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| <b>Course Title:</b>               | <b>Tropical Biodiversity</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Instructor(s):</b>              | Dr. Nina Zitani: P: 519-661-2111 x 85356; Dept. of Biology, Western; <a href="mailto:nzitani@uwo.ca">nzitani@uwo.ca</a> ; two graduate student teaching assistants, and local Ecuadorian naturalist guides                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Dates:</b>                      | 1 - 21 August 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Location:</b>                   | Ecuador, South America: Cabañas San Isidro, Yanayacu Biological Station (2,100 m); town of Coca (300 m); <a href="#">Shiripuno Lodge</a> (220 m); the Capital City of Quito (2,800 m).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Cost:</b>                       | Estimated \$3,500.00 (Includes in-country transport, accommodation, 3 meals/day at lodges, buffet breakfast at hotels). These fees <b>do not include</b> roundtrip airfare (the course begins at Quito airport; students arrange their own flights), ~ \$200.00 US cash for miscellany, passport, visa (for non-Canadian passports only: students must determine visa requirements), travel medical & trip cancellation insurance, required immunizations, field, safety gear. A non-refundable \$350.00 deposit to home university due at registration; ~ \$3,150.00 final payment due 1 March. Once all students have paid in full the professor will contact students (mid-March). Exact dates, number of days at locations, and cost may vary (depending on exchange rate with \$US, the currency of Ecuador). Cancellation & Refund Policy: after March 1 <sup>st</sup> anyone in arrears will be automatically removed from the course roster. Cancellation must be received in writing by March 9 <sup>th</sup> , after which we retain your full payment as the monies are used at this time to pay vendors in Ecuador. No exceptions.                                                                 |
| <b>Prerequisites:</b>              | 2 <sup>nd</sup> yr. Biology or Environmental Science & 1 course in introductory ecology/evolution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Enrolment*:</b>                 | 13 (6 reserved for Western)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Course Description (brief):</b> | This is an introductory course on Neotropical biodiversity, ecology, and forest conservation of the Amazon River System. We will experience Amazonian cloud forest and lowland rain forest, two of the most biodiverse ecosystems on Earth. Emphasis will be on the most diverse taxa -- the arthropods and plants -- though we will learn about many kinds of animals including vertebrates, and fungi. Students will learn tropical forest ecology, field sampling techniques (e.g. arthropod sampling techniques; light-trapping for nocturnal insects), identification skills, engage in group walks during the day & night. We will work directly with insects and students must not be squeamish and willing to learn about living insects and other arthropods. <i>Students are encouraged, but not required to handle live animals.</i> In the lowlands we board motorized canoes for a 4-hour trip downstream to Shiripuno Lodge. At this remote field station (no electricity) within Yasuni Biosphere Reserve, we will have an unparalleled opportunity to observe the biodiversity of lowland Amazonia, and interact with, and learn from the Waorani Indigenous Peoples on their ancestral lands. |
| <b>Evaluation:</b>                 | <ul style="list-style-type: none"> <li>a) 15%: Leadership, professionalism, and enthusiastic participation.</li> <li>b) 20%: Sight Identification Quiz: plants, arthropods, and possibly other taxa.</li> <li>c) 20%: Group Hypothesis-Driven Research Project and Research Paper.</li> <li>d) 10%: Independent Study of a taxon and Oral Presentation.</li> <li>e) 25%: Field notebook, and Journal, with daily entries.</li> <li>f) 10%: Reflection essay (750-1000 words).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## An Average Day – What to Expect

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| (a) Daily timeline                          | <p>Typical daily routine (times may change somewhat depending on weather, etc.):</p> <p>5:00-7:00 am bird/animal-watching (not all, but some mornings)<br/>         7:00-8:00 am - Breakfast &amp; field prep<br/>         8:00-12:00 pm - Morning hike/in-the-field learning activities/research<br/>         12:30-1:00 Lunch<br/>         1:00-2:00 pm power nap/journal-writing/study time<br/>         2:00-3:30 lecture<br/>         3:30-6:00 – Afternoon hike/in-the-field learning activities/research<br/>         6:00 – 7:00 - Dinner<br/>         7:00- 8:30 - Evening group meeting and discussion<br/>         8:30 - 10:30 – Night hike/light-trapping for nocturnal insects<br/>         11:00 pm Bedtime/Silence/lights out (enforced)</p>                                                                                                                                               |
