



Coastal Ecology and Natural Resource Management Seminar

ENVI 3000 (4 credits / 60 class hours)

SIT Study Abroad Program:

Tanzania: Zanzibar - Coastal Ecology and Natural Resource Management

Please Note: This syllabus represents a recent semester. Because course develop and change over time to take advantage of unique learning opportunities, actual course content varies from semester to semester.

Course Description

The Coastal Ecology and Natural Resource Management Seminar is an interdisciplinary course that examines coastal ecosystems and natural resource management in Zanzibar and the proximal mainland coast of Tanzania. Lectures, discussions, and activities engage the natural and social sciences. In the course, students study ecology, coastal marine environments, coastal forests, and the lifeways, culture, and human-environment challenges in Zanzibar. Through five complimentary modules - delivered by in-country faculty, researchers, and custodians - student achieve a comprehensive familiarity with coastal ecology and the management of natural resources in the cosmopolitan world of East Africa and the western Indian Ocean.

Course Learning Outcomes

The Coastal Ecology and Natural Resource Management Seminar comprises 60 hours of academic study and events (4 credits). At the complete of the course, students will:

- Know “nature” as a complex concept;
- Know ecology and natural resource management as critical practices;
- Demonstrate familiarity with coastal marine environments and forests in Zanzibar and Tanzania, and key cases;
- Demonstrate mastery of the basic natural history, biology, and ecology of select plants, invertebrates, fish, mammals, and other life in Zanzibar and the western Indian Ocean;
- Comprehend present challenges to environments, species, and human communities in coastal Tanzania;
- Show an in-depth understanding of nature preservation, natural resource management, and human sustainability in the region.

Course Requirements

Lectures, field trips, excursions, and reflexive discussions help students to learn about coastal ecology, human communities in the region, and natural resource management in Zanzibar. The Academic Director evaluates student participation and assignments based on timeliness, completeness, seriousness of purpose, and, when relevant, the demonstration of cooperative teamwork among group members. The evaluation of assignments further accounts for their clarity of organization, accurate background, supportive data, appropriate analysis, coherence and depth of argument, and the quality of written, visual, and/or oral presentation.

Course Program

This course takes the form of interrelated modules that incorporate lectures, readings, discussions, activities, and assignments:

Module I: Ecology, and the Historical and Social Context of Zanzibar

This ten-day module introduces key concepts of ecology and the defining background traits of Zanzibar and its people. Students engage “nature” as a multifaceted concept understood somewhat differently by scientists, different publics, and the state. Field trips and discussions introduce Zanzibar’s ecosystems and the politics, religion, and lifeways of its people. This module helps students to grasp the intellectual and social context, human practices, and institutions relevant to ecological study and natural resource management in East Africa and the western Indian Ocean.

- Escobar, A. 1998. “Whose Knowledge, Whose Nature?,” *Journal of Political Ecology* 5.
- Pendergrast, M. et al. 2016. “Continental Island Formation and the Archaeology of Defaunation on Zanzibar, Eastern Africa.” *PLoS ONE* 11.
- Sheriff, A. 2010. *Dhow Cultures of the Indian Ocean: Cosmopolitanism, Commerce and Islam*. Columbia University Press. (excerpts)
- Walley, C. 2004. *Rough Waters: Nature and Development in an East African Marine Park*. Princeton University Press. (excerpts)

Module II: Coastal Marine Environments in Tanzania-Zanzibar

This three-week module emphasizes the region’s physical oceanography, marine environments, and key plants and animals. Field trips on Unguja, Mafia, and Chumbe islands and to Zanzibar’s fish market reinforce classroom learning. Presentations by regional experts and faculty at the Institute for Marine Sciences in Stone Town introduce the intertidal zone, sea grass beds, and coral reefs. Activities highlight the characteristics and behaviors of select animal species - corals and other invertebrates, bony fish, dolphins, sharks, and sea turtles - and the various anthropogenic threats posed to marine ecosystems in Zanzibar.

- McClanahan, C. et al., eds. 2000. *Coral Reefs of the Indian Ocean: Their Ecology and Conservation*. Oxford. (excerpts)
- Nesbitt, K. and M. Richmond. 2015. “A Preliminary Assessment of the Status and Habitat Preference of the Grouper (Serranidae) Population of Chumbe Island Coral Park, Zanzibar, Tanzania,” *Western Indian Ocean Journal of Marine Science* 14.
- Reyment, R. 2008. “A Review of the Post-mortem Dispersal of Cephalopod Shells,” *Palaeontologia Electronica* 11.
- Richmond, M. 2002. *A Field Guide to the Seashores of Eastern Africa and the Western Indian Ocean Islands*. SAREC. (excerpts)

- Roman, J. and J. McCarthy. 2010. "The Whale Pump: Marine Mammals Enhance Primary Productivity in a Coastal Basin," *PLoS ONE* 5.
- Utne-Palm, A. et al. 2010. "Trophic Structure and Community Stability in an Overfished Ecosystem," *Science* 329.

Module III: Coastal Forests in Tanzania-Zanzibar

This module emphasizes the region's coastal forests and key plants and animals. Field trips on Unguja and Misali islands and in Dar es Salaam reinforce classroom learning. Presentations by custodians at Jozani-Chwaka Bay National Park, park rangers at Misali Island Marine Park, and faculty at the University of Dar es Salaam introduce coastal forests, especially mangrove forests. Lectures on diurnal and nocturnal wildlife highlight the characteristics and behaviors of the Red Colobus monkey (*Procolobus kirkii*) and robber crab (*Birgus latro*). Group discussions engage the various threats posed to forest ecosystems.

