ENVS 40: Natural Resources and Environmental Issues in Southern Africa

FALL 2018 Syllabus

Introduction: ENVS 40 is one of three courses that constitute the academic curriculum for the ENVS Foreign Study Program in Southern Africa. In this course, we will apply a shared framework to explore both social and natural systems, and the interactions them. As a part of this process we will focus on several different models of environmental use, management and conservation. Prominent models include: (1) community-based natural resource management, (2) protected areas, (3) integrated catchment management, and (4) highly extractive, economically driven use of the environment. To explore these models we will be staying at the following sites in South Africa:

September 12-16. Johannesburg and Soweto: We will spend the first four days of the program in Soweto, which is an area of historical importance due in large part to the Soweto uprising. Much of the focus at this site will be learning (1) SA history, (2) the current SA approach to environmental conservation, and (3) the theoretical background needed to complete your ENVS 40 journal entries (see below). We will go on several fieldtrips, most notably to the Apartheid museum.

September 16-26. Matatiele is a midsized town just south of the mountain nation of Lesotho. In Matatiele we will be working with several local organizations that are part of the Umzimvubu Catchment Partnership Programme (https://umzimvubu.org/about/), or UCPP. The goal of this partnership is to coordinate the management of human-environment interactions at the watershed scale. Students will work in groups with watershed partners to address local environmental challenges, including overgrazing and invasive species. There will also be a homestay during this part of the trip.

September 26 -29. Wakkerstroom. We will have a few days "off" on our way up to Wits Rural to relax and take care of academic assignments in the town of Wakkerstroom, which is roughly halfway to Wits Rural from Matatiele.

September 29-October 6. The Wits Rural Facility (WRF) (https://www.wits.ac.za/campus-life/arts-and-culture/wits-rural-facility/) is a rural research campus of the University of Witwatersrand, one of the largest universities in SA. Wits Rural is just down the road from the Timbavati private game reserve, but is a very different type of organization, with research projects on environmental change and threats to biodiversity, as well as sustainable rural livelihoods. Much of this research is done in collaboration with local communities. During our stay at Wits Rural we will be collaborating with a local NGO, Nourish (http://www.nourishnpo.co.za/who-we-are/).

October 6-13. Timbavati private game reserve (http://timbavati.co.za/) is located in the northeastern section of SA, not far from Mozambique and is contiguous with the well-known Kruger National Park. At Timbavati students will learn about landscape ecology as well as the behavior of important local species, notably elephants and termites. We will engage with employees of the reserve and spend a day with them tagging a rhino, and another day learning bush skills. Local social issues such as rhino and elephant poaching will also be discussed, as will the general model of nature reserves for environmental conservation.

Itineraries for each site will be discussed when we arrive at the site.

Social structure of the program:

The quality of the program is something that we all share, and all need to contribute to. In this way it is a "public good", or a shared resource. To help us provide this for our group, this section introduces the interrelated concepts of positions, rights and responsibilities, which will be an important part of our shared intellectual framework on this program. They also form the basis for how we will interact with each other and local partners on this program.

Positions: individuals in social systems are assigned to various positions, and these positions confer rights and responsibilities. There are three positions on this program, each with its own set of rights and responsibilities.

Everyone:

- Should communicate respectfully with other individuals. Conversely everyone has the right to be respected. This becomes more important when there are disagreements.
- Should try to productively engage with others and their own feelings as we all have new experiences on the program.
- Has the right to feel safe, physically and socially.

Dartmouth students:

- Have the right to express themselves and their thoughts and concerns to programmatic leaders and local partners.
- Have the right to a rigorous academic experience, and they have the responsibility to actively contribute to this experience, and to ***coproduce*** their education.
- Should avoid excessive and unnecessary risks. There is no individual risk on this program: your decisions affect everyone else in the group.

Programmatic leaders: Programmatic leaders make up the team that will be working with you across sites. This includes myself, Clare Doherty (ENVS 40 TA) Bianca Fizzotti, Eric Ndlovu, and Aimee Ginsburg.

- Leaders have the right/responsibility to make decisions that maintain the safety of program participants, and that are in the best academic and logistical interests of the program. At times this may require that decisions need to override the preferences of individuals in the group.

Local partners: These are individuals and organizations that our FSP formally engages with on the program in each of the field sites. The most prominent local partners are Lara Allen, the NGOs and individuals that make up the Umzimvubu Catchment Partnership Programme (UCPP), Wayne Twine and staff at Wits Rural, Sarah Bergs, the director of Nourish and her staff, and Andreas and his staff at Bateleur in Timbavati.

