

Course Title:	Tropical Field Biology										
Instructor(s):	Prof. John Stinchcombe, john.stinchcombe@utoronto.ca Prof. Megan Frederickson, m.frederickson@utoronto.ca Prof. Adriana Bravo, adriana.bravoordonez@utoronto.ca										
Dates:	Approx. August 16 - 30, 2020										
Location:	Peru (Wayqecha Cloud Forest Research Center, near Cuzco; and Los Amigos Research Center, near Puerto Maldonado)										
Cost:	<p>Approximately \$1,900 includes food, accommodation, field station fees, and in-country transportation (flights within Peru, and ground/boat transportation to and from field sites). Not included: International airfare (approx. \$1,200 for a return flight from Toronto to Lima by Air Canada), travel insurance (mandatory), travel visa (if required), beverages, laundry, etc. If you wish to be on the same flight(s) as the instructors, information will be provided after you have made your course deposit. Students must purchase their own airfare tickets and must either travel with the professors, or meet the class in Lima by the time the professors arrive in Lima.</p> <p>IMPORTANT: A \$350 deposit is due to your home university with your OUPFB application. The remaining deposit must be received by the host university in two instalments:</p> <ul style="list-style-type: none"> • A \$650 deposit is due May 1, 2020. Students must provide the EEB Undergraduate Office with photocopies of two documents: (1) Valid passport, and (2) Certificate of proof of travel insurance (that covers the dates of the field course) by May 2020. Students must have a passport valid until at least February 2021. <p>The remaining \$900 is due July 17, 2020.</p>										
Prerequisites:	First year biology course; <i>Recommended:</i> Upper year courses in ecology, evolution, behaviour, or organismal biology.										
Enrolment*:	20 (18)										
Course Description (brief):	<p>This field course will examine the ecology and evolutionary history of the Andes-to-Amazon region through a combination of lectures, discussions, and field research projects. There will be mandatory pre-trip lectures and meetings (dates and times TBA) during which we will discuss in detail the logistics of the trip and also introduce the ecosystems of the Neotropics. During our two weeks in Peru we will visit two main field sites, one in cloud forest and one in lowland rain forest. Visiting these two sites will allow us to explore how plant and animal communities change as we travel from the Andes Mountains to the jungles of the Amazon Basin.</p> <p>We will spend several days at the Wayqecha Research Center, which is located almost 3,000 m above sea level on the eastern slope of the Andes. We will then travel to the Los Amigos Research Center, before travelling back to Lima via the jungle city of Puerto Maldonado. The Los Amigos Research Center is situated in the Amazon Basin at only 250m above sea level and surrounded by lowland tropical rain forest. Both the Wayqecha and Los Amigos field stations are operated by the Amazon Conservation Association and more information can be found online at:</p> <p>Wayqecha: www.amazonconservation.org/ourwork/research_wayqecha.html</p> <p>Los Amigos: www.amazonconservation.org/ourwork/research.html</p>										
Evaluation:	<p>Marks will be based on performance in group and individual projects, and participation. Each student will give oral presentations to the class and hand in a report on an independent project at the end of the course. Grades will be available a few weeks after completion of the course.</p> <table> <tr> <td>Assigned oral presentation</td> <td>20%</td> </tr> <tr> <td>Discussions of assigned readings</td> <td>15%</td> </tr> <tr> <td>Group projects</td> <td>15%</td> </tr> <tr> <td>Independent project</td> <td>30%</td> </tr> <tr> <td>Participation</td> <td>20%</td> </tr> </table>	Assigned oral presentation	20%	Discussions of assigned readings	15%	Group projects	15%	Independent project	30%	Participation	20%
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An Average Day – What to Expect