- Drew, M. et al. 2010. "A Review of the Biology and Ecology of the Robber Crab, *Birgus latro*," *Zoologischer Anzeiger* 249.
- Hogarth, P. 2007. *The Biology of Mangroves*. Oxford. (excerpts)
- Kamel, S. and N. Mrosovsky. 2006. "Deforestation: Risk of Sex Ratio Distortion in Hawksbill Sea Turtles," *Ecological Applications* 16.
- Struhsaker, T. 2010. *The Red Colobus Monkeys: Variation in Demography, Behavior, and Ecology of Endangered Species*. Oxford. (excerpts)
- Walsh, M. 2007. "Island Subsistence: Hunting, Trapping and the Translocation of Wildlife in the Western Indian Ocean," *Azania* 42.

Module IV: Rural and Urban Ecological Challenges and Solutions in Zanzibar

This module provides a critical introduction to the relationship between human communities and regional environments. In Dar es Salaam and on Pemba Island, lectures and excursions led by regional experts and custodians address rural and urban environmental challenges and solution strategies. Cases from coastal Tanzania address a range of issues: climate change, habitat destruction, biodiversity loss, human-wildlife conflict, invasive species, water pollution, solid waste disposal, the unequal distribution of resources, food security, strip mining, urban sprawl, and the spread of human and domestic animal diseases. This module also examines how specific challenges are being addressed and how they might be resolved.

- Basha, A. et al. 2008. "Zanzibar National Forest Resources Management Plan, 2008-20." Unpublished Report. (excerpts)
- Colbert-Sangree, N. and J. Suter. 2015. "Community Based Fishery Management within the Menai Bay Conservation Area: A Survey of the Resource User," *Marine Policy* 60.
- Deutsche Welle. 2015. *Zanzibar: Sustainable Marine Economy* (video).
- Houck, M. 2010. "In Livable Cities is Preservation of the Wild." In *The Routledge Handbook of Urban Ecology*. New York.
- Kombo, Y. 2010. "Zanzibar Biodiversity, Climate Change, and the Energy Crisis." Unpublished Report. (excerpts)
- Lecoutere, E. et al. 2015. "Sharing Common Resources in Patriarchal and Status-based Societies: Evidence from Tanzania," *Feminist Economics* 21.
- Pandu, A. 2016. "Waste Management of Disposable Diapers in Zanzibar." Unpublished Report. (excerpts)
- Walsh, M. 2009. "The Use of Wild and Cultivated Plants as Famine Foods on Pemba Island,

Zanzibar,” *Etude Océan Indien* 42-43. (excerpts)

- Yu, R. and D. Packard. 2012. “Assessing the Viability of Desalination for Rural Water Supply: A Case Study of Chwaka, Zanzibar,” *Cross-Cultural Communication* 8.

Module V: Complexities of Conservation and Natural Resource Management in Tanzania-Zanzibar

This module introduces students to the complexities of conservation and natural resource management in Zanzibar. Field trips to parks on Mafia, Chumbe, and Misali islands and at Mikumi National Park on the mainland of Tanzania engage national conservation efforts and private ecotourism ventures. Students consider the complexities and outcomes of case studies in natural resource management from multiple standpoints, including those of African communities. Students further learn about and discuss laws, the role of scientists, and the inner workings and politics of park development in East Africa and the Indian Ocean.

- Myers, G. 2016. “The Cityscape” [and, reference to ‘The Trees are Yours’]. In *Urban Environments in Africa*. Policy Press.
- Walley, C. 2004. *Rough Waters: Nature and Development in an East African Marine Park*. Princeton University Press. (excerpts)
- Walsh, M. and H. Goldman. 2012. “Chasing Leopards: Science, Witchcraft, and the Politics of Conservation in Zanzibar,” *Journal of Eastern African Studies* 6.

Course Readings

Reference articles and books (see above) are available from the program library and through SIT’s electronic library database. (NOTE: COURSE CONTENT, LECTURERS, READINGS, AND ASSIGNMENTS MAY BE MODIFIED. STUDENTS WILL BE NOTIFIED PROMPTLY OF ANY CHANGES.)

Course Grading Distribution

Participation in CE and NR Readings and Discussions	15%
Coastal Species Assignment	10%
Jozani Forest Paper and Presentation	20% (Paper - 15% / Pres. - 5%)
Coral Reef Conservation Plan and Presentation	25% (Paper - 20% / Pres. - 10%)
Final Exam	30%

Course Grading Scale

The grading scale is as follows:

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

Course Grading Criteria

All assigned grades take into account the students' special circumstances and challenges as foreigner. An "A" grade entails superior (not just "very good") performance in terms of accuracy, structure, and organization for assignments. An "A" grade refers to full attendance, punctuality, attentive listening, and active engagement in all language classes, field exercises, and other activities. It also means polite and respectful behavior. The frequency and quality of the students' participation is monitored and taken into account.

Disability Services: Students with disabilities are encouraged to contact Disability Services at disabilityservices@sit.edu for information and support in facilitating an accessible educational experience. Additional information regarding SIT Disability Services, including a link to the online request form, can be found on the Disability Services website at <http://studyabroad.sit.edu/disabilityservices>.

Student Expectations

Please refer to the SIT Study Abroad handbook for policies on academic integrity, ethics, warnings, probations, diversity, disability, sexual harassment, and the academic appeals process. In addition, students should refer to information in the Student Handbook and the Program Dossier distributed during orientation.