

.VĒRITAS

U N I V E R S I D A D

Tropical Marine Biology Short Term Field Program 2018-2019

COURSE DESCRIPTION

This course is aimed to highlight the importance of tropical marine biology to study biology and the interaction of marine species that we will discover on the Pacific coast of Costa Rica. Marine ecosystems of the eastern tropical Pacific provide a baseline source for species of high commercial interest in satisfying humans demand for food worldwide. However, numerous marine species are threatened by unsustainable human activities, such as overfishing and habitat destruction. We will develop a critical understanding of concepts and application in Marine Biology, where the students will also be introduced to a wide range of practical activities by visiting field stations and natural laboratories in Costa Rica.

COURSE OBJETCTIVE

The objective of this course is to obtain a general comprehension of concepts, issues, and application pertinent to tropical marine biology. We will study Costa Rican marine ecosystems, biodiversity and environmental issues through field trips to coral reefs, sandy and muddy beaches, mangroves and estuaries. We will also learn about integrated coastal management approach and some cases of studies.

- Program Description: 2 weeks On line **Dec 4th – Dec 14th, 2018**
2 ^{1/2} weeks in Costa Rica with lectures and field sessions
Jan. 7th- January 23, 2019
- Hours and credits: 15 on line hours, 30 lecture hours, 35 field session hours
(6 credits)

Program Objectives:

The purpose of this program is to expose exchange students to:

- General comprehension of the concepts and issues addressed in marine biology.
- Costa Rican marine ecosystems, biodiversity and environmental issues through field trips and fieldwork in coral reefs, sandy and muddy beaches, mangroves and estuaries.
- The importance of integrated coastal management.

ON-LINE CONTENTS:

1. The Region: Biogeography of Central American Isthmus
Marine and coastal environments in Costa Rica
2. Introduction to Tropical Marine Biology
3. Physical and Chemical Oceanography
4. Tropical Marine habitats: Reefs
5. Tropical Marine habitats: Intertidal zones
6. Tropical Marine habitats: Mangroves and estuaries

7. Global Warming in marine ecosystems

On-line Evaluation:

Important note: Each student must be punctual when making delivery of the requested documents in each one of the assignments, because otherwise the student **will lose the total score in their assignment**.

Personal presentation and letter of interest → 5%

Each person must write a small letter, explaining why he/she decided to take the course, what expectations he/she has, and what he/she is currently studying, or whether they will be a professional in any other area. You must include a photograph doing some activity that you are passionate about or a photo that you want to share.

Readings and assignments → 35%

Each student during each day of the **online course** will receive a scientific article or a technical document. The student will do their reading and as directed by the professor, they will have to answer a questionnaire, make a summary, essay or diagram related to the assigned reading. Each assignment must be sent on *Canvas* platform according to the date determined by the professor. On time!!

Research proposal → 10%

Format: (Times New Roman, Source: 12 to 1.15 spacing).

Description: Each topic should address the same logical structure that is covered throughout its bibliographic review:

1. Introduction to the topic (bibliographic **citations** should appear).
2. Source of the problem (bibliographic **citations** should appear).
3. Scope of the problem at the global and regional level in the case of Costa Rica (bibliographic **citations** should appear).
4. Examples to solve the problem (bibliographic **citations** should appear).
5. The document containing a minimum of three (3) pages without counting the consulted bibliography.
6. Bibliography (**minimum 10 bibliographic references** quoted in the APA 6th edition format).

ON-SITE CONTENTS & ITINERARY:

Note: Due to the intensity of the program, students have to study all readings and materials **before their arrival and during their free time**. Furthermore, students will develop a final presentation (max. 20 minutes) on previously established topics concerning marine animals, ecosystems and management issues, which will be presented to the class during the last days. Each group can prepare their topic before their arrival; however, emphasis is on on-site documentation and interviews with local people. Each topic will be addressed throughout the entire field trip by the professor, but students are expected to deepen their knowledge whenever possible, by asking the teacher, guides, community members, etc. and document their observations with own photos. The goal of this evaluation is to train students in on-site

research and documentation to address and solve a particular problem. Students will evaluate the other student's presentation as well as their own. Topics will be shared with the students during the on-line courses.

The final evaluation constitutes of an oral assessment on the topics presented. The teacher will evaluate each answer together with the group who presented a particular issue and on which content students of other groups were assessed.

On-site Evaluation:

Video-field trip activities → 15%

It will be evaluated in groups, according to the number of students, by means of a video report of the field work which must contain:

- The name of the students, the name of the course, as well as the logo of Veritas University and the logo of the University of origin each student.
- The content of the video will evaluate the registration of all the activities carried out in the field and in the laboratory in the video.
- The video can be narrated by the voice of the students or by means of key text that introduces each activity.
- The video must have a minimum duration of 3 minutes 30 seconds.

Final research presentation → 35%

The oral presentation will be done in groups, according to the number of students. It will be presented to the rest of the class and must contain the following aspects:

- Cover with the title of the research, name of the students, name of Veritas University, the University of origin of the students.
- Research objectives.
- Questions to develop in the exhibition.
- Introduction to the topic.
- Methods and materials used to collect information in these should appear: expert interviews, interviews with local people, interviews with tourists, taking audiovisual material (photos, videos, and surveys) to support the information collected.
- Important results, discussion and possible solutions to the problem posed.
- The bibliography must present a minimum of 10 references, these must be published scientific articles.
- Each group of students will have 20 minutes to expose their topic.