(a) Daily timeline	During the first week of the field course, we will conduct several group exercises designed to familiarize you with common techniques and approaches in field ecology and evolution. We will explore the forests around two biological stations during these exercises, with the goal of introducing the tremendously diverse natural history of the Andean and Amazonian regions. We will also have a series of lectures to provide background and context to what you see in the field. On the second week of the course, students will perform an independent research project, designed to test an ecological or evolutionary hypothesis. Students will gain exposure to all components of the scientific process including natural history observations, hypothesis generation, experimental design and data collection, data analysis, and an oral and written presentation of the results.
(b) Work habitat & Physical exertion	We will spend a great deal of time in the field in all weather conditions. Students should be comfortable spending long hours outdoors, standing and walking, and physically and mentally prepared to spend two weeks in remote locations. Students should be prepared for strenuous physical activity, long hours, and rustic accommodations.
(c) Common activities	Risks are similar to those for any eco-tourist visiting Peru (diarrhea, parasitic infections, snake and insect bites and stings, and crime). Students should be aware that while at the biological stations there is limited access to medical assistance; therefore, travel insurance is mandatory.
(d) Weather, dehydration, & biting insects	<p>Weather conditions will vary among sites we will visit. We will meet in Cusco, a city in the Andes of Peru at 3399 m.a.s.l. with an annual temperature of 13 °C. The weather conditions in the Andes are usually dry and with high UV incidence. We encourage students to pack warm clothes for this part of the trip.</p> <p>After a brief stay in Cusco, we will visit the cloud forests of the south eastern slope of the Andes (2000-3010 m.a.s.l.). The average annual temperature in this region is 12.5 C, with colder and damper evenings. For the second week, we will go to the lowland rainforests (200 m.a.s.l.) where the annual average temperature is 26.5 °C. Although August falls into the dry season, some rain as well as high humidity must be expected in both forest sites.</p> <p>Given the changing conditions, we strongly advice students to stay hydrated and to use sun block all the time to prevent dehydration, sun burns or heat shock.</p> <p>While mosquitos are not an issue in Cusco or in the cloud forests, they are common in the lowland rainforests. Mosquito repellent should be used at all times as well as long sleeves and long pants to prevent mosquito bites. Ticks may also be found in the lowland forests. Long sleeves, long pants, rubber boots and repellent will prevent tick bites.</p> <p>Because of the high temperatures and humidity in the lowlands, we advise students to wear light breathable clothing.</p>
(e) Toxic/poisonous, wildlife/ plants	While visiting the cloud forests and lowland rainforest, we will be exposed to some natural hazards such as mosquitos that may carry tropical diseases such as malaria, yellow fever, dengue or zika; flies that may carry leishmaniasis; poisonous snakes; and stinging bees, wasps and ants. Although all these risks are not common, we take specific actions to prevent them from happening. For instance, we strongly encourage student to use insect/tick repellent, wear long sleeves, long pants and rubber boots, walk and work along the trails, never be alone in the forest, and always be aware of the potential risks.
(f) Sleeping, washroom & laundry facilities	Blankets, sheets, and bug nets (where necessary) will be provided. Students do not need to bring their own sleeping bags or blankets. Accommodations will be a mixture of cabins, common dorms, or platform tents, depending on availability. Toilets will be rustic with toilet paper provided. Showers will mainly be cold water, though warm water is sometimes available. Laundry is hand-washing with soap, water, a brush, and a clothesline.
(g) Meal plans & food allergies	The course will provide meals to students during the whole duration of the course after the group meets up in Peru. A daily plan of three meals (breakfast, lunch and dinner) will be offered at the stations and during days traveling among sites. Students should expect basic meals (e.g. fruit, bread, rice, beans, eggs, limited amounts of meat). While we try our best to accommodate specific meal plans, sometimes things

	don't go as planned. Thus, we ask students to be as flexible and patient as possible and to make sure we will try to find a solution.
(h) Non-academic responsibilities	The entire group will participate in organizing, carrying, and maintaining group gear.
(i) Degree of isolation	We will stay at two biological stations that are remotely located in the Peruvian Amazon. Electricity is not available 24/7, but we will be able to recharge cameras, laptops, or any other electronic devices. Although there is sometimes internet access at the stations, it is very limited and unreliable. While at the stations, we will have no access to stores for food, personal hygiene supplies or forgotten equipment. Communication with the plugged-in world is episodic.
(j) Alcohol & drugs	There is a zero tolerance policy on drugs; students will be given a 0% and sent home in the case of drug use or possession. On alcohol, we follow the policies of the hosting field stations, and it is only permitted for those of legal age.
(k) Vaccinations/ Insurances	We encourage students to consult with their personal doctors or a health care professional at least 6 weeks before they travel to Peru about the required vaccines and any other medical advice. The Government of Canada recommends Canadians going to Peru to have all their routine vaccinations up-to-date. Among those vaccines are measles-mumps-rubella (MMR), diphtheria, tetanus, pertussis, polio, varicella (chickenpox) and influenza. It also provides a list of other vaccines travelers must consider such as yellow fever, hepatitis A, hepatitis B, etc. Although we encourage students to discuss this information, available at https://travel.gc.ca/destinations/peru , with their personal doctors, we strongly recommend them to get the yellow fever vaccine as it occurs in the area we will visit. Students should obtain standard travel insurance.
(l) Social Situations	<p>The dress code in Peru is up to you. There are no restrictions (political or religious) on what to wear on a daily basis. But women wearing too revealing clothing may bring the attention of some men on the streets and may be subject to harassment. Some people in cities like Cusco wear traditional clothes on a daily basis.</p> <p>Cusco is a city that receives about 1.5 million tourists per year. So, students should be ready to stay in a busy city with many locals offering handicrafts, food, pictures, among other things or simply asking for some change. They should politely refuse the request and keep going.</p> <p>During the whole course, students will be sharing limited space on a daily basis. Students are expected to be respectful, patient, flexible, organized, and clean.</p>
(m) Final comments	This is an unparalleled opportunity to spend 2 weeks in Peru, visit rare and threatened ecosystems, see incomparable biodiversity, and learn while doing. You'll leave the course with ~20 new best friends, and learn a ton.