TROPICAL BOTANY IN ECUADOR. BIOL 4377-5377 SA1

Summer Session I. Monday June 6- Friday July 8, 2016. 3 Credit hours.

Instructor: Dr. Tim McDowell, Dept. of Biological Sciences, ETSU. Office: 327 Brown; Phone: 439-8635. email: mcdowelt@etsu.edu

Course objectives:
The goals of this course are to provide students the following:
• an understanding of plant morphology and descriptive terminology
• a familiarity with plant classification and nomenclature (taxonomy)
• the ability to recognize major plant families and to identify plants to genus and species.
• an appreciation and awareness of economically useful plants (foods, medicines, etc) of tropical and temperate regions.
• direct experience of diverse tropical biomes: rain forest, mangroves, dry tropical forests, high páramo, etc.

Course cost:
Tuition & fees for 3 cr. hr. (~$1000 for undergraduates) + Airfare roundtrip (TRI-UIO: about $1100) + Travel expenses in Ecuador: $2400. Travel expenses fee covers five weeks food and lodging at all sites, ground transportation, and entry fees.

Scholarships:
Students with a 2.75 or higher GPA are eligible to apply for scholarships from the International Programs office (typically up to ½ total expenses, with supplemental scholarships for qualified early applicants). For application to these courses and for scholarship applications see link below. Read the instructions carefully and address all points mentioned when you prepare your Study Abroad Scholarship application, giving special attention to writing a strong essay. Applications are accepted and reviewed on rolling basis: apply early.
http://www.etsu.edu/honors/international/exchange/default.asp "Study Abroad and Exchange Programs" link.

There are other possible funding options: Pell Grant recipients can apply for the Gilman Scholarships, which average around $3000 and may provide full funding. See information at: http://www.iie.org/en/Programs/Gilman-Scholarship-Program
Students should meet with the ETSU Financial Aid office to learn more about scholarship options and for help preparing these applications.

Course description:
The class will visit many field sites in Ecuador where students will examine plants at diverse climatic, elevational and vegetational settings. Students will collect and identify plants, observe and dissect material, and become familiar with economically important tropical and temperate plants. Working with Ecuadorian botanists and students, we will conduct plant surveys in several locations. Plants collected in these surveys will be identified and specimens deposited with regional and national herbaria.

Students will observe diverse tropical environments and habitats found at varied elevations and climates in Ecuador South America. The course will travel to five distinct regions, ranging from coastal mangroves to cloud forests, high elevation páramos and Amazon rain forests. Topics to be presented include plant morphology, taxonomy, identification, food and medicinal plants, plant pollination, and vegetation types.

Field trips will be conducted in collaboration with expert botanists at regional universities in each habitat. Economically important plants will be studied in visits to farms, reforestation projects, and markets. At local public markets diverse tropical and temperate food and medicinal plants will be obtained for morphological examination in the teaching lab. Special field trips will include visits to the Botanical Garden in Quito, to an indigenous Ethnovotanical Garden in Puyo (Amazon region), a coastal mangrove near Esmeraldas, and an alpine dwarf vegetation habitat (páramo) near Tulcan.

Student participation and cooperation are essential to the success of this field course. Each student must sign the "Course Agreement Form" which describes key aspects of student responsibilities on the course.

Course is conducted with Ecuadorian students:
A particularly innovative aspect of this course is the cross-cultural and bilingual format for classes in Ecuador. An equal-sized group of Ecuadorian students enrolled through the Ecuadorian State University of Bolivar (UEB) will participate in this course alongside the ETSU students. Class resources will include both English and Spanish language materials, and students will be provided translations for the botanical vocabulary and common names of plants. The bilingual, binational format will greatly increase student access to and involvement with local experts, scientific literature, and popular aspects of plant use.
Course in Spanish Language taught on same trip:

In combination with this Tropical Botany course interested students may also take a course in Spanish Language/Latin American Culture, taught by ETSU professor Dr. Jerome Mwinyelle. This course (LANG 4957-5957, 3 credit hours) will provide guided instruction in Spanish (comprehension, speech, and reading) along with cultural experiences throughout our travels across Ecuador. Instruction will be targeted toward each students level of language skill. There will be great opportunity for students to practice speaking Spanish with Ecuadorian faculty and students.