- Local partners have the right/responsibility to make decisions that maintain the safety of program participants, the integrity of their organizations, and that are in the best academic and logistical interests of the program.

Assignments:

There will be three main components to your grade in this course, totaling 100 points.

1) Field journal entries (30 points each, 60 points)

Students will be required to apply a standard framework to unpack the systems we see in (1) Matatiele, and (2) Wits Rural and Timbavati. These assignments will each be recorded in a field journal that you will use throughout the course.

2) Matatiele project reports and presentations (30 points)

During our time in Matatiele, groups of students will work with local organizations associated with the Umzimvubu Catchment Partnership Programme to conduct research projects. Each of these projects will be conducted with a local partner to help address local environmental issues such as cattle grazing and erosion, invasive species, alternative livelihoods and ecotourism, and catchment-scale collaboration. Each student group will produce a report and a presentation that they will deliver at the end of our time at the site. Each presentation and report should contain the following information: (1) a description of the goals of the project and the local partner with which you worked; (2) a summary of the activities conducted with the local partner; (3) a summary of results (findings or goals accomplished); and (4) a conclusion and reflection on how the project could move forward given the opportunities and challenges you have identified during your time on the project. Reports are expected to be roughly 6-8 pages single-spaced (this will likely include graphics).

3) Participation (10 points)

Throughout the course, students will be expected to engage with (1) each other, (2) the trip leaders, and (3) local partners in a mature and respectful way to facilitate learning and continue to build important relationships for the program. I understand that everyone has better and worse days, but much of the value of this program comes from your immersion in a set of fascinating and complex environments, so I view this as a very important part of the course. If during the program you feel like something is preventing you from engaging the way you would like, communicate this with me or another leader sooner rather than later so that we can make the needed adjustments.

Schedule of assignment due dates for ENVS 40 and 42:

September 26: Matatiele final group reports and presentations due

September 27: Submit ENVS 42 journals to Clare by 12pm

September 28-29: Meet with Clare to receive feedback on ENVS 42 journals

September 30: Submit ENVS 40 journals to Michael by 9am

Tuesday 2: Submit first annotation for ENVS 42 to Clare and Doug by 3pm

October 13: Submit second ENVS 40 journal to Michael

October 15: Submit second annotation for 42 to Doug

Framework for studying human-environment interactions:

This framework is based on the book *Pursuing Sustainability.* Answer the following questions, organized by the chapters of this book, making explicit reference to the basis for your inferences and conclusions in the form of your personal observations, discussions with local actors, and the assigned readings. When referring to readings, please use parenthetical citations: "statement (author DATE)." You **do not** have to answer these questions in the order in which they appear below, and you **do not** have to address every question in your journal entry. You can choose to dedicate more space to some questions than others.

Chapter two: actors, assets, and ecosystem services

2. Use the framework depicted in figure 2.1 one page 16 to answer the following questions about the significant actor groups in this social-environmental system:

2.1. How would you characterize their capital assets as summarized in table 2.1 on page 17 (human, natural, manufactured, knowledge, and social capital)?

2.1.1. How do these assets relate to or influence each other? Does a group use one type of capital to obtain another?

2.2. How would you characterize the well-being of each actor group? (Material needs, health, education, opportunity, community, security)?

2.3. What connections do you see between each actor group's capital assets and their well-being? In addressing this question, consider the ecosystem services listed in table 2.2 on page 34 (provisioning, regulating, cultural).

Chapter three: system dynamics

3. Answer the following questions about this system:

3.1. Boundaries of the system. "To analyze and explain what's happening in and to manage a particular system, one needs to define the system" (page 56). How would you describe the boundaries of the system that contains the actor groups you just discussed?

3.2. Feedbacks, regimes and traps

3.2.1. What positive or negative feedbacks do you perceive in this system? Consider both social and ecological feedback loops.

3.2.2. How has the social and ecological history of this system affected its current path?

3.2.3. Do you see evidence of or the potential for tipping points (thresholds) in this system?

3.3. Externalities and invisibilities: how do actor groups affect other groups over time and space?

3.4. How would you characterize the resilience or vulnerability of the system, and/or of particular social or ecological components (ecosystems, actor groups), to any likely disturbances?

