

SIMPSON COLLEGE
2010 MAY TERM OFF-CAMPUS TRAVEL COURSE PROPOSAL

Date: 15 January 2009

Completed forms should be submitted to the Office of International Education no later than Jan. 15, 2009 for international travel courses and no later February 17, 2009 for domestic travel courses.

Name of proposer(s): Ryan Rehmeier and Jeff Parmelee Department(s): Biology

Please check one of the following:

- INTERNATIONAL Off-Campus Travel Course**
 DOMESTIC Off-Campus Travel Course

I. Course Information

- A. Course number, if course has been offered previously: Not offered before
- B. Course title: Coral reef and tropical rainforest ecology in Belize.
(*Note: The name of the place of study should appear in the title*)
- C. Transcript Course Title (max. 21 characters): Trop. Ecol. in Belize
- D. Course level (100/200/300): What is the rationale for offering the course at this level?
100-level; Class content should be academically and conceptually accessible to most students on campus.
- E. Minimum enrollment: 22
- F. Maximum enrollment: 28

II. Course Description

- A. Course goals and objectives: Given that Simpson May Term Off-Campus Travel Courses aim to provide students with an active learning curriculum that integrates a rigorous academic program with experiential immersion activities, please outline the learning objectives for your course.

We propose a course that explores the ecology, structure, function, stability, and conservation of tropical rainforests and coral reefs in Belize. Our planet is warming at an unprecedented rate, and most climate scientists agree that the increasing concentration of greenhouse gases in the atmosphere is driving this climate change. Carbon dioxide is the primary greenhouse gas, due to its vast abundance and status as a major product of fossil-fuel combustion. Photosynthetic plants and animals give ecosystems the ability to absorb carbon dioxide from the atmosphere, thereby ameliorating the negative climatic effects of increasing carbon dioxide levels. Per unit area, tropical rainforests and coral reefs are the two most productive ecosystems on our planet, sequestering more carbon dioxide from the atmosphere than any other types of habitats. Better knowledge of how these ecosystems work and the threats to their continued existence is necessary to preserve them, either for their intrinsic value or for their practical value as climate-change dampeners.

We have several learning objectives. This course is meant to improve students' abilities to ask testable questions, analyze, and interpret ecological data. They will gain better knowledge of ecological processes and learn skills helpful in understanding and addressing environmental issues. Students will learn the theory and practice of SCUBA diving, becoming PADI-certified divers. In addition, students also learn about personal and community responsibility as they relate to local and large-scale environmental issues.

- B. Rationale for the course: Please explain how the course fits in with your department and/or the college's curriculum.

Simpson College has made sustainability a central theme of life on our campus, and this course will teach students about the importance of conservation of valuable native ecosystems as part of a long-term strategy of being ecologically responsible citizens of our world. The content focus of this course is to teach students about ecology and evolution, which are core themes of the Biology curriculum.

- C. In-country activities: Describe how the planned immersion activities (these could include home stays, service learning opportunities, interviews with locals, Q & A sessions with local guest lecturers/speakers, etc.) will be integrated into educational goals of the course.

This course is broken into a section on Coral Reef Ecology and another on Tropical Rainforest Ecology. Coral Reef Ecology will be taught at a private biological field station on South Water Caye off the coast of Dangriga, Belize. South Water Caye is situated on the largest barrier reef in the Western Hemisphere. Here students will get experiential learning via snorkeling, diving, and boating on the reefs, sea grass meadows, and mangrove swamps that define the ecologically important boundary between terrestrial and marine ecosystems. During the first 3 days on the island, students will complete their SCUBA diving certification course. Most days will include lectures by a marine biologist with many years of experience on the site (Dr. Gary Gaston, Professor in the University of Mississippi Marine Biology Department), intensive labs, data collection, research, and collaboration of research groups. Specifically, students will learn to identify local fish, invertebrates, and plants; observe important ecological relationships such as competition, predation, and symbiosis; perform numerous field techniques; and pull information from peer-reviewed journals and discussions into presentations about their research projects.