| (b) Work habitat & Physical exertion        | <p>Students must be able to hike in high rubber, waterproof boots for ~ 4 hours at a time in hard rain, on very muddy slopes at high elevation in the Andean cloud forest, and in high heat and humidity in lowland rain forest, carrying a knapsack with field supplies, water and snacks. Students should be prepared for remote tropical field station conditions (e.g. no electricity in the lowlands; limited or no internet; open air cabins in lowlands), be interested in learning about and at least tolerate living with a variety of arachnids (spiders and relatives) and other tropical fauna (e.g. diverse and abundant insects, bats, snakes). Students may need to use the bush as toilet (packing out all trash with them) on occasion. During hikes rest periods are taken when necessary.</p>                                                                                           |
| (c) Common activities                       | <ul style="list-style-type: none"> <li>• common activities: day and night hikes in potentially hard rain on very muddy trails in cloud and lowland rain forest; bus rides on steep Andean slopes; urban walks in Quito; 4-hour open, motorized canoe ride down a tributary of the Amazon River; data-gathering in the field for group research project/independent study; unforgettable, once-in-a-lifetime, fascinating natural history and science learning experiences in the Amazon rain forest with a highly trained, seasoned professor.</li> <li>• associated risks: altitude sickness (medication can be obtained from your doctor), collisions, getting lost, twisted ankles, fatigue, blisters from poor footwear, heat exhaustion, sun burn. We discuss safety and risks during the first day in the field and throughout the course. Students are instructed in basic field safety.</li> </ul> |
| (d) Weather, dehydration, & biting insects  | <ul style="list-style-type: none"> <li>• weather conditions likely to be encountered: cool and wet conditions in high elevation cloud forest, hot and humid conditions in lowland rain forest; strong sun, high UV, high humidity, dehydration from hiking and sweating, heavy rain possible at any time.</li> <li>• a variety of biting &amp; stinging arthropods are possible, e.g., mosquitoes, black flies, no-see-ums, horse flies, stinging wasps, biting, stinging ants, chiggers, spiders)</li> <li>• Long pants and high, waterproof boots, and waterproof pants and rain jacket are required field gear. Long-sleeved shirts recommended. Pants and shirts do not need to be fancy and new, in fact old pants and shirts work well in the field.</li> </ul>                                                                                                                                      |
| (e) Toxic/poisonous, wildlife/ plants       | <p>Dangerous animals possible: mosquitoes potentially carrying tropical diseases including but not limited to malaria, dengue, Zika, Yellow fever, chikungunya; stinging bees/wasps/ants, centipedes, arachnids, caiman, venomous snakes, large mammals, toxic plants.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| (f) Sleeping, washroom & laundry facilities | <ul style="list-style-type: none"> <li>• sleeping accommodations: students typically share a room with one or two other students of same sex</li> <li>• washroom facilities: flush toilets, access to toilet paper at field stations, but not guaranteed during travel and in urban areas; private showers, sometimes hot, sometimes cold water; shower in piped-in river water in the lowlands.</li> <li>• washing/laundry facilities: handwashing clothes in sink available, although clothes not likely to dry due to humidity; last few days in Quito laundry service in hotel (paid by student).</li> </ul>                                                                                                                                                                                                                                                                                           |
| (g) Meal plans & food allergies             | <p>3 meals a day provided at field stations, and breakfast at hotels (when staying at hotels, students are responsible for lunch and dinner at a local restaurant). The places we go have been very good in the past about accommodating allergies and vegetarian/vegan diets. Students are responsible at all times for informing the airline, and the food preparation staff at all localities about food preferences and/or food allergies.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

