



THE SCHOOL
FOR FIELD STUDIES

Directed Research SFS 4910

Syllabus

The School for Field Studies (SFS)
Center for Water and Wildlife Studies (CWWS)
Kilimanjaro Bush Camp, Kimana, Kenya



This syllabus may develop or change over time based on local conditions, learning opportunities, and faculty expertise. Course content may vary from semester to semester.

COURSE CONTENT SUBJECT TO CHANGE

Please note that this is a copy of a recent syllabus. A final syllabus will be provided to students on the first day of academic programming.

SFS programs are different from other travel or study abroad programs. Each iteration of a program is unique and often cannot be implemented exactly as planned for a variety of reasons. There are factors which, although monitored closely, are beyond our control. For example:

- Changes in access to or expiration or change in terms of permits to the highly regulated and sensitive environments in which we work;
- Changes in social/political conditions or tenuous weather situations/natural disasters may require changes to sites or plans, often with little notice;
- Some aspects of programs depend on the current faculty team as well as the goodwill and generosity of individuals, communities, and institutions which lend support.

Please be advised that these or other variables may require changes before or during the program. Part of the SFS experience is adapting to changing conditions and overcoming the obstacles that they may present. In other words, the elephants are not always where we want them to be, so be flexible!

Center Research Direction

CWWS directed research course is designed to answer the following case study question:

How can changes in land use, natural resources utilization and availability in the Amboseli Ecosystem be managed to promote socio-economic well-being of local communities whilst safeguarding and promoting natural resources conservation?

Course Overview

A key aspiration of SFS is to generate knowledge on the interaction between communities and the environment they live-in, and use it to promote sustainable use of natural resources for enhanced livelihoods and socio-economic wellbeing. To this end, students attending SFS abroad programs are involved in Faculty guided Directed Research (DR) in Spring and Fall semesters. With time, they assist the Faculty and each Center to generate a substantial pool of knowledge in form of data and information collected in different semesters.

This course aims at providing students with an opportunity to apply biological, social and ecological scientific process and methods to a research project that addresses a local issue related to conservation, environment and socio-economic welfare of local communities in the Amboseli Ecosystem. It prepares students to distinguish hidden assumptions in scientific approaches. We will also investigate the ways that various methods and theories differentiate (or do not) fact from interpretation, cause from correlation, and advocacy from objectivity. Through the Directed Research projects, students will contribute to a growing body of scientific research that informs local conservation and resource management decisions and further the Center's research agenda.

Each student will join a Faculty-led team that will conduct field-based research, data analysis, and communication of results in one or across several of the following disciplines: ecology, natural resource management, and human dimensions of conservation. The Directed Research course is designed to build on the various aspects students have learned in the courses offered in the semester as well as Directed Research lectures which are specially designed to assist students in understanding the scientific process, testing hypotheses and presenting results in both written and spoken formats. The entire process will culminate with a short one-on-one present of the DR work to the Faculty in-charge, and presentation to various stakeholders at the Center.

Learning Objectives

The core skills students will learn in this course are field techniques, analytical methods, communication skills and critical thinking, as well as team work and time management. The specific objectives of the course are the following:-

1. Understand the process of designing a field research project
2. Conduct field data collection
3. Manage, interpret and analyze data sets
4. Communicate research results to diverse audiences

To achieve these objectives, the specific tools used in this course include experimental design, field techniques, basic descriptive statistics, and parametric and non-parametric quantitative analysis. Succinct scientific writing, graphic and tabular presentation of results and effective delivery of oral presentations will be emphasized.

Assessment

Students will present their DR projects in the standard scientific formats of a peer-review style report and a conference style presentation. They will also be graded on data management and their degree of positive contribution to the class. Comprehensive details of all assignments will be provided separately, see below for the general descriptions and expectations.

Assessment Item	Value (%)
Project proposal	10
Final report	55
Presentation	20
Data management	5
Directed research skills	10
TOTAL	100

Project Proposal (10%): The project proposal has two elements: a *Literature Review* and a *Project Summary*.

1. Literature Review

The main objective of the Literature Review is for students to familiarize themselves with previous research and publications in the area of their chosen Directed Research project. This should draw upon a literature base (where possible) to initially review the current status of research in the field and then to build a setting and justification for research that still remains to be done. The Literature Review should include:-

1. A full literature review: A critical evaluation of knowledge in the subject area
2. An exploration of the DR project status within the literature: Highlight knowledge gaps and how the proposed project fits within the current literature

2. Project Summary

The main objective of the *Project Summary* is for students to develop a detailed outline (framework) for their Directed Research. The DR *Project Summary* must include the following items:

1. **Aims/Hypothesis(es):** A list of questions that the student would like to answer as a result of the research project they will design
2. **Materials & Methods:** A detailed description of the methods to be used in their study and why these methods will be used over other potential methods. This should include sampling design, as well as the physical data collection methods to be employed
3. **Predicted Findings & Importance:** A list of 'predicted findings' and implications for each

Final DR Report (55%): The final report will be written in the style of a peer-review submission to a journal in the appropriate field. You will have ample guidance from your DR supervisor throughout the DR period, and especially during DR data collection, analysis and report write-up. The analytical tools for research workshops in the DR course (and complementary classes in other courses) are designed to prepare you for producing the results section and improve the quality of your work.