Tentative schedule:

Day 1 - 6th	Sunday
	Arrival to Costa Rica! Airport pick up and transfer to homestay.
Day 2 - 7th	Monday
7:00 am	Breakfast (CASA-mama-tica)

8:00 am	Leave for Ojochal Reserve Playa Tortuga
12:30 md	Lunch on the road
3:30 pm	Intro to research projects from Reserve Playa Tortuga: 1) Fisheries Landing Sharks, 2) Crocodriles and Caimans.
6:00 pm	Dinner
7:15 pm	Night census Crocodiles
Day 3 - 8th	Tuesday
7:30 am	Breakfast
8:30 am	Field work in Térraba-Sierpe river (sampling of rays)
12:00 md	Lunch
1:00 am	Field work in (census of crocodiles)
6:00 pm	Dinner
Day 4 - 9th	Wednesday
7:30 am	Breakfast
8:30 am	Leave for Caño Island
9:00 am	Snorkel activities in the island: Fish Identification
12:00 md	Lunch
6:00 pm	Dinner
Day 5 - 10th	Thursday
7:30 am	Breakfast
8:30 am	Return to San José
12:00 md	Lunch on the way
	Free afternoon
6:00 pm	Dinner (CASA-mama-tica)
Day 6 - 11th	Friday
7:00 am	Breakfast (CASA-mama-tica)
8:00 am	Leave for Curú Wildlife Reserve
12:00 md	Lunch on way
1:15 pm	Presentation of results previous fieldtrips
3:15 pm	Afternoon to collect observations and additional information for final presentations.
6:30 pm	Bioluminescence night
	Dinner
Day 7 - 12th	Saturday
7:30 pm	Breakfast
9:00 am	Scuba diving adventure or Snorkeling
12:00 md	Lunch
12:00 md	Responsible Fishing
6:00 pm	Dinner
Day 8 - 13th	Sunday
7:30 am	Breakfast
8:30 am	Leave for El Jobo
12:00 md	Lunch on the way to El Jobo

1:30 pm	Arrived to El Jobo
2:00 pm	Entrance to the stay site
6:00 pm	Dinner (Kembly's house)
Day 9 - 14th	Monday
6:30 am	Breakfast (Kembly's house)
8:00 am	Sport fishing with Piporro local fisherman
12:00 md	Lunch (Piporro's boat)
1:00 pm	Snorkel (La Cornuda)
6:00 pm	Dinner
Day 10 - 15th	Tuesday
7:30 am	Breakfast (Kembly's house)
8:30 am	Field work with marine turtles in Matapalito (Maike Heidenmeyer)
12:15 md	Lunch (Captain's boat)
1:15 pm	Snorkel (Rajadita beach)
6:30 pm	Dinner (Kembly's house)
3:00 am	Patrolling sea turtles on the beach (Local people)
Day 11 - 16th	Wednesday
7:15 am	Breakfast (Kembly's house)
8:20 am	Collection, classification and cleaning of the beach and coral reef in El Jobo.
12:00 md	Lunch at El Jobo beach
	Free afternoon
6:15 pm	Dinner (Kembly's house)
Day 12 - 17th	Thursday
7:30 am	Breakfast (Kembly's house)
8:30 am	Collection, sampling, tagging and identification of rays in beaches of El Jobo.
12:00 md	Lunch (Kembly's house)
1:15 pm	Collection, sampling, tagging and identification of rays in beaches of El Jobo.
6:15 pm	Dinner (Kembly's house)
Day 13 - 18th	Friday
7:15 am	Breakfast (Kembly's house)
8:15 am	Return to San José
12:00 md	Lunch on the way
6:00 pm	Dinner (CASA-mama-tica)
Day 14 - 19th	Saturday
8:00 am	Breakfast (CASA-mama-tica)
9:15 am	Biomolecular lab, Identification of species using shark fin
12:00 md	Lunch Pizza lunch
1:05 pm	First part: DNA extraction
6:00 pm	Dinner (CASA-mama-tica)

Day 15 - 20	Sunday
8:00 am	Breakfast (CASA-mama-tica)
9:15 am	Second part: DNA extraction
12:30 md	Lunch Chinese
1:30 pm	Theory of “Polymerase chain reaction, PCR”
6:00 pm	Dinner (CASA-mama-tica)
Day 16 - 21	Monday
8:15 am	Breakfast (CASA-mama-tica)
9:30 am	PCR
12:00 md	Lunch Veritas Campus ticket
1:05 am	Electrophoresis process
6:00 pm	Dinner (CASA-mama-tica)
Day 17 - 22	Tuesday
8:30 am	Breakfast (CASA-mama-tica)
9:45 am	Research presentations
12:00 md	Lunch Veritas Campus Ticket
1:05 pm	Research presentations
6:00 pm	Dinner (CASA-mama-tica)
Day 18 - 23	Wednesday
	Airport drop off!!! Don't forget to coordinate transportation at the Adventures office with Mónica.