

ECL 0440 Tropical Ecology

The main purpose of this course is to offer the students a solid introduction about tropical environments and ecology, with emphasis on the global and local factors that determine the climates and the contrasting of ecosystems that can be found throughout the tropics. While visiting several field locations in the highlands and the tropical rain forests of the Ecuadorian Amazon, the students learn current topics of tropical ecology, and discuss the main environmental issues associated with the conservation of natural ecosystems in tropical developing countries.

In this course we will study the fundamental features of tropical ecosystems, with emphasis on the structure of biological communities, and their interaction at the ecosystem level. While reviewing the main features of two contrasting types of tropical ecosystems (e.g. tropical lowland forest and high altitude grasslands), we will analyze the environmental and ecological factors that govern life in the tropics, and some of the resulting ecological interactions and patterns that emerge in terms of biodiversity, sensitivity, and productivity. Additionally, during class discussions and field trips, we will study representative examples of other Ecuadorian ecosystems, their fauna, flora, cultures, protected areas and the main environmental issues affecting them.

Knowledge:

- Students will learn the main factors that determine climatic patterns at the global and local scales.
- Students will learn the main features of tropical rain forest ecosystems and high-altitude Andean grasslands (páramo), with emphasis on the structure and function of these ecosystems.
- Students will understand the main issues that constrain the conservation of biodiversity and natural ecosystems in the tropical region.

Skills:

- Students will be able to explain the main factors that determine climatic patterns at the global and local scales.

- Students will be able to describe the main characteristics of tropical rain forest ecosystems and high-altitude Andean grasslands (páramo).
- Students will be able to proficiently discuss about the main environmental problems that constrain the conservation of biodiversity and natural ecosystems in the tropical region.
- Students will learn to identify in the field the main plant life-forms that dominate in tropical rain forest ecosystems and high-altitude Andean grasslands (páramo).

Attitudes:

- Students will be encouraged to critically think about the main similarities and differences between tropical and temperate ecosystems.
- The main attitude that we hope to promote among the students is a close attachment to natural ecosystems, based on the first-hand experiences that we will have throughout the course.

Course content:

- Introduction to tropical ecosystems (world distribution of tropical climates, biogeographical regions)
- Neotropical biota: influence of conditions and resources in the natural history of tropical species
- Tropical rain forests: structure, diversity and functioning
- Tropical rain forests: ecological interactions
- Páramo (high altitude grasslands): structure, diversity and functioning
- Páramo: ecological interactions
- Tropical lotic and lentic ecosystems