Grading:

Students will be graded on participation in daily field activities (25%), homework exercises (25%), student plant family reports (25%), and test scores (25%, including final exam plus several small quizzes). Each student will select a plant family to study during the course and on which they will present information to the class and submit a final report in written form or word file.

Course Materials: Students will be provided a "Tropical Botany Course Notebook" with course materials at the first class meeting. Students are also provide a spiral notebook for field notes. The notebook's contents are listed below:

- Syllabus with Itinerary
- Maps
  - Political
  - Topographic
  - Vegetation
  - Vegetation 2
  - Geology
  - Economic
  - Rainfall
  - Holdridge zones
- Botany illustrations
  - Flower
  - Ovary position
  - Inflorescence types
  - Fruit types
  - Leaf types
  - Leaf shapes
- Mono- vs. Dicot
- Grass morphology
- Orchid flower
- Pollination biology summary
- Catalogue of the Vascular Plants of Ecuador, Chapters 1-6* & Selected Tables
  - Species / region
  - Species / zone
  - Largest families & genera
  - Big families & genera/region
  - Species & area/elevation
  - Species/habit/zone/elevation
  - Big families/habit
  - Big genera/habit
  - Habitats summary sheets:
    - Mangrove
    - Páramo
    - Lowland Rain forest
    - Montane/Cloud forests
    - Deserts
    - Savanna/Seasonal dry forest
    - InterAndean valley
    - Phylogenetic trees
    - Seed plants phylogeny
    - Food plants phylogeny
    - Monocot phylogeny
    - Economic plants list & assignment
    - Medicinal plants list, D. Lazare
    - Plant taxonomy basics
    - Taxonomy of *Prunus serotina*
    - Plant family report assignment


Miscellaneous information:

Passport information:
US State Department Passport information:
http://travel.state.gov/passport/passport_1738.html

State Dept. Travel Information on Ecuador:

Center for Disease Control Health Information (Vaccinations, etc) for Ecuador:

A few tourism web sites for Ecuador:
  [in Spanish]
  http://www.galapagos-islas.com/Turismo01.html
  http://www.viajandox.com/
  [in English]
  http://www.thebestofecuador.com/
  http://wikitravel.org/en/Ecuador
  http://www.ecuador-travel-guide.org/

An excellent all-purpose introduction to the Flora of Ecuador (richly illustrated, in Spanish, color pdfs on web)

General Information on Ecuador:
CIA Factbook:
Library of Congress Country Study:
http://lcweb2.loc.gov/frd/cs/ectoc.html

City of Guaranda (Sister City to Johnson City TN since 1964)
http://www.guaranda.net/

University Estatal de Bolívar, Guaranda, Ecuador (a partner university to ETSU)
http://www.ueb.edu.ec/
Selected volumes in the Tropical Botany course library.

The Tropical Botany course will carry a course library on the course bus. The following books are among the many useful botanical references in the course library. Students may sign out these books for use during the course.


