

Environmental Research Methods and Ethics

ENVI-3500 (3 credits)

Tanzania: Zanzibar Coastal Ecology and Natural Resource Management

This syllabus is representative of a typical 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 Research Methods and Ethics Seminar prepares students to learn and conduct research effectively in a non-traditional environment. It provides experience with environmental and wildlife field study techniques and facilitates students' development of a well-designed Independent Study Project. Course content emphasizes understanding the ecosystems, wildlife, and human-environment context as fundamental to fieldwork. The course teaches environmental field methods, skills, and tools: maps, compasses, and orienteering; environmental (terrestrial and marine) survey; behavioral observation of a range of wildlife using a wide range of techniques include animal count, focal and scan sampling, pitfall and camera trapping, mist-netting and point count, among others. On anthropology, the course teaches field methods that include interviewing techniques, focal group discussion, and participatory approaches. Students also engage with record keeping, statistical analysis, interpretation, and presentation of primary data linked to environments and wildlife. Through excursions and field assignments, the course introduces and critically employs scientific methods appropriate to the program theme. The course also explains 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 Environmental Research Methods and Ethics Seminar (RME), students will be able to:

- Show informed awareness of environments, species, and the practicalities of field research in Tanzania, including reciprocity with communities;
- Formulate a research question and develop a scientific research design;
- Demonstrate skill in the use of essential field tools, e.g. for orienteering;
- Apply key field methods to collect primary data in ecology, society, and natural resource management;

- 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, focused, sound, and feasible 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, wildlife, and natural resource management in Tanzania. For their Independent Study Project (ISP) proposal and presentation, students apply the methods, skills, and tools learned in the Research Methods and Ethics course. The Academic Directors evaluate 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 1: Human-Wildlife Interface in Tarangire-Manyara Ecosystem

This module introduces students to social science concepts and methods within Tarangire-Manyara ecosystem covering about 30,000 square kilometers. Field trips and excursions facilitate the collection of primary data in the context of human-wildlife interactions. Activities and discussion emphasize logistics, data collection tools and reviews of survey techniques. Students use survey techniques to record primary data on human-wildlife interactions. Students are split into Field Study Teams (FST) to collect, analyze, and present data on marauding animals, human demographics, social income generative activities, farming practices, mitigation measures, community perceptions toward wildlife conservation, and resource mapping. Presentations of the findings are made to the broader group.

Readings:

Clearly, L. M. (2013). "Gathering data while respecting participants." *In Doing Cross-Cultural Research in Social Settings*. Palgrave Macmillan.

DeWalt, K.M. and B.R. DeWalt. (2011). *Participant Observation: A Guide for Fieldworkers*. Altamira.

Glesne, C. (2011). *Becoming Qualitative Researchers: An Introduction*. Pearson.

Holland, J. and J. Campbell. (2005). *Methods in Development Research: Combining Qualitative and Quantitative Approaches*. ITDG Publishing.

Kumar, R. (2011). *Research Methodology: A Step by Step for Beginners*. Sage.

Kumar, R. (2011). *Becoming Qualitative Researchers: An Introduction*. Pearson.

Yin, R.K. (2014). *Case Study Research, Design, and Methods*. Sage.

Sinclair, A., et al., eds. (2015). *Serengeti IV: Sustaining Biodiversity in a coupled human-natural system*, Chicago: University of Chicago Press.

Module 2: Wildlife Interactions and Behavioral Ecology

This module is conducted in Tarangire-Manyara ecosystem, Ngorongoro Crater Authority Area and Serengeti National Park. It introduces students to natural science concepts and methods. Field trips and excursions facilitate the collection of primary data on animal behavior, species distribution, prey-predator interactions, and the vegetation mosaic. Students employ a range of techniques, including focal and scan sampling, animal counts, and camera traps to record data on wildlife interactions and animal environments. In Tarangire NP and Ngorongoro Conservation area, students are split into FSTs (i.e. ruminants, non-ruminants, and birds) to observe and gather data and then present findings to the broader group. While in Serengeti National Park, each FST designs a “mini-ISP” around one of the basic concepts of ecology – social organization as it relates to habitat. Each FST conducts a background review, devises a study question with predictions, gathers primary data, and analyzes and presents findings to the group in a FST oral presentation.

Readings:

Chris, S. and S. Tilde. (1994). *A Field Guide to the Tracks and Signs of Southern and East African Wildlife*. Southern Book Publishers.

Estes, D.R. (1991). *Behavior Guide to African Mammals*. University of California Press.

Krebs. J. and N. Davies. (1997). *Behavioral Ecology, an Evolutionary Approach* (4th edition). Blackwell.

Michael B. (1987). *Collings Photo Guide: Wildflowers of East Africa*. William Collins & Sons.

Mike. P., G. Charles, and W. Alan. (2004). *Field Guide to Insects of South Africa* (Updated 2004). Craft Print.

Mbuya L.P., H.P. Msanga, C.K. Ruffo, B. Ann, and T. Bo. (1994). *Useful Trees and Shrubs for Tanzania Identification*. Regional Soil Conservation Unit.

Stevenson. S. and J. Fanshawe. (2015). *Birds of East Africa*. Bloomsbury.

Sprawls. S., K. Howell, R. Drewes, and J. Ashe. (2004). *A Field Guide to the Reptiles of East Africa*. A&C Black.

Sinclair A.R.F. and A. Peter. (1995). *Serengeti II: Dynamics, Management, and Conservation of an Ecosystem*. University of Chicago.

Sinclair, A.R.F., C. Packer, S. Mduma, and J. Fryxell J. (2008). *Serengeti III: Human Impacts on Ecosystem Dynamics*. University of Chicago Press.

Sinclair. A.R.F., K. Metzger, S. Mduma, and J. Fryxell. (2015). *Serengeti IV: Sustaining Biodiversity in a Coupled Human-Natural System*. University of Chicago Press.

Module 3: Coastal Marine Wildlife Environmental Research Methods

This module introduces students to essential marine environmental research concepts and methods in the near shore marine settings of Unguja Island. Excursions facilitate the collection of primary marine data in-context. Activities and discussions emphasize logistics,

field equipment, marine biodiversity inventories, census techniques for marine animals, and evidence of environmental impacts to wildlife and ecosystems. Students use traditional techniques and tools to record primary field evidence. Student teams analyze and represent data on corals, fish, echinoderms, mollusks, and other marine life.

Readings:

Braulik, G., et al. (2017). "Cetacean Rapid Assessment: An Approach to Fill Knowledge Gaps and Target Conservation across Large Data Deficient Areas," *Aquatic Conservation*.

English, S. et al. (1997). *Survey Manual for Tropical Marine Resources* (2nd Edition). Australian Institute of Marine Science.

Milroy, S. (2015). *Field Methods in Marine Science: From Measurements to Models*. Garland.

Richmond, M. (2002). *A Field Guide to the Seashores of Eastern Africa and the Western Indian Ocean Islands*. SAREC.

Module 4: Coastal Forest Wildlife Environmental Research Methods

This module introduces students to essential coastal forest environmental research methods. An excursion to Jozani-Chwaka Bay National Park and Biosphere Reserve on Unguja Island facilitates the collection of primary data on wildlife in both terrestrial and mangrove forests. Activities and discussions emphasize logistics, field equipment, orienteering, terrestrial biodiversity inventories, census techniques for terrestrial animals, behavioral studies, and evidence of environmental impacts to wildlife and ecosystems. Teams of students record primary field evidence and analyze and represent data on Red Colobus monkeys (*P. kirkii*), frogs, and understory birds.

Readings:

Struhsaker, T. (2010). *The Red Colobus Monkeys: Variation in Demography, Behavior, and Ecology of Endangered Species*. Oxford.

Vonesh, J., et al. (2010). "Rapid Assessments of Amphibian Diversity." In *Amphibian Ecology and Conservation: A Handbook of Techniques*. Oxford.

Stevenson, T, and J. Fanshawe. (2020). *Birds of East Africa: Kenya, Tanzania, Uganda, Rwanda, Burundi*. Helm.

Module 5: Human-Environment Interface - Natural Resource Management, Ecotourism, and Wildlife Conservation in the Zanzibar Archipelago

This module emphasizes the relationship among humans, regional environments, and coastal wildlife. On Chumbe Island (off of Unguja Island) and Misali Island (off of Pemba Island), excursions address the successes and challenges of parks and private ecotourism ventures from multiple stakeholder standpoints, including those of coastal African communities. The group also studies relevant laws and policies, the governance of conservation entities (e.g., parks), the roles of local and foreign scientists, and inner workings and politics of parks development in the region. Students further consider the implications and ethics of research and reciprocity in East Africa.

Readings:

- Agrawal, A., and C. Gibson. (1999). "Enchantment and Disenchantment: The Role of Community in Natural Resource Conservation," *World Development*.
- Chumbe Island Coral Park. (2017). "Chumbe Island: 3rd Ten Year Management Plan for Chumbe Island Coral Park." Unpublished Report.
- Khalid, F. (2002). "Islam and the Environment." In *Encyclopedia of Global Environmental Change*. Wiley and Sons.
- Shilabukha, K. (2018). "Navigating the Sea Space: The Nature and Significance of Giriama Indigenous Knowledge on Marine Resources," *Western Indian Ocean Journal of Marine Science* 17.
- Walley, C. (2010). *Rough Waters: Nature and Development in an East African Marine Park*. Princeton University Press.
- West, J. and R. Salm. (2003). "Resistance and Resilience to Coral Bleaching: Implications for Coral Reef Conservation and Management," *Conservation Biology*.

Course Readings

Reference articles and books (see above) are available from the program library and through SIT's electronic library database.

Course Grading Distribution

Quizzes and Participation in Readings and Discussions - 20%

Terrestrial Wildlife Methods in Arusha - 25%

Marine and Terrestrial Wildlife Methods in Zanzibar - 25%

ISP Proposal and Presentation - 30%

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.

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.