



## Center for International Programs and Sustainability Studies

**Course name: Land Vertebrates of Costa Rica**

**Course code: ENV 3120**

**Total contact hours: 60 hours**

### COURSE DESCRIPTION

This course is an introduction to the zoology of terrestrial vertebrates in Costa Rica. Students will gain insight about various biological characteristics of the groups of land vertebrates in the country. Costa Rica has an immensely rich animal biodiversity, that has been influenced by both North American and South American fauna, and is a world-renowned hot spot for animal research and conservation. Emphasis will be given to the study of Costa Rican species, but others will be discussed as well.

### AUDIENCE

This course is structured for international students attending the Study Abroad Program at an LCI Education university campus. However, courses are not exclusive to foreigners so local degree-seeking students may enroll in this course. Some of the courses are also taught in Spanish as part of our Bachelor's in Sustainability Management or Business Administration programs.

This is a theoretical-practical course and explores/responds to the following inquiry according to the professional/disciplinary profile:

**What basic knowledge is necessary to understand the taxonomy, adaptations, evolution, ecology, and natural history of the tropical vertebrates inhabiting Costa Rica, and promote their study and conservation?**

To answer this question, the following **generative topics** will be studied:

- Herpetology, Ornithology and Mastozoology as sciences.
- Evolution and biogeography of Costa Rican Tetrapods.
- Ecology and Behavior o of Costa Rican Tetrapods.
- Taxonomy of Costa Rican Tetrapods.
- Census techniques for vertebrates.
- Conservation issues.

Throughout the course the following **skills** will be promoted:

- Ability to identify tropical tetrapods to family and species level.
- Ability to understand the natural history of the land vertebrates occurring in Costa Rica.
- Ability to design and analyze census techniques for tetrapods.
- Ability to critically analyze relevant topics related to land vertebrates through the interpretation of scientific articles and discussions.

Among the **values** and **attitudes** that will be promoted among the students are the following:

- Excellence in performance.
- Responsibility to achieve goals.
- Tolerance to work in group.
- Respect for nature and their ecosystem (organism, stakeholder, and local community).
- Negotiating knowing how to inspire trust and empathy.
- Critical thinking.

## **COMPETENCIES, CRITERIA AND EVIDENCE**

The competencies for the Veritas University are reflexive and integral actions that respond to the professional profile and to the problems of the context, with suitability and ethical commitment, integrating the know-how, the know-how and knowledge to know in perspective of improvement.

Below are both the disciplinary and general competencies, linked to their criteria and evidence of performance for this course.

<b>Competencies</b>	<b>Key competencies</b>	<b>Learning Assessments</b>
<b>Disciplinary</b> 1. Integrates knowledge on evolution, anatomy, physiology, taxonomy, ecology, natural history, distribution and conservation status of the of tropical amphibians, reptiles, birds and mammals of Costa Rica to promote their identification, appreciation, study and conservation in accordance with the field of Zoology as a branch of Biology.	1. Discuss the concept of herpetology, ornithology and mammology as sciences, and analyze critical conservation issues regarding these sciences.	Oral presentations and discussions. Analysis of scientific papers. Blog/Species Album report.
	2. Analyze the several biogeographical zones of land vertebrates in Costa Rica considering their main characteristics and learn the diversity of land vertebrates on these areas.	Oral presentations and discussions. Analysis of scientific papers. Blog/Species Album report.

	3. Applies basic identification techniques to classify Costa Rican amphibian, reptile, bird and mammal species in taxonomic families and ecological niches.	Analysis of scientific papers and discussions. Field and class practices.
	4. Applies survey techniques and data analysis to measure the tetrapod diversity occurring in a specific area and understands the importance of and how to do a diversity report.	Field and class practices. Analysis of scientific papers and discussions. Project presentation and final report writing.
<b>Generic/Core</b>		
1. Integrates knowledge, skills and attitudes to learn continuously and through one's life pursuing an efficient development in the knowledge-based society.	1. Learning to learn.	Field practices. Field trip and final research project reports. Oral presentations and discussions. Scientific paper analysis.
2. Builds necessary knowledge, skills and attitudes to learn how to	2. Communicate thoughts of the discipline orally, iconically, and in written form.	Oral presentation and discussions.

<p>communicate orally and in written form in the different disciplines that make up a curriculum.</p> <p>3. Integrates the necessary knowledge, skills and attitudes to learn teamwork and leadership techniques.</p>	<p>3. Execute teamwork and leadership.</p>	<p>Final research report.</p> <p>Field trip report.</p> <p>Field practices.</p>
<p>5. Integrates the necessary knowledge, skills and attitudes to learn interpersonal communication techniques.</p>	<p>4. Relate well with others.</p> <p>5. Manage and solve conflicts.</p> <p>6. Negotiate reliably and empathetically.</p> <p>7. Speak responsibly.</p> <p>8. Listen attentively.</p>	<p>Oral presentations and discussions.</p> <p>Field practices.</p>