<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Location</th>
<th>Topics, Activities</th>
<th>Hotel</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>6</td>
<td>Travel TRI-Quito (UIO) Ecuador</td>
<td>Bus from ETSU to TRI departs at 8:45 AM from Brown Hall. Meet in room 320 Brown Hall at 8:00 AM</td>
<td>Hostal El Arupo Bed &amp; Breakfast, Lizardo Garcia E5-45 y Juan Leon Mera, Quito, EC. (593) 2 2523528</td>
</tr>
<tr>
<td>7</td>
<td>Tu</td>
<td>Quito</td>
<td>National Botanical Garden, Vegetation types (AM)</td>
<td>Hostal El Arupo Bed &amp; Breakfast, Lizardo Garcia E5-45 y Juan Leon Mera, Quito, EC. (593) 2 2523528</td>
</tr>
<tr>
<td>8</td>
<td>W</td>
<td>Quito</td>
<td>Herbarium visit in Quito, Documenting diversity</td>
<td>Hostal El Arupo Bed &amp; Breakfast, Lizardo Garcia E5-45 y Juan Leon Mera, Quito, EC. (593) 2 2523528</td>
</tr>
<tr>
<td>9</td>
<td>Th</td>
<td>Travel to Baños</td>
<td>Interandean valley vegetation</td>
<td>Hostal La Chiminea, Martinez y Viera, Baños, Tunguruahua, EC. (593) 3 2742725 (593) 3 2740830</td>
</tr>
<tr>
<td>10</td>
<td>F</td>
<td>Baños</td>
<td>Plant hike &quot;Sendero de los Contrabandistas&quot; Chivo trip to view Tungurahua volcano (night)</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Sa</td>
<td>Banos</td>
<td>Free day for students. Provide instructor your plans. Andean forests, waterfalls, hot springs.</td>
<td>Hostal Las Palmas, 20 de Julio y 4 de Enero, Puyo, Pastaza, EC. (593) 3 2884832</td>
</tr>
<tr>
<td>12</td>
<td>Su</td>
<td>Travel to Puyo</td>
<td>Amazonian vegetation, warm tropical plant families. River promenade, Rio Puyo.</td>
<td>Hostal Bolivariano, Sucre 7-04 Guaranda, Bolivar, EC. (593) 3 2980 547</td>
</tr>
<tr>
<td>13</td>
<td>M</td>
<td>Puyo</td>
<td>Ethnobotanical Garden Omaere (AM) Ingaro, Shuar indigenous peoples representative (PM)</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Tu</td>
<td>Puyo</td>
<td>Plant Rescue Garden &quot;The Orchids&quot; (AM) Sacha Warmi Center (PM)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>W</td>
<td>Puyo</td>
<td>Jatun Sacha Biological Reserve (AM) Mishawalli (PM)</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Th</td>
<td>Travel to Guaranda</td>
<td>Free afternooon for students</td>
<td>Hotel Bolivariano, Sucre 7-04 Guaranda, Bolivar, EC. (593) 3 2980 547</td>
</tr>
<tr>
<td>17</td>
<td>F</td>
<td>Guaranda</td>
<td>Botany workshop at Bolivar State University (UEB)</td>
<td>Hotel Milan, Presidente Cordova 9-89 y Padre Aguirre, Cuenca, EC. (593) 7 2831104</td>
</tr>
<tr>
<td>18</td>
<td>Sa</td>
<td>Guaranda</td>
<td>Botany field trip: Cascha Totoras Protected Forest</td>
<td>Hotel Bolivariano, Sucre 7-04 Guaranda, Bolivar, EC. (593) 3 2980 547</td>
</tr>
<tr>
<td>19</td>
<td>Su</td>
<td>Guaranda</td>
<td>Special activities in Guaranda to be arranged</td>
<td>Hotel Bolivariano, Sucre 7-04 Guaranda, Bolivar, EC. (593) 3 2980 547</td>
</tr>
<tr>
<td>20</td>
<td>M</td>
<td>Guaranda</td>
<td>Salinas de Guaranda visit</td>
<td>Hotel Bolivariano, Sucre 7-04 Guaranda, Bolivar, EC. (593) 3 2980 547</td>
</tr>
<tr>
<td>21</td>
<td>Tu</td>
<td>Travel to Cuenca</td>
<td></td>
<td>Hotel Sol de Oriente, Aguirre 603 Guayaquil, EC. (593) 4 232 5500</td>
</tr>
<tr>
<td>22</td>
<td>W</td>
<td>Cuenca</td>
