

Coastal Ecology and Natural Resource Management Seminar

ENVI-3000 (4 credits)

Tanzania: Zanzibar Coastal Ecology and Natural Resource Management

Course Description

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

Course Learning Outcomes

At the completion of the course, students will be able to:

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

Course Requirements

Lectures, field trips, excursions, and reflexive discussions help students to learn about coastal ecology, wildlife, and natural resource management in Zanzibar. The Academic Directors evaluate 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 five-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, wildlife, 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 coastal East Africa and the western Indian Ocean.

Readings:

Kueffer, C. and K. Kinney. (2017). “What is the Importance of Islands to Environmental Conservation?,” *Environmental Conservation* 44.

Prendergrast, 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. (2010). “Where there is no Nature.” In *Rough Waters: Nature and Development in an East African Marine Park*. Princeton University Press.

Module II: Coastal Marine Environments in Zanzibar

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

Readings:

Kiilu, B. et al. (2019). “Spatial Distribution, Seasonal Abundance and Exploitation Status of Shark Species in Kenyan Coastal Waters,” *African Journal of Marine Science*.

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.

Module III: Coastal Forests in Zanzibar

This five-day module emphasizes the region's coastal forests and key animals and plants. Field trips on Unguja Island reinforce classroom learning. Presentations by park custodians at Jozani-Chwaka Bay National Park and faculty from the University of Dar es Salaam introduce mangrove and terrestrial forests. Lectures on diurnal and nocturnal wildlife highlight the characteristics and behaviors, for instance of the Red Colobus monkey (*Procolobus kirkii*) and coconut crab (*Birgus latro*). Group discussions engage the various threats posed to select forest wildlife, including bats, amphibians, and understory birds.

Readings:

- Davenport, T. et al. (2017). "Zanzibar's Endemic Red Colobus *Procolobus kirkii*: First Systematic and Total Assessment of Population, Demography and Distribution," *Orxy*.
- Drew, M. et al. (2010). "A Review of the Biology and Ecology of the Robber Crab, *Birgus latro*," *Zoologischer Anzeiger* 249.
- Saunders, F. (2011). "It's Like Herding Monkeys into a Conservation Enclosure: The Formation and Establishment of the Jozani-Chwaka Bay National Park, Zanzibar, Tanzania," *Conservation and Society* 9.
- Rödder, D et al. (2010). "Environmental Niche Plasticity of the Endemic Gecko *Phelsuma parkeri* Loveridge 1941 from Pemba Island, Tanzania: A Case Study of Extinction Risk on Flat Islands by Climate Change," *Tropical Zoology* 23.
- Walsh, M. (2007). "Island Subsistence: Hunting, Trapping and the Translocation of Wildlife in the Western Indian Ocean," *Azania* 42.

Module IV: Complexities of Conservation and Natural Resource Management in Zanzibar

This eight-day module provides a critical introduction to the complexities of conservation and natural resource management in Zanzibar. Cases from Unguja Island and Pemba Island address a range of issues: park management, eco-tourism, habitat destruction, biodiversity loss, human-wildlife conflict, climate change, and the spread of diseases. Students consider the complexities and outcomes of case studies in natural resource management from multiple standpoints, including those of coastal African communities. Students further learn about and discuss laws, the role of scientists, the inner workings and politics of park development, and how specific challenges are being addressed in East Africa and the Indian Ocean.

Readings:

- Darling, E., et al. (2019). "Socio-environmental Drivers Inform Strategic Management of Coral Reefs in the Anthropocene." *Nature Ecology & Evolution*.
- Myers, G. (2016). "The Cityscape" [and, reference to 'The Trees are Yours']. In *Urban Environments in Africa*. Policy Press.
- 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.

Assignments and Evaluation

Assessment

- Quizzes - 10%
- Coastal Species Assignment - 15%
- Coral Reef Conservation Plan and Presentation - 30%
- Final Exam – 35%
- Participation - 10%

Attendance and Participation

Due to the nature of SIT Study Abroad programs, and the importance of student and instructor contributions in each and every class session, attendance at all classes and for all program excursions is required. Criteria for evaluation of student performance include attendance and participation in program activities. Students must fully participate in all program components and courses. Students may not voluntarily opt out of required program activities. Valid reasons for absence – such as illness – must be discussed with the academic director or other designated staff person. Absences impact academic performance, may impact grades, and could result in dismissal from the program.

Late Assignments

SIT Study Abroad programs integrate traditional classroom lectures and discussion with field-based experiences, site visits and debriefs. The curriculum is designed to build on itself and progress to the culmination (projects, ISP, case studies, internship, etc.). It is critical that students complete assignments in a timely manner to continue to benefit from the sequences in assignments, reflections and experiences throughout the program. Example: Students may request a justified extension for one paper/assignment during the semester. Requests must be made in writing and at least 12 hours before the posted due date and time. If reason for request is accepted, an extension of up to one week may be granted at that time. Any further requests for extensions will not be granted. Students who fail to submit the assignment within the extension period will receive an 'F' for the assignment.

Course 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

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.

Program Expectations

- 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 on schedule, printed, and done accordingly to the specified requirements. This will help ensure that your assignments are returned in a timely manner.
- Ask questions in class. Engage the lecturer. These are often very busy professionals who are doing us an honor by coming to speak.
- Comply with academic integrity policies (no plagiarism or cheating, nothing unethical).
- Respect differences of opinion (classmates', lecturers, local constituents engaged with on the visits). You are not expected to agree with everything you hear, but you are expected to listen across difference and consider other perspectives with respect.
- Storing Your Work: Keep several copies of your work as back up and keep one copy accessible to you through an online forum, such as an attachment in your email, the course learning management system, or cloud-based storage. This way your work will always be available to despite technical issues. Lost files, deleted drives, or computer crashes are not excuses for late, missing work.
- Personal Technology Use: Cell phones and other personal electronics can be used for taking notes and other class activities. Off-task usage is not acceptable. You may be marked as absent for habitually using them for something other than classroom activities.
- Course Communication: Course documents and assignments will be posted on the learning management system, Canvas. Although the course calendar provides a broad overview and the general sequence of work and assignments for the course, what we accomplish in class will vary, and revisions to the calendar will be posted at the course site. You will need to check the course site regularly. You are responsible for letting me know about any network-related problems that prevent you from accessing or submitting assignments.
- Content Considerations: Some texts and activities you will encounter in this course delve into sensitive topics that may be emotionally and intellectually challenging. Our classroom is a space where we can engage with challenging ideas, question assumptions, and navigate difficult topics with respect and maturity. As possible, I will flag content and activities that are especially graphic or intense, so we are prepared to address them soberly and sensitively. If you are struggling to keep up with the work or participate in the course because of the nature of the content and activities, you should speak with me and/or seek help from counseling services.
- Classroom recording policy: To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.

SIT Policies and Resources

Please refer to the [SIT Study Abroad Handbook](#) and the [Policies](#) section of the SIT website for all academic and student affairs policies. Students are accountable for complying with all published policies. Of particular relevance to this course are the policies regarding: academic integrity, Family Educational Rights and Privacy Act (FERPA), research and ethics in field study and internships, late assignments, academic status, academic appeals, diversity and disability, sexual harassment and misconduct, and the student code of conduct.

Please refer to the SIT Study Abroad Handbook and SIT website for information on important resources and services provided through our central administration in Vermont, such as [Library resources and research support](#), [Disability Services](#), [Counseling Services](#), [Title IX information](#), and [Equity, Diversity, and Inclusion](#) resources.