

## Environmental Research Methods and Ethics

ENVI 3500 (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 courses develop and change over time to take advantage of unique learning opportunities, actual course content varies from semester to semester.

### Course Description

The Environmental Research Methods and Ethics Seminar prepares students to learn and research effectively in a nontraditional, cross-cultural environment. It provides experience with field study techniques, both ecological and anthropological, and facilitates students' development of an in-depth and ethical Independent Study Project. Course content emphasizes understanding cultural difference and the human-environment context as fundamental to knowing ecosystems and society through fieldwork. The course teaches field methods and skills: marine and terrestrial field survey and observation, use of orienteering tools, digital documentation, and interviewing. Also engaged are record keeping, statistical analysis, interpretation, and presentation of primary data linked to environments and society. Through excursions and field assignments, the course introduces and critically employs scientific and social scientific methods appropriate to the program theme. The course further introduces the Institutional Review Board (IRB) process necessary for student research clearance and adequately prepares students to develop a feasible and ethical Independent Study Project (ISP).

### Course Learning Outcomes

At the end of the 60-hour (4 credits; 2 hrs. of fieldwork = 1 hr. of class) Environmental Research Methods and Ethics Seminar (ERME), students will be able to:

- Show informed awareness of society and of the practicalities of field research in Zanzibar, including sustainability and reciprocity;
- Understand core natural and social scientific concepts;
- Demonstrate key methods for field study, including the collection of primary data in ecology, society, and natural resources management;
- Demonstrate skills and the use of essential tools for orienteering, digital documentation (e.g. of climate change evidence), and interviewing;

- Formulate a research question and develop a scientific research design;
- Apply appropriate statistics to analyze and represent data;
- Show familiarity with the IRB process and ethically-sound field research;
- Demonstrate a critical understanding of past student ISPs and local field studies; and,
- Develop an appropriate, feasible, sound, and focused proposal for an Independent Study Project (ISP)

## Course Requirements

Students participate in activities and reflexive discussions to learn the methods and ethics appropriate to the theme of ecology and natural resource management in Zanzibar. In their Independent Study Project (ISP) proposal and presentation, students apply the concepts, methods, and skills learned in the Research Methods and Ethics course. The Academic Director evaluates student participation and assignments based on timeliness, completeness, depth of thought, clarity of organization, application of methods and skills, quality of primary data, depth of analysis and interpretation, coherence of argument, and ethical practice.

## Course Program

This course takes the form of topical modules that incorporate student activities and assignments:

### Module I: Context, Cultural Adjustment, and Experiential Learning

This module introduces students to field research in a study abroad context in eastern Africa and the western Indian Ocean. Students consider representations of African environments and communities and the ways in which standpoints shape approaches to Africans, ecosystems, and research. Furthermore, the module introduces students to strategies for effective living in Zanzibar and mainland Tanzania, including norms of hygiene, dress, gender, age, and power. Students learn to appreciate their positionality within SIT's experiential pedagogy.

- Adams, J. and T. McShane. 1997. *The Myth of Wild Africa: Conservation without Illusion*. University of California Press. (excerpts)
- Tharoor, I. 2009. "How Somalia's Fishermen became Pirates," *Time* (September 18).
- Walley, C. 2010. *Rough Waters: Nature and Development in an East African Marine Park*. Princeton University Press. (excerpts)

### Module II: Coastal Marine Environmental Research Methods

This module introduces students to essential marine environmental research concepts and methods off of Unguja Island. Two excursions with Dr. Mohammed Suleiman in Unguja facilitate the collection of primary marine data in marine niches. Activities and discussions emphasize logistics, field equipment, field inventories of biodiversity, census techniques of animals, and evidence of recent climate change and other environmental impacts. Digital tools, such as GoPros and iPads, will be used to gather field data, especially as it relates to evidence of climate change and environmental impacts. Teams of students collect, analyze, and represent primary field data on invertebrates, fish, and other marine life.

- English, S. et al. 1997. *Survey Manual for Tropical Marine Resources*. Australian Institute of Marine Science. (excerpts)
- Milroy, S. 2015. *Field Methods in Marine Science: From Measurements to Models*. Garland Science. (excerpts)
- Richmond, M. 2002. *A Field Guide to the Seashores of Eastern Africa and the Western Indian Ocean Islands*. SAREC. (read and skim, as assigned)

### Module III: Coastal Terrestrial Environmental Research Methods

This module introduces students to essential terrestrial coastal environmental research concepts and methods in Unguja and Dar es Salaam. Excursions to Jozani-Chwaka Bay National Park and Pugu Forest facilitate the collection of primary data in mangrove forests and hardwood tropical forests. Activities and discussions emphasize logistics, field equipment, orienteering, field inventories of biodiversity, census techniques of plants and animals, behavioral studies, and evidence of climate change and recent environmental impacts. Teams of students collect, analyze, and represent primary field data on mangrove forests and Red Colobus monkeys. Students also engage reptiles and amphibians, coconut crabs, and land snails.

