioning of an ecosystem.
- Understand the relation between ecology and other disciplines, in a way that allows an integration of acquired knowledge.
- Learn to value the importance of using ecological principles as determinant aspects for human survival and the sustainable development of human activities.

EVALUATION

Exams. Two exams accounting for 30% of the final grade (each).	60%
Homework. Homework will be assigned every week, including 2 readings, the research of an ecology related subject and answers to specific questions.	10%
Oral Presentations. Students must complete 2 oral presentations about an ecological subject and participate spontaneously and actively on class discussions.	10%
Final Report. Students must present a final report at the end of the course where they develop a subject related to tropical ecology.	20%
Total:	100,00%

METHODOLOGY

CHRONOGRAM OF EVALUATIONS:

Homework	
Presentation	
Homework	
Midterm Exam	
Presentation	
Final Exam	

CHRONOGRAM OF ACTIVITIES:

SESSION NUMBER	DATE	SUBJECT	CONTENT	ACTIVITY
1		Introduction to tropical ecology	<ul style="list-style-type: none">• Importance of tropical ecosystems• Life zones and behavior of flora and fauna species in tropical ecosystems	Lecture
2		Energy in ecosystems	<ul style="list-style-type: none">• Identifying the sun as a source of energy• Photosynthesis• Describing how plants and animals absorb energy through breathing	Lecture
3		Energy in ecosystems	<ul style="list-style-type: none">• Thermodynamics and ten percent laws	Lecture
4		Feeding and productivity	<ul style="list-style-type: none">• Food chains• Producers, consumers, reducers, autotrophs, heterotrophs, herbivores, carnivores• Parasites and hosts	Micro field trip
5		Feeding and productivity	<ul style="list-style-type: none">• Food chains	Lecture
6			<ul style="list-style-type: none">• Trophic levels	Lecture
7		Tropical ecosystems	<ul style="list-style-type: none">• Life zones	Oral presentation
8		Water cycle	<ul style="list-style-type: none">• Water resources problems in tropical ecosystems	Lecture
9		Biochemical cycles and nutrient balance	<ul style="list-style-type: none">• Gaseous and sedimentary cycles• Nutrient cycles in tropical ecosystems	Lecture
10		Tropical soils	<ul style="list-style-type: none">• Nitrogen cycle• Phosphorous cycle• Aquifers• Nutrient balance	Micro field trip
11		Population dynamics	<ul style="list-style-type: none">• Evolution and natural selection	
12			<ul style="list-style-type: none">• Entire content (homework, presentations and field trips)	First exam
13		Pollution	<ul style="list-style-type: none">• Pollution in agricultural production	Micro field trip

			<ul style="list-style-type: none"> • Medicinal plants • Interspecific relationships 	Lecture
14		Population magnitude		
15		The problems of tropical flora and fauna	<ul style="list-style-type: none"> • Endangered species in Costa Rica 	Oral presentation
16		Final exam review	<ul style="list-style-type: none"> • Entire content of the second part of the course (class practices, presentations and field trips) 	Second exam
17		Final grades		End of the course

BIBLIOGRAPHY:

Sutton D. Fundamentos de Ecología. Editorial LIMUSA, Balderas, México. 2002.

Arias Ana C. Suelos Tropicales. Editorial EUNED. San José, Costa Rica. 2001.

Dominguez-Dominguez, Laura E, Morales-Mavil, Jorge E y Alba-Landa, Juan. (2006) Germinación de semillas de *Ficus insipida* (Moraceae) defecadas por tucanes (*Ramphastos sulfuratus*) y monos araña (*Ateles geoffroyi*). *Rev. biol. trop*, jun. 2006, vol.54, no.2, p.387-394.

<http://www.biologia.ucr.ac.cr/rbt/attachments/volumes/vol54-2/16-DOMINGUEZ-Germinac.pdf>

Ochoa-Gaona, Susana, Perez Hernandez, Isidro y De Jong, Bernardus H.J. (2008) Fenología reproductiva de las especies arbóreas del bosque tropical de Tenosique, Tabasco, México. *Rev. biol. trop*, jun. 2008, vol.56, no.2, p.657-673. ISSN 0034-7744.

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