## **COURSE CONTENTS**

### **Unit 1. What is a Vertebrate?**

- 1.1 Evolution of Tetrapods
- 1.2 Basic characteristics of the Tetrapods group
- 1.3 Groups of Tetrapods in the world and Costa Rica
- 1.4 History of naturalism in Costa Rica

### **Unit 2. Amphibians**

- 2.1 Evolution
- 2.2 Basic characteristics
- 2.3 Ecology

## 2.4 Amphibians in Costa Rica

- a) Gymnophiona
- b) Caudata
- c) Anura

## 2.5 Conservation issues.

### **Unit 3. Reptiles**

#### 3.1 Evolution

#### 3.2 Basic characteristics

#### 3.3 Ecology

#### 3.4 Reptiles in Costa Rica

- a) Squamata
- b) Testudinata
- c) Crocodylia

#### 3.5 Conservation issues.

### **Unit 4. Birds**

1. Evolution
2. Basic characteristics
3. Ecology
4. Birds in Costa Rica (main orders)
5. Conservation issues.

### **Unit 5. Mammals**

#### 5.1 Evolution

#### 5.2 Basic characteristics

#### 5.2 Ecology

#### 5.4 Land mammals of Costa Rica

#### 5.5 Marine mammals of Costa Rica

## **METHODOLOGY**

This course promotes the interaction between the students and the teacher, in order to develop active feedback between the two parties. The course will be composed of participatory activities through case studies where the objective is that the students can solve a research question, question previously planned by the teacher, both individually and in groups. This in turn will allow students to learn how to perform critical analyses in different working situations.

Classes are of an interactive nature, stimulating the collective construction of knowledge; so, students can recognize, by their own means, the context in which they are and how they can use it to understand the topics of the course for use in their future careers.

Along the course the expository method is used both by the professor and by the students, individually and in groups, always promoting the participation of students through their direct intervention in discussions, extension of concepts and analysis of the topics exposed. Since research is a pillar of the subject, the subjects to be discussed and exhibited in class and in the different assignments, are firstly investigated at a bibliographic level by the students, as a prerequisite to present group and individual work products.

The role of the professor is to mediate, facilitate and guide the teaching and learning process, allowing students to build and self-regulate learning, based in their previous and significant knowledge; the student is active, the teaching-learning process is collective and socialized. It also fosters social integration, the development of group work skills, community feeling and respect, without neglecting individualization.

## **EDUCATIONAL RESOURCES**

In order to guarantee good development of the course, therefore, to guarantee learning, the following resources are available: an updated bibliographic database, multimedia equipment that students can use for their individual presentations; whiteboards and other school equipment for weekly sessions, and readings provided by the educator. All of these complement the suggested projects and provide the students with higher possibilities of knowledge ownership. Most of the lessons will take place in the classroom. During independent work periods, students will be able to attend the institution.

A campus library, study rooms, and computer labs are available for the students' independent work time. Free Wi-Fi connection for students, educators, and staff is provided on campus, which gives students the possibility to work not only in the library or computer labs, but also around campus.

## **LEARNING ASSESSMENT**

In order to make the course or program better competencies-based evaluation compiles and evaluates evidence by taking into account feedback providing pre-established criteria. The course evaluation must be aligned with the competencies and the teaching methodology. There is a rubric for each evaluation resource, and the details will be provided in **CANVAS LMS**. Even though the rubric grants a grade, it is also a quantitative and qualitative description of the students' performance. The rubrics include the core and discipline key competences.

<b>ASSIGNMENTS</b>	<b>PERCENTAGE VALUE</b>
Oral presentations: <ul style="list-style-type: none"> <li>○ 1 per student</li> </ul>	<b>15%</b>

Field Trip Report (Species Album) ○ Including video/photos of species seen in the field trip	<b>20%</b>
Classwork/ Class activities	<b>10%</b>
Field Trip ○ Participation in field activities and note taking	<b>20%</b>
Final research presentation: ○ Presentation about the individual or group field research designed and applied through the course	<b>35%</b>
<b>TOTAL:</b>	<b>100%</b>

## **LEARNING STRATEGIES**

The following learning strategies will be carried out:

### **1. Oral presentations:**

By means of digital presentations (power-point, prezi) each group of students will explain the content pertaining to a research topic assigned in advance by the teacher (scientific papers).

### **2. Blog/Species Album Field trip report:**

The field trip will be assessed by means of a web blog report where audiovisual material (photographs and/or video) and species lists will be included, regarding the species seen in the activities performed in the field trip.

### 3. Field practices about vertebrates identification, diversity and census techniques:

The student will apply count points, transects, and other sampling techniques. Field trips are obligatory. The mandatory fieldtrips in this course are not excursions. Assistance and behavior during the fieldtrip will be evaluated (punctuality, participation, etc.). Students must be on time for all fieldtrip related activities including departure, return and scheduled mealtimes. Students must carry **small notebooks** to write down anything they see or learn while in the field and what they think about it. Each person's journal will be unique to them: each person will notice different observations and everyone could interpret similar things differently. It is highly recommended that students bring binoculars to the trip. These should be of magnification 7,8,10, and with an aperture ranging from 35-45 mm. 8x40 and 10x42, are some of the best. The following site provides information of a wide range of binoculars of different qualities and prices (<https://www.allaboutbirds.org/best-binoculars-the-cornell-lab-review-2013/>). For night hikes a flashlight and closed boots are mandatory.