- Ellison, J. 2015. "Vulnerability Assessment of Mangroves to Climate Change and Sea-Level Rise Impacts," *Wetlands Ecology and Management* 23.
- Ford, E. 2000. *Scientific Methods for Ecological Research*. Cambridge University Press. (excerpts)
- Struhsaker, T. 2010. *The Red Colobus Monkeys: Variation in Demography, Behavior, and Ecology of Endangered Species*. Oxford. (excerpts)

### Module IV: Conventional Social Science Research Methods and Ethics

This module introduces students to social science research methods in Unguja. An excursion to Mangapwani facilitates the collection of primary data on a coastal fishing community. The core methods studied include participant-observation and structured and unstructured interviewing. The Creative Solutions program - an NGO - at Mangapwani engages people and logistics, field equipment, field notes, translators, project scheduling, and the collection of demographic, cultural, and behavioral data. Teams of students collect, analyze, and represent primary field data on individuals, families, and the wider Mangapwani community. The group considers the positionality and privilege of foreign researchers and the interests of diverse stakeholders in social science research. Also addressed are the ethics surrounding researcher and community identities, dress, language use, and reciprocity.

- Bernard, H. 2012. *Social Research Methods: Qualitative and Quantitative Approaches*. Sage. (excerpts)
- Jasanoff, S. 1996. "Is Science Socially Constructed, and Can It Still Inform Public Policy?," *Science and Engineering Ethics* 2.
- Reyes-García, V. et al. 2016. "Local Indicators of Climate Change: The Potential Contribution of Local Knowledge to Climate Research," *WIREs Climate Change* 7.
- Setel, P. 2000. *A Plague of Paradoxes: AIDS, Culture, and Demography in Northern Tanzania*. (Chapter I excerpts)

### Module V: Human-Environment Interfaces: Ethics in Human Resources Use, Health, and Development

This module is the first of two modules that introduces students to the relationship between humans and regional environments. At the University of Dar es Salaam (on mainland Tanzania) and on Pemba Island, excursions engage rural and urban environmental challenges and solutions in Tanzania. Cases include, but are not limited to climate change evidence and mitigation, wildlife management, food-crop and cash-crop farming, salt mining, urban sprawl, solid waste disposal, fresh water use, alternative energy strategies, and human and environmental health. This module also addresses how the human-environment interface can be better addressed by posing scientific questions, formulating appropriate research designs, and practicing more sustainably in eastern Africa and the Indian Ocean.

- Guedes, J. et al. 2016. "Twenty-first Century Approaches to Ancient Problems: Climate and Society," *Proceedings of the National Academy of Sciences* 113.
- Holland, J. and J. Campbell. 2005. *Methods in Development Research: Combining Qualitative and Quantitative Approaches*. ITDG. (excerpts)

- Myers, G. 2016. *Urban Environments in Africa: A Critical Analysis of Environmental Politics*. Policy Press. (excerpts)

**Module VI: Human-Environment Interfaces: Ethics in Ecotourism, Natural Resource Management, and Conservation**

This module is the second of two modules that introduces students to the relationship between humans and regional environments. On Mafia, Chumbe, and Misali islands, and in Mikumi Park in interior Central Tanzania, excursions to unique localities touch on the successes and challenges of national parks as well as private ecotourism ventures. This module considers such arrangements from multiple standpoints, including those of different African communities. The group further discusses, in a critical manner, relevant laws, governance of conservation entities (public and private), roles of local and foreign scientists, and the inner workings and politics of parks development in the region.

- Holt, F. 2005. "The Catch-22 of Conservation: Indigenous Peoples, Biologists, and Cultural Change," *Human Ecology* 33.
- Nelson, F. et al. 2007. "The Evolution and Reform of Tanzanian Wildlife Management," *Conservation and Society* 5.
- Nordlund, L. et al. 2013. "Chumbe Island Coral Park - Governance Analysis," *Marine Policy* 41.
- Walley, C. 2004. *Rough Waters: Nature and Development in an East African Marine Park*. Princeton University Press. (excerpts)

**Module VII: Successful and Ethical ISP Proposal**

This module further enables students in the selection of an ISP topic, a key question, and appropriate field methods. It stresses the design, writing, and presentation of a successful ISP proposal. Moreover, it prepares students for challenges in the field and ensures the environmental and social ethics of project proposals.

**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**

Appropriate Behavior and Dress in Zanzibar	10%
Participation in Methods-Ethics Readings + Discussions (Quizzes)	10%
D-I-E Journal Entries	10%
Suleiman Assignments	20%
Mangapwani Paper and Presentation	20% (Paper - 12.5% / Pres. - 7.5%)
ISP Proposal and Presentation	30% (Proposal - 20% / Pres. - 10%)

**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](mailto: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.

If the research has been funded by a U.S. government agency, or if the student plans to take this research back to the home school or community for further dissemination, then the student may be required to follow standards from their home institutions in addition to the Local Review Board and those of the Office for Human Research Protections, with which SIT is registered. For applications that require a full review, the academic director will forward any questions or concerns that cannot be resolved at the program level (through the Local Review Board) to SIT's Institutional Review Board.