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Biodiversity and Natural Resource Conservation in Bali

ENVI 3010 (3 Credits / 45 hours)

SIT Study Abroad Program:

Indonesia: Biodiversity and Conservation in Bali and Borneo

PLEASE NOTE: This syllabus represents a recent term. Because courses develop and change over time to take advantage of unique learning opportunities, actual course content varies from term.

Course Description

This course focuses on biodiversity conservation in the ecological context of tropical Asian reef and rainforest systems. Against a backdrop of historical and contemporary patterns of natural resource use patterns in Indonesia and particularly Bali, we examine the responses of the biota to large-scale habitat loss and fragmentation, extraction of resources (for example timber and fishes), and changes to hydrological and nutrient dynamics that accompany conversion of the landscape to agricultural dominance. Understanding the processes and patterns of change gives us insight into potential solutions, which may include government-initiated programs, privately-funded ventures, and community-based approaches.

Field excursions will focus on identification and analysis of ecological processes and patterns, threatening processes, as well as observation and participation in conservation activities.

Learning Outcomes

On successful completion of this course students will be able to:

- Describe how geography and physical environment act as determinants of biodiversity and endemism in flora and fauna. This includes understanding how Bali's original habitats and wildlife evolved, and the key environmental features that maintain diversity.
- Evaluate how human settlement and resource-use patterns have led to habitat loss and fragmentation, species endangerment and ongoing threats to terrestrial and marine biodiversity.
- Communicate principles and practices of conservation biology, with a particular focus on habitat fragmentation and management of threatened species and populations.
- Assess conservation strategies to ameliorate habitat loss and population reduction, including tropical forest restoration, captive breeding and release programs, protected area management and community conservation approaches.
- Discuss principles of sustainability, and how these apply to multifaceted reality. This includes integrating economic, environmental and social aspects of sustainability to find creative solutions to the problems posed by population growth, environmental exploitation and tourism, among others.

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Language of Instruction

The program will be taught in English. Language instruction in Bahasa Indonesia will be given throughout the program, to facilitate a level of immersion in the cultural milieu, vital to the holistic understanding of the context of conservation in Indonesia.

Course Requirements

Course Schedule

***Please be aware that topics and excursions may vary to take advantage of any emerging events, to accommodate changes in our lecturers' availability, and to respect any changes that would affect student safety. Students will be notified if this occurs.**

Course Schedule

Weeks 1-2 Arrival, in-country orientation, intensive language and culture instruction at Kerambitan (orientation site). Three-night homestay at Munduk Pakel. This part of the program is designed to settle participants into their new cultural and environmental context. Lectures during this period will focus on patterns and processes in tropical ecology and biodiversity as well as the historical, geographic and cultural backdrop to resource use patterns in Bali. On short excursions we will visit localities where we expand on these topics, and on our first field project we will examine conservation values of remnant vegetation in urban and agricultural landscapes.

Lecture Series Topics
History of Bali
Introduction to Indonesian terrestrial ecosystems, flora and fauna
Biogeography of Indonesian flora and fauna

Field Activities and Demonstrations
Temple visit to investigate a religion/conservation interface
Wildlife Rescue Centre visit to examine wildlife trade issues
Mapping and biodiversity assessment of human-dominated landscapes
Bird survey and identification methods

Readings
Weinzettel, J., Hertwich, E.G., Peters, G.P., Steen-Olsen, K., Galli, A. (2013). Affluence drives the global displacement of land use. *Global Environmental Change* 23: 433–438.

Adams, W.M., Aveling, I.R., Brockington, D., Dickson, B., Elliott, J., Hutton, J., Roe, D., Vira, B., Wolmer, W. (2004). Biodiversity Conservation and the Eradication of Poverty. *Science* 306, 1146-49.

Weeks 3-5 We undertake an extended excursion including fieldtrips to central and west Bali, East Java, and the Central Kalimantan province of southern Borneo. We divide our time between Bali Barat National Park where we examine forest ecology and conservation; Baluran National Park in East Java, where we investigate the different management challenges presented by high habitat diversity and a diverse mega-fauna; and the lowlands of southern Borneo, where tropical forest remnants protect major reservoirs of biodiversity from large-scale landscape change wrought by the oil palm industry; and the island of Nusa Lembongan off southern Bali, where we focus on coral reef ecology and conservation in the world's richest marine environment. This excursion provides exposure to a range of environmental concerns and explores the ways in which tourism can be a part of a holistic conservation strategy. Field projects in this portion of the program will focus on coral reef ecology and monitoring.