### 4. Final research presentation:

At this point students will conduct a thorough investigation into the topic assigned at the beginning of the course. They will have to carry out the analysis of their own data and results, consult literature and if possible consult experts on their research topic. At the end of the course students will present the information collected and analyzed in scientific article format to the professor. At the same time students should prepare a summary for the rest of their classmates, as they will be reviewers of the students who would present their findings on the final filing date.

## ATTENDANCE

### Regarding classes:

1. Students are only allowed a two (2) **non-consecutive (back-to-back) class absences**. A student shall fail the course if more than two absences are registered by the professor. Administration does not control attendance.
2. Three **late arrivals** to class (arrival after the first 15 minutes) are treated as one absence. Attending class 30 minutes late without an official justification will also count as an absence.
3. In the case of an **absence from any assignment evaluated in class** (presentations, evaluations, field trips, etc.) a student will be given a grade of zero unless an official document is presented within **one week** of the absence.
4. If a student presents an official document to excuse the absence, the missed assignment is to be presented on that same day.

### Regarding field trips:

5. An unjustified **absence on a field trip** will immediately result in the loss of all points assigned to that specific trip. However, if an official document justifying the absence is presented, 50% of the assignment points may be obtained upon presentation of a complementary research assignment, to be agreed upon with the professor, within one week of the field trip.
6. An absence on a field trip may be justified should two course field trips coincide. In such a case, and to avoid losing points, students shall be able to opt for carrying out a research assignment.

## CODE OF CONDUCT

Professors have the right to expel a student from the classroom should he / she/ they:

1. Be disruptive in the classroom.
2. Behave in a disrespectful way.
3. Be under the influence of alcohol.
4. Be under the influence of any illegal drug.
5. Shows hygiene or odor problems that may disturb other students.

### **ELECTRONIC DEVICES**

The use of cell phones, smartphones, or other mobile communication devices is disruptive and is therefore prohibited during class. **Please turn all devices OFF and put them away** when class begins. Devices may be used only when the professor assigns a specific activity and allows the use of devices for internet search or recording. Those who fail to comply with the rule must leave the classroom for the remainder of the class period. Using devices while the professor or other peers are lecturing, or presenting is perceived as a lack of interest and disrespectful.

### **STUDY ABROAD PROGRAM POLICIES**

The student must comply with the provisions of the Study Abroad Program Policies available on the Canvas/Omnivox platform.

### **BIBLIOGRAPHY**

Garrigues, R. (2007). **The birds of Costa Rica**. Christopher Helm Publishers Incorporated.

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Leenders, T. **Amphibians of Costa Rica: A field Guide**. Zona Tropical Publication.

Janzen, D. H. (1983). **Costa Rican natural history**. University of Chicago Press.

Stiles, F. G., & Skutch, A. F. (1989). **Guide to the birds of Costa Rica**. Comstock.

Stutchbury, B.J. & E.S. Morton. (2001). **Behavioral Ecology of Neotropical Birds**. Academic Press

Stiles, G.F. & Skutch A. 2007. **Guía de aves de Costa Rica**. 4ta. edición Trad. L. Roselli, illus. D. Garner. **Instituto Nacional de Biodiversidad, Heredia, Costa Rica**. 576 pp.

Reid, F. 2009. **A Field Guide to the Mammals of Central America and Southeast México**, 2<sup>nd</sup> edition, Oxford University Press.

Savage, Jay M. 2002. **The Amphibians and Reptiles of Costa Rica**. The University of Chicago Press.

### **CHRONOGRAM**

<b>Week</b>	<b>Contents</b>	<b>Learning strategies</b>
<b>1</b>	Course description and Unit 1- Evolution of Tetrapods	Oral presentation and class discussion
<b>2</b>	Unit 1- Evolution of Tetrapods	Oral presentation and class discussion
<b>3</b>	Unit 2- Amphibians	Oral presentation and discussion Class activity

<b>4</b>	Unit 2- Amphibians	Oral presentation and discussion Class activity
<b>5</b>	Unit 3- Reptiles	Oral presentation and discussion Class activity
<b>6</b>	Unit 3- Reptiles	Oral presentation and discussion Class activity
<b>7</b>	Field Trip and Diversity Analysis practice	Field practice (identification and survey of land vertebrates) Class practice
<b>8</b>	Unit 4- Birds	Oral presentation and discussion Class activity
<b>9</b>	Unit 4- Birds	Oral presentation and discussion Class activity
<b>10</b>	Unit 5- Mammals	Oral presentation and discussion Class activity
<b>11</b>	Unit 5- Mammals	Oral presentation and discussion Class activity
<b>12</b>	Field Trip Report and Final Research Project	Field Trip Report presentation Final Research Project presentation

		Final reflections
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