Tropical Rainforest Ecology will be taught at Blue Creek Rainforest Lodge in the mountainous Toledo District of southern Belize. Students will learn about the ecological roles played by hundreds of species of plants, birds, reptiles, fish, amphibians, and mammals by hiking through the jungle and observing them first hand. They will be taught appropriate data collection methods for tropical rainforests and complete a brief research project. Activities planned for the students include an ethnobotany walk, cave hike, iguana hike, jungle climb, monkey hike, bird walk, several night hikes, and snorkeling in the pristine Blue Creek River. Students will interact with locals as most hikes will be led by local guides, and we will visit a nearby village inhabited by Ketchi and Mopan Mayans who use sustainable agricultural practices to conserve the forest. We will also visit Lubaantun, Mayan ruins near Blue Creek Village, to learn more about the cultural history of the area.

- D. Required course assignments and evaluation

1. Explain specific course requirements and indicate when they would occur (e.g., P=during the on-campus spring semester prep course, O=off-campus, and D=during the de-briefing portion of the off-campus experience; it's possible that some assignments will happen in all of the periods, e.g., Readings could be P-O-D)
 - a. Participation

Students will be expected to participate in group discussions of topics (P) and during all off-campus (O) group activities and hikes, enthusiastic participation is mandatory.
 - b. Readings (please specify what these will be)

Required readings will be chapters from the Kricher book below (P) which is the most thorough coverage of the natural history of terrestrial Neotropical ecosystems available. The suggested field guide to coral reefs will be useful for the marine labs, post-diving discussions, and research projects (O). We will provide sufficient background to make these readings understandable to a non-biology major.
Required: A Neotropical Companion, 2nd revised edition, by John Kricher, 1999, Princeton University Press, Princeton, NJ.
Suggested: A Field Guide to Coral Reefs of the Caribbean and Florida, by Roger Tory Peterson, Eugene H. Kaplan. 1999. Houghton Mifflin Company, Boston, MA.
 - c. Journal reflections

Students will keep a field journal (O) and be graded on the completeness of notes and entries in this journal; notes will come from discussions occurring on exploratory hikes, and writing prompts will be provided for reflective entries in the journal.

d. Exams

No exams are planned, but many questions will be asked for students to ponder and answer during the many exploratory hikes (O), and we will expect these questions to be answered in the students' journals.

e. Papers/Presentations/Field reports, etc.

Each student will research and lead a discussion on a topic of their choice (environmental, biological, or cultural aspects pertaining to the course) during the prep course (P). They will also work in small groups to carry out brief research projects (O) and present their findings to the entire class (O). Potential topics for the projects will be provided but we will also allow students to come up with other ideas that fit their interests. Students will turn in a final essay (O-D) in which they reflect about the impact of the experience on their understanding of evolutionary or ecological concepts presented during the course.

f. Other assignments

Students will turn in written synopses of each discussion topic every week (P) during the preparatory course.

2. Approximately what percentage will each of the above course requirements contribute toward the final course grade?

For on-campus prep course: Participation in leading discussions: 50%, Weekly synopses: 50%;
for off-campus portion: Participation in group activities: 40%, Research project and presentation: 20%; Journal: 20%, Final essay: 20%

E. Catalog course description of about 100 words which includes a statement of expected course work (papers, exams, journal writing, presentations, etc.)

This course will explore the ecology, structure, function, and conservation of tropical rainforests and coral reefs in Belize. Experiential learning via snorkeling, SCUBA diving, and boating on the reefs, sea grass meadows, and mangrove swamps will take place on South Water Caye, an island situated on the largest barrier reef in the Western Hemisphere. Students will learn to identify local fish, invertebrates, and plants; observe important ecological relationships; learn field techniques; and carry out group research projects. We will investigate tropical rainforest at the Blue Creek Rainforest Lodge in mountainous southern Belize. Activities there will include numerous day and night hikes, a visit to Mayan ruins, and snorkeling in the pristine Blue Creek River. Discussions in the spring prep course, active participation in all off-campus group activities, journal writings, group research projects, and a final reflective essay will make up the course work. This course has no prerequisites and is designed for both biology and non-biology majors.

F. Are there prerequisites for this course? Yes No X

III. Other Information

A. Has this course been offered in a previous May Terms? Yes No X
If yes, please indicate *when* it was offered and the approximate enrollment.