Chapter four: collective action and governance

4. Answer the following questions to further develop your understanding of the actors in this system

4.1. Collective action:
- 4.1.1. What collective action problems do you see in this system; (situations where individual-level short-term incentives are misaligned with group-level long-term incentives)?
- 4.1.2. Do you see any negative or positive externalities associated with these problems? This could relate directly to your response to question 3.3.
- 4.1.3. Are any of these problems associated with the (over)use of a common-pool resource?
- 4.1.4. Are these problems being addressed? Why or why not? (think about free-riding).

4.2. Actors and agency:
- 4.2.1. Try drawing a diagram of the relevant actors in the system and their relationships. Include an explanation of this drawing.
- 4.2.2. Are there actors or actor groups with more "agency" than others?
- 4.2.3. Power asymmetries: do some actors exert influence over the agency of others?
- 4.2.4. Are there important information asymmetries across actor groups?
- 4.2.5. Do you see any sustainability leaders in this system (chapter 6)? If so, describe them.
- 4.2.6. Are there important boundary organizations in the system (figure 5.1 on page 126)? If so, describe them.

4.3. Governance:
- 4.3.1. What is the process by which rules and norms are created that govern actors' behavior?
- 4.3.2. How do these rules and/or norms affect important social or ecological outcomes by changing the incentives that actors face, and therefore their actions?
- 4.3.3. Adaptive governance: are actors able to learn from past efforts and failures?
- 4.3.4. Are any of Ostrom's design principles relevant in this system?

Chapter five: knowledge and action

5. Based on your current understanding of the system:

5.1. What barriers to, and opportunities for, positive change do you see in this system?

5.2. If you were to give advice to actors in the system:
- 5.2.1. How would you address the issues of saliency, credibility and legitimacy? (Box 5.1 on page 107).
- 5.2.2. How would you address the four challenges identified in this chapter (collaboration, systems thinking, adaptation, recognizing politics).

Chapter six: reflections

6. Reflect on your engagement with this system by considering the following questions:

6.1. In focusing on individual trees (actor groups, issues, places) do you feel you have better understood the forest (the larger system)? Or has focusing on one element hidden the forest from you?

6.2. Additional knowledge:
- 6.2.1. Is there an important dynamic in this site that you don't think is captured in the perspective we have adopted, and the readings assigned thus far?
- 6.2.2. What additional research (basic, applied, use-inspired) could be done here?

6.3. Are there contradictions that you perceive in the system, or in your own thinking about this system?

6.4. In your efforts to make sense of this system, how have you relied on your own mental models, and on just-so stories, or intuitive but untested narratives? What assumptions may be embedded in your interpretation of this site?

Readings:

Johannesburg and Soweto:

Cousins, B. 2016. Land reform in South Africa. Can it be Saved? Nelson Mandela Foundation.

Noah, T., 2016. *Born a Crime: Stories from a South African Childhood.* Random House Publishing Group.

Matson, P., Clark, W. and Andersson, K. 2016. *Pursuing Sustainability.* Princeton University Press.

Matatiele:

Scheffer, M., S. Carpenter, J. A. Foley, C. Folke, and B. Walker. 2001. Catastrophic shifts in ecosystems. Nature 413: 591–596.

Redford et al. 2015. Mainstreaming biodiversity: conservation for the twenty-first century. *Frontiers in Ecology and Evolution* 3: 1-7.

Savory, A. 2015 - Cows can save the world. *Range Magazine*.

Matatiele local municipality introduction document.

Environmental and Rural Solutions and Conservation South Africa. 2011. Umzimvubu Catchment Overview.

Wits Rural:

Annecke, W. and Masubelele, M. 2016. A Review of the Impact of Militarisation: The Case of Rhino Poaching in Kruger National Park, South Africa. *Conservation and Society* 14(3): 195-204.

Findlay, S.J., Twine, W.C., 2018. Chiefs in a Democracy: A Case Study of the "New" Systems of Regulating Firewood Harvesting in Post-Apartheid South Africa. *Land* 7: 35

Timbavati:

Biggs, D., F. Courchamp, R. Martin, and H. P. Possingham. 2013. Legal trade of Africa's rhino horns. *Science* 339(6123): 1038–1039.

Havemann, B. 2017. Sustainable utilization: the fight between the pro and anti-hunting fraternities ignores the primary threats to Africa's biodiversity.

Kreuter, U., M. Peel, and E. Warner. 2010. Wildlife conservation and community-based natural resource management in southern Africa's private nature reserves. *Society and Natural Resources* 23(6): 507–524.

Sankaran et al. 2005. Determinants of Woody Cover in African Savannas. *Nature* 438: 7069.