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| (h) Non-academic responsibilities | Leadership and professionalism at all times, beginning at course registration; follow all safety recommendations and requirements; respectful, courteous behavior towards everyone in the group and towards our Ecuadorian colleagues at all times; keeping rooms reasonably clean, taking short showers, sharing space and access to washrooms, keeping the shared laboratory space organized and neat, and helping cleanup rooms and temporary laboratory prior to departure from field stations; help carry course supplies in large containers at various times e.g., from the bus to the field station.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| (i) Degree of isolation           | At the field stations (majority of the course) do not expect access to internet. Hotels have wifi. First week: electricity is readily available at San isidro and Yanayacu in cloud forest; but not at Shiripuno in the lowlands other than possibly at night. There is no access to shopping of any kind other than occasional truck stops during bus rides, until the last few days in Quito. <i>Students must pack all necessary supplies such as hygiene needs and prescription medication, clothing etc.</i> Please see section below "Required vaccinations/Insurances" for further information.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| (j) Alcohol & drugs               | No drugs or alcohol use are permitted during this course at any time, for safety reasons.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| (k) Vaccinations/ Insurances      | <p><b>Required Vaccinations:</b> To travel to Shiripuno (the Amazon lowlands and the ancestral lands of the Waorani) you are required to show proof of vaccinations for: <b>Yellow Fever, Hepatitis A &amp; B, and MMR (measles-mumps-rubella)</b>. Visit a physician to obtain these required vaccinations (and prescriptions, see below). At a later date (TBA) before we depart, you must provide documentation to us that indicates that you have had the above vaccinations, so be sure to obtain the vaccination <i>and the documentation from the doctor (e.g., yellow card)</i>.</p> <p><b>Recommendations:</b> Due to the remote locations of our destinations, and the presence of malaria (<a href="http://www.cdc.gov/malaria/travelers/country_table/e.html">http://www.cdc.gov/malaria/travelers/country_table/e.html</a>), and dengue, chikungunya, and Zika viruses the following are additional medicines/products that are strongly recommended: 1) Antimalarial medication used in the prevention and treatment of malaria; 2) Sufficient insect repellent with DEET or other proven effective repellent (over-the-counter): <a href="http://wwwnc.cdc.gov/travel/yellowbook/2016/the-pre-travel-consultation/protection-against-mosquitoes-ticks-other-arthropods">http://wwwnc.cdc.gov/travel/yellowbook/2016/the-pre-travel-consultation/protection-against-mosquitoes-ticks-other-arthropods</a> 3) A course of Cipro or other broad-spectrum antibiotic to use in the event of a bacterial infection; 4) Medication to be used in the event of altitude sickness; 5) All other routine immunizations, e.g., Typhoid, Tetanus, flu shot, etc.</p> <p><i>Also, be sure to bring any other prescription medications that you will require -- do not expect to be able to obtain prescription medication while in Ecuador.</i></p> <p>The most common medical conditions that students have suffered from on past courses are #1 TD - traveler's diarrhea #2 mild altitude sickness and #3 viruses we bring with us from Ontario e.g. influenza and 24-hour stomach flu. <b>Each student is required to have travel medical and trip cancellation insurance:</b> You are required to purchase travel medical insurance (that includes helicopter transport within Ecuador, in the event of a medical emergency), and trip cancellation insurance that covers the dates of the trip. For most of the trip we will be in remote locations (except Quito) with limited or no immediate access to medical assistance. Each student must provide proof of insurance and vaccinations at our request (once the course is in progress, prior to departure, we will communicate by email about how to do this).</p> |
| (l) Social Situations             | Students are expected to behave at all times according to the Academic Code of Conduct of their home university; students are expected to be respectful and courteous towards everyone in the group and to our Ecuadorian colleagues, and, wear required field gear and appropriate and respectful clothing in urban areas.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| (m) Final comments                | The professor has taught this course 6 times and completed 26 Neotropical field expeditions. Safety is taken very seriously, and we strive to provide a positive, rich, and rewarding learning experience for every student. This course provides a once-in-a-lifetime opportunity to experience one of the most biodiverse places on Earth, the Amazon rain forest, with seasoned, enthusiastic instructors, a variety of outstanding Ecuadorian field naturalists, Amazonian Indigenous Peoples (Waorani), and peers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |