

Woodsworth College and School of Environment, University of Toronto
Summer Abroad 2023 Program in Ecuador
May 4 – June 2
ENV 395Y0 Special Topics Field Course:
Ecology and Conservation in the Amazon, Andes, and Cloud Forest
Professors Christoph Richter and Monika Havelka
Tentative Course Outline and Assessment Scheme

Background: Ecuador is the smallest of the Andean countries, but it has huge physical, biological, and social diversity. We will examine this by taking extended field trips to three very different parts of the country: The High Andes; the western Amazon Basin; and Cloud Forests on both the eastern and western slopes of the Andes Mountains. We will also have a city tour of historic Quito, visit the Equator, and take a class in traditional Ecuadorian cuisine. This is the 18th year that this course has been offered by the University of Toronto Summer Abroad with our partner, Universidad San Francisco de Quito (USFQ).

High Andes: The spine of the Andes in Ecuador consists of dozens of volcanic peaks formed by the subduction of the Nazca Plate under the South American Plate. Most of Ecuador's volcanoes are extinct or dormant, but at least eight are still active. We will visit an Indigenous family in the Andes; hike around Chimborazo – at 6268 m, the highest peak in Ecuador and anywhere on the equator; and visit Cotopaxi Volcano, which last erupted in 2016. We will look at treelines and their characteristics; the flora and fauna of the alpine zone; the *Polylepis* forest and páramo environments; and the physiological, cultural, and economic adaptations of the Indigenous Quichua.

Cloud Forest: When moist air moving inland from the Pacific (in the west) and the Amazon (in the east) hits the Andes Mountains it rises and cools, dropping much of its moisture. This creates tropical montane cloud forests on both slopes of the Andes. We will visit cloud forests on both the eastern and western slopes to see an artisanal coffee and chocolate production, visit volcanic hot springs, take trail walks through the forest, and see many Andean birds, butterflies, and other native animals and plants.

Amazonia: Ecuador's section of the Amazon Basin, in the province of Oriente, takes up nearly half of the country but has less than 5% of its population. From Coca, the provincial capital, we'll head down the Napo and Tiputini Rivers to the Tiputini Biodiversity Station, a research facility run by the University of San Francisco Quito (USFQ), our hosts in Ecuador. The area is still largely pristine rainforest and is a major biodiversity hotspot. In our week there we will focus on tropical rainforest ecosystems – their richness, structure, and behaviour – and will learn and apply field research skills. We will also look at traditional uses of the forest by the Waorani and other Indigenous groups, and at the consequences of recent exploitation by oil companies, including deforestation and fragmentation, road construction and increased access, and other environmental and social impacts.

Course Prerequisites: We do not assume any common academic background for students taking this course. Most of our students are typically in EEB, Environmental Science, Environmental Management, or related programs, but it is not necessary to have extensive background in any of these areas.

Recommended preparation: ENV200H1 or equivalent (such as ENV100Y5); and/or BIO120H1 or equivalent (such as BIO152H5). We have had students from many different programs and backgrounds take this course very successfully in the past.

Course Goals: Through our course activities, it is our intention to:

- establish a learning community that promotes individual creativity, productive interactions, and mutual support, to facilitate both student learning and personal growth.
- provide opportunities for students to challenge themselves while experiencing the extraordinary and unique environments of the Andes, the Amazon, and the cloud forest.
- expand students' awareness of the relationships among social, political, economic, and environmental issues in fragile and contested situations, within the historical context of Ecuador and South America.
- encourage students to learn about, consider, and engage with diverse cultural values and perspectives on environmental, economic, and social issues in the developing world, including Indigenous perspectives.
- provide opportunities for students to apply classroom-based learning in the real world.

Learning Outcomes: After having completed this course, you should be able to:

- summarize the unique ecological, geological, and climatological characteristics of the High Andes, the Amazon, and tropical montane cloud forest environments.
- summarize the impacts of human activities on these unique environments, including issues related to tourism; agriculture; waste management; energy use; refugeeism; and resource extraction.
- discuss some of the many challenges facing Ecuador today regarding conservation; habitat threats; species at risk; invasive species; climate change; and sustainable economic development.
- introduce other class members to a native species of the Andes, the Amazon, or the cloud forest, with which you have become familiar through your research and course work.
- maintain, synthesize, and interpret field observations.
- design and carry out an experimental study in a tropical rainforest environment, including interpretation of the data, with a partner(s), and communicate the results of your study through a report and presentation.
- produce a term paper, in scholarly style, on a topic of your choosing that is relevant to environmental issues in Ecuador; and
- use, without aids, scholarly terminology appropriate to the course content.