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Lecture Series Topics
Biodiversity: patterns and processes in terrestrial and marine ecosystems
Ecology of tropical forest systems
Ecology of tropical marine ecosystems
Factors and processes threatening biodiversity in Indonesia
Principles and practices of Conservation Biology
Conservation models: public, private and community
Sustainability, the quadruple bottom line approach
Reforestation: principles and practices
Endangered species management: theory and practice
Nature-based tourism: the good, the bad and the ugly
Towards a sustainable future for Indonesia's communities and ecosystems

Field Activities and Demonstrations
Marine survey methods, fish and coral species identification (snorkeling)
Monitoring of forest birds, primates and other wildlife
Mega-fauna conservation and rehabilitation programs, including programs for organgutans in Borneo
Invasive species impacts on ecosystems
Vegetation survey methods, emphasis on habitat restoration plots
Restoration nursery maintenance work

Readings
Nyström, M., Folke, C. and Moberg, F. (2000). Coral reef disturbance and resilience in a human-dominated environment. *TREE* 15 (10): 413-17.
Sodhi, N.S., Koh, L.P., Clements, R., Wanger, T.C., Hill, J.K., Hamer, K.C., Clough, Y., Tscharntke, T., Posa, M.R.C., Lee, T.M. (2010). Conserving Southeast Asian forest biodiversity in human-modified landscapes. *Biological Conservation* 143: 2375–2384.
Friends of the National Parks Foundation Borneo project: www.fnpf.org/what-we-do/tanjung-puting-national-park (information on the work of FNPF in Borneo including links to more detailed accounts of current projects and general information on the organization).

Week 6 Study Project completion, final exam and evaluation. This period allows for more intensive exploration of research topics, culminating in a research paper and oral presentation.

Evaluation and Grading Criteria

Description of Assignments
Students will be assessed through a variety of means: the **Field Journal** gives students an opportunity to record their experiences and interactions with the environment in a flexible, creative manner, as ongoing journal entries can combine their selected observations and analysis with illustrations such as field sketches, diagrams, maps and others. The skills and discipline of keeping a field journal are among the most important tools of a fieldworker. The **Group Ecology Projects** will use the combined field efforts of the students to gather simultaneous data from a series of field sites, and will be presented as short papers and oral reports.

Grades will be allocated as follows:

Field Journal	25%
Group Ecology Projects	25%
Final Written Examination	40%
Participation in all program activities	10%

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Participation
Participation in the course activities is also evaluated. Performance is based on punctual attendance at all activities; informed participation in all activities, including group discussions, field trips, and lectures; and encouragement and support of group members in their studies and contribution to maintaining a positive learning atmosphere in the group.

A full description of the expectations and assessment guidelines for each of these assignments is provided in the student handbook, which students will receive at the commencement of classes.

Grading Scale

94-100%	A
90-93%	A-
87-89%	B+
84-86%	B
80-83%	B-
77-79%	C+
74-76%	C
70-73%	C-
67-69%	D+
64-66%	D
below 64	F

Expectations and Policies

Show up prepared. Be on time, have your readings completed and points in mind for discussion or clarification. Complying with these elements raises the level of class discussion for everyone.

Have assignments completed and submitted on schedule, and done according to the specified requirements. This will help ensure that your assignments are returned in a timely manner.

Examinations. Students are given examinations covering the major content of the program's lectures, field trips and readings.

Attendance. All students are required to attend all lectures and to participate in all discussion and analysis sessions. All excursions are mandatory and students must discuss absences with the Academic Director before the planned departure.

Participation. Participation is not the same as attendance. All students are expected to participate fully in all aspects of the course. This means asking pertinent questions to the course's guest lecturers, engaging in discussion and analysis during lectures, group discussions and on excursions. Students are expected to complete the required reading in a timely fashion, and to demonstrate their understanding of texts through reflection, writing, and discussion.

Please refer to the SIT Study Abroad handbook for policies on academic integrity, ethics, warning and probation, diversity and disability, sexual harassment and the academic appeals process.

Disability Services: For information about and support from Disability Services (DS) to facilitate an accessible educational experience, please contact disabilityservices@sit.edu or +1-802-258-3390. Additional information regarding SIT Disability Services can be found on the DS website at: http://studyabroad.sit.edu/disabilityservices.

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