B. Department(s) in which credit is to be awarded:
Biology

C. If this course will meet requirements for a departmental major or minor, please explain briefly:
This course would qualify as an elective for the Biology major or minor and would fulfill the Field Methods course requirement of the Environmental Science major.

D. Proposed dates of the travel course, including dates you anticipate being abroad:
(*Note: It is highly recommended that the group should depart no earlier than Sat., May 1, 2010, and*

should return no later than Thurs., May 20, 2010.)

Depart Des Moines airport on May 3, 2010 and return to Iowa on May 20, 2010.

- E. Proposed location(s) and how the site location(s) relate to the core objectives of the course:

Multiple sites throughout Belize. This locale is unique because it offers immediate access to the two most productive ecosystems on our planet. Belize also has a reasonable tourism infrastructure, making travel there relatively safe and reasonably priced for a travel course.

- F. Indicate your level of familiarity with the site(s) visited during the course.

Rehmeier has not visited the site, but Parmelee has some experience in Belize. If International Travel Course development funds are available again this year, we will likely complete an on-site reconnaissance trip in 2009.

- G. Will the off-campus component of this course require a significant amount of physical exertion on the part of the course participants? On a scale of 1-5, with 1 being little physical exertion and 5 being a tremendous amount of physical exertion, please rate the anticipated activities related to this course. Do you anticipate that the course activities would pose any significant challenges for someone with physical disabilities?

The off-campus parts of this class will require significant physical exertion, with activities ranging from 3-5 on the exertion scale. Time will be spent during the prep course to ensure that all students are ready for the portions of the course requiring swimming and comfort in the water. In many cases, our "classroom" will be a saltwater lagoon or a slippery rainforest trail. We will spend a considerable amount of time snorkeling or SCUBA diving and navigating unpaved, potentially steep trails through forests for this course. This could pose problems for students with physical disabilities related to locomotion.

V. Proposed Budget for the Course

(A more precise estimate is not due to the OIE until September 7, 2009)

First, estimate expenses for instructor(s) and course assistant(s), if any, (in total, not per student)

Air transportation	\$1200
In-country transportation	\$included
Lodging	\$included
Meals	\$included
Events: tickets, admissions, excursions, etc. (Nat. park entrance fees)	\$40
Any necessary entry visas (exit tax)	\$80
Misc.	\$0
Other (explain): SCUBA costs: tanks, equipment	\$1000
Total instructor(s) and course assistant expenses	\$2320

*all but the air transportation and SCUBA refresher course for the instructors is already included in the package price (\$2995 per person, assuming 22 students) given to us by IZE. We have split that \$2995 evenly between In-country transportation, Lodging, and Meals in the Student cost table below.

Next, estimate the cost per student, based upon the minimum enrollment number (22) from page 1 of this document:

Air transportation	\$600
In-country transportation	\$1000
Lodging	\$1000
Meals	\$995
Events: tickets, admissions, excursions, etc. (Marine Reserve use fee)	\$20
Honorariums (local guide with us at all times, hired by IZE)	\$95
Tips	\$20
Int'l Student I.D. card is now optional, \$25 each if desired	\$0
SC Study Abroad Program Fee	\$100
Any necessary entry visas (airport exit tax)	\$40
Contingency fund (\$100 recommended)	\$100
Other (explain): SCUBA certification course, all tanks, equipment for all diving and snorkeling	\$700
Subtotal per student expenses (based upon minimum enrolled #)	\$4670

Finally, divide the "Total instructor(s) and course assistant expenses" by "the minimum enrollment number (22) from page 1 of this document" to get a "per student instructor cost." Then add

Subtotal per student expenses (based upon minimum enrolled #)	\$4670
+ per student instructor cost	\$105
= Total per student cost	\$4775

Additional expenses not covered by the program for which students need to budget:

For example, passport @ \$100, books, meals, immunizations, trip cancellation insurance, etc.

Passport = \$100; books = \$30, meals not covered = \$30

Total estimated additional expenses not covered by the course: \$160

Instructor signature: _____ Date: _____

Instructor signature: _____ Date: _____

Dept Chair approval: _____ Date: _____
(department(s) in which credit is to be awarded)

Dept Chair approval: _____ Date: _____
(department(s) in which credit is to be awarded)

Div. Head approval: _____ Date: _____
(division of the instructor)

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(division of the instructor)