Evaluation Scheme (dates are subject to minor changes depending on travel and other constraints):

Due Date	Item	Weight
May 10	Pre-departure assignment (submit online to Quercus)	10%
May 18	Andes Assignment	15%
May 19	Test #1 (in person)	15%
May 28	Tiputini Research Project – Symposium Presentation (in person)	15%
May 31	Test #2 (in person)	15%
June 16	Final Paper (submit online to Quercus)	30%

Tentative Schedule:

DAY	DATE	ACTIVITY
Thursday	04-May	PRE-DEPARTURE ORIENTATION: Required synchronous online class meeting to discuss plans, meet each other, and introduce the course format and topics (two hours, time to be arranged, probably 10 am-noon on Zoom).
Friday - Wednesday	05-May - 10-May	Asynchronous (Recorded) Lectures (approximately 4h): <i>Please watch BEFORE we arrive in Ecuador.</i>
Wednesday	10-May	Pre-departure assignment due (submit online to Quercus) – 10%
Thursday	11-May	TRAVEL TO QUITO, ECUADOR; transfer to hotel (<i>Students are responsible for arranging their own flights to Quito. Please see below for more information.</i>) Overnight: Cumbayá
Friday	12-May	AM: Orientation + lecture Welcome Lunch PM: Classes at USFQ Dinner: Cactus Restaurant Overnight: Cumbayá
Saturday	13-May	City tour & visit to Mitad del Mundo Overnight: Cumbayá
Sunday	14-May	AM: Travel by bus to Riobamba PM: Hike to Bosque de <i>Polylepis</i> Overnight Achikñan
Monday	15-May	AM: Chimborazo Hike PM: Travel to Cotopaxi Overnight: Cotopaxi
Tuesday	16-May	AM: Visit Cotopaxi Refuge, visit Limpiopungo Lagoon + box lunch PM: Travel by bus to Quito Overnight: Cumbayá
Wednesday	17-May	Travel by bus to Mindo Activities in Mindo Lunch & dinner Overnight: Mindo
Thursday	18-May	Travel by bus back to Quito Free afternoon Overnight: Cumbayá Andes Assignment (submit online to Quercus) – 15%
Friday	19-May	AM: Test #1 (in person, USFQ) – 15% PM: cooking and salsa class Overnight: Cumbayá
Saturday	20-May	AM: Travel by bus to Papallacta Cayambe Coca hike & hot springs PM: Lunch & Dinner at Papallacta Overnight: Papallacta

Summer 2023 ENV395Y0 – Course Outline

Sunday	21-May	AM: Walk Trails & 11AM Lunch 12PM: departure – Bus travel to Coca; check in at hotel (dinner) Overnight: Coca
Monday	22-May	Travel to Tiputini Biodiversity Station (TBS)
Tuesday – Monday	23-May – 29-May	Tiputini Biodiversity Station Activities Guided walks; time for data collection/research projects
Sunday	28-May	Tiputini Research Project – Symposium Presentation – 10%
Monday	29-May	Depart TBS Toxic Tour (at hotel in Coca) Overnight: Coca
Tuesday	30-May	Bus travel to Quito USFQ Lunch Overnight: Cumbayá
Wednesday	31-May	AM: Free time PM: Test #2 (in person, USFQ) – 20% Overnight: Cumbayá
Thursday	01-Jun	AM: Otavalo & Musicians 7:30PM Farewell dinner Overnight: Cumbayá
Friday	02-Jun	DEPART QUITO for TORONTO
Friday	16-Jun	Final Paper (submit online to Quercus) – 30%

Readings:

Links to reading materials will be available on our Quercus site. There is no reading package or textbook to buy.

Additional Information and Notes:

1. Please be sure to come to our Pre-Departure Orientation meeting (online, May 4th – time TBD) and explore our course Quercus site thoroughly once it has been published and read the course guidebook When in Ecuador 2023 for additional important, detailed course information.
2. There is no pre-arranged group flight for the course, but information will be provided to you about a suggested flight. You should plan to arrive in Quito by the evening of May 11, 2023 (around 8-9 pm is ideal). It would be extremely convenient if everyone could arrive in Quito on the same flight, or within an hour of the arrival time of the suggested flight. We will be at the airport with a bus to get back to the hotel. If you arrive outside of that time window, you will need to arrange for a taxi or other type of transfer from the airport to our base hotel in Cumbayá. (We'll give you detailed directions.)
3. The way to get the most out of your Summer Abroad experience is to be engaged, enthusiastic, and flexible. We are going to be seeing and doing a lot of exciting, once-in-a-lifetime things together. But we do a lot of travelling and the conditions are not always perfect – sometimes it's hot or cold, wet, muddy,

and sometimes we're tired. We often push ourselves outside of our comfort zones. We especially love students who have a "let's do this!" attitude – who love to learn and want to experience everything. If that describes you, then let's go!