<td>Botanical garden at City Museum</td>
<td>Hotel Milan, Presidente Cordova 9-89 y Padre Aguirre, Cuenca, EC. (593) 7 2831104</td>
</tr>
<tr>
<td>23</td>
<td>Th</td>
<td>Cuenca</td>
<td>Las Cajas Nat. Park hike: high montane vegetations.</td>
<td>Hotel Milan, Presidente Cordova 9-89 y Padre Aguirre, Cuenca, EC. (593) 7 2831104</td>
</tr>
<tr>
<td>24</td>
<td>F</td>
<td>Cuenca</td>
<td>Free day for students. Provide instructor your plans.</td>
<td>Hotel Milan, Presidente Cordova 9-89 y Padre Aguirre, Cuenca, EC. (593) 7 2831104</td>
</tr>
<tr>
<td>25</td>
<td>Sa</td>
<td>Travel to Guayaquil</td>
<td>Walk the Malecon to Cerro Santa Ana lighthouse</td>
<td>Hotel Sol de Oriente, Aguirre 603 Guayaquil, EC. (593) 4 232 5500</td>
</tr>
<tr>
<td>26</td>
<td>Su</td>
<td>Guayaquil</td>
<td>Botanical Garden (AM) &amp; Historical Park (PM)</td>
<td>Hotel Sol de Oriente, Aguirre 603 Guayaquil, EC. (593) 4 232 5500</td>
</tr>
<tr>
<td>27</td>
<td>M</td>
<td>Travel to Atacames</td>
<td>Travel day</td>
<td>Hotel Lumbar. Sucre Entre Rocafuerte Y Pichincha. Tulcan, Carchi - Ecuador (593) 6 2980402°</td>
</tr>
<tr>
<td>28</td>
<td>Tu</td>
<td>Atacames</td>
<td>Muisne Island, mangroves, boat trip</td>
<td>Hotel Coraza, Abdón Calderón y Sucre esquina. Otavalo, EC. (593) 6-2921225, 6-297360</td>
</tr>
<tr>
<td>29</td>
<td>W</td>
<td>Atacames</td>
<td>Coastal seasonally dry forest, Univ. Esmeraldas</td>
<td>Hotel Coraza, Abdón Calderón y Sucre esquina. Otavalo, EC. (593) 6-2921225, 6-297360</td>
</tr>
<tr>
<td>30</td>
<td>Th</td>
<td>Travel to Tulcan</td>
<td>Arrive in Tulcan Friday evening.</td>
<td>Hotel Lumbar. Sucre Entre Rocafuerte Y Pichincha. Tulcan, Carchi - Ecuador (593) 6 2980402°</td>
</tr>
<tr>
<td>July</td>
<td>1</td>
<td>Tulcan</td>
<td>Los Frailejones: high elevation Paramo, Aguas Hediondas: hot springs</td>
<td>Hotel Coraza, Abdón Calderón y Sucre esquina. Otavalo, EC. (593) 6-2921225, 6-297360</td>
</tr>
<tr>
<td>2</td>
<td>Sa</td>
<td>Tulcan</td>
<td>Los Cipreses Topiary, Las Lajas Cathedral</td>
<td>Hotel Coraza, Abdón Calderón y Sucre esquina. Otavalo, EC. (593) 6-2921225, 6-297360</td>
</tr>
<tr>
<td>3</td>
<td>Su</td>
<td>To Otavalo</td>
<td>Los Arrayanes, San Gabriel</td>
<td>Hotel Coraza, Abdón Calderón y Sucre esquina. Otavalo, EC. (593) 6-2921225, 6-297360</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>Otavalo</td>
<td>Final Written Exam (AM) Visit Andean flute maker (PM)</td>
<td>Hotel Coraza, Abdón Calderón y Sucre esquina. Otavalo, EC. (593) 6-2921225, 6-297360</td>
</tr>
<tr>
<td>5</td>
<td>Tu</td>
<td>Otavalo</td>
<td>Plant hike: Rim of Lake Cuyococha, Parque Cotocachi</td>
<td>Hotel Coraza, Abdón Calderón y Sucre esquina. Otavalo, EC. (593) 6-2921225, 6-297360</td>
</tr>
<tr>
<td>6</td>
<td>W</td>
<td>To Quito</td>
<td>UEB students return to Guaranda (mid-day)</td>
<td>El Arupo Bed &amp; Breakfast, (above)</td>
</tr>
<tr>
<td>7</td>
<td>Th</td>
<td>Quito, to airport in evening</td>
<td>Mitad del Mundo (AM-PM) Quito (dinner) to UIO airport by 9:00 PM</td>
<td>Depart UIO airport around midnight Thursday</td>
</tr>
<tr>
<td>8</td>
<td>F</td>
<td>Arrive at TRI</td>
<td>Students arrive in Johnson City. Arrange own ride.</td>
<td>Depart UIO airport around midnight Thursday</td>
</tr>
</tbody>
</table>