DR In-house Presentation (20%): The main objective of the oral presentation is to give students practice at presenting findings in a concise and understandable way. Students will be assessed on their oral presentation skills, understanding of their research and time management. The focus will be on; nature of the DR work, objectives, methods, key results and conclusions drawn from the study. A Faculty will not do the in-house presentation assessment for the group they were in-charge of.

DR Presentation to Stakeholders: Each DR group will be responsible for preparing and presenting findings of their research to different stakeholders who will include the local community. This is a critical outcome of the Center's research, and is part of SFS social responsibility with the host community and country. The findings will of the Center's research will be presented to relevant parties or stakeholders in a manner that can be easily understood and applied to address conservation and livelihood issues that are of concern in the host community. Each DR group will receive a grade for their oral presentation after assessment by two Faculty members not involved in a group's research work. Faculty will guide students on how to prepare and do the presentations.

Data Management (5%): It is important to record and store research data in a manner that is useful. Students will be required to provide (as applicable) Excel sheets with their research data in a format that is intelligible to someone else. You may need to provide both raw and manipulated data you used to create figures, tables and to run statistical tests. You need to annotate your spreadsheets (use text boxes if appropriate) so that an outsider can understand what the data are. You may be required to provide field notes on your findings for review.

Directed Research Skills (10%): Student's Directed Research skills will be graded throughout the DR course by their supervisor. Your final grade will depend upon your attendance to all DR activities, active involvement and competencies in field data collection, data interpretation and group participation/support.

Grading Scheme

A	95.00 - 100%	B+	86.00 - 89.99%	C+	76.00 - 79.99%	D	60.00 - 69.99%
A-	90.00 - 94.99%	B	83.00 - 85.99%	C	73.00 - 75.99%	F	59.99 - 0.00%
		B-	80.00 - 82.99%	C-	70.00 - 72.99%		

General Reminders

Plagiarism: Using the ideas and material of others without giving due credit, is cheating and will not be tolerated. A grade of zero will be assigned if anyone is caught cheating or aiding another person to cheat actively or passively (e.g., allowing someone to look at your exam). All assignments unless specifically stated should be individual pieces of work.

Deadlines: Deadlines for written and oral assignments are instated for several reasons: they are a part of working life to which students need to become accustomed and promote equity among students. Deadlines allow faculty ample time to review and return assignments before others are due.

Late assignments will incur a 10% penalty for each day that they are late. No assignment will be accepted after three days. Assignments will be handed back to students after a one-week grading period.

Participation: Since we offer a program that is likely more intensive than you might be used to at your home institution, missing even one lecture can have a proportionally greater effect on your final grade simply because there is little room to make up for lost time. Participation in all components of the program is mandatory because your actions can significantly affect the experience you and your classmates have while at SFS. Therefore, it is important that you are prompt for all academic activities, and bring the necessary equipment for field exercises and directed research, and simply get involved.

Course Content

The coursework component of the DR is designed to prepare students to conduct field based research. These lectures will be taught at towards the end of the semester, and will augment the topical courses to prepare students to work effectively with their respective DR Faculty supervisor for a meaningful research process.

Key: L: Classroom lecture, L/Demo: Classroom lecture and demonstration

No.	Lecture Title and Description	Type	Time (hrs)
DR01	DR Course Introduction: In this class, each Faculty will do a 30min overview of their DR to enable students do an informed decision in selecting their DR choice	L	1.50
DR 02	Introduction to excel spreadsheet: This will be a class demonstration on how to use excel spreadsheet in data syntheses and analyses	L/Demo	1.0
DR 03	Introduction to science & the scientific method Familiarize students with the process of science and associated methods	L	1.0
DR 04	Introduction to scientific writing & reading Explore the difference between primary and secondary sources; expectations and standards of practice; describe expectations for the DR paper	L	1.5
DR 05	Qualitative & quantitative research. Lecture will introduce students to qualitative and quantitative research	L	2.0
DR 06	Research ethics: The lecture will introduce students to the ethical considerations involved in research (e.g. human subject's protection, data integrity and management)	L	1.0
DR 07	Risk & time management in DR. Will prepare students on how to manage risks in the field during data collection, and how to effectively manage the time allocated for the DR course	L	1.0
DR 08 8 th	Effective scientific communication skills: Students will understand the importance of scientific communication skills and start to think about how to address different audiences	L	2.0
DR 09	Introduction to biometry and statistical tools: Will involve a comprehensive introduction to various statistical terminologies, scales of data and how to properly distinguish data types for analysis. It will also expose students to statistical inference, hypothesis testing, common analytical tools and when to use them	L	3.0
DR 10	Statistical analysis computer lab: Introduce students to parametric, non – parametric and enumerative statistical analysis using computer software, and interpretation of analysis output	L/Demo	3.0

No.	Lecture Title and Description	Type	Time (hrs)
DR 11	Introduction to spatial analysis: Lecture will introduce students to basics of GIS and its application in display of spatial relationships	L/Demo	4.0
Total			22

Note: The rest of the DR course time comprises of; research proposal write up, field data collection, synthesis, DR report write up, in-house and stakeholder’s presentations.

#	Research Component Activity	Days Allocated
1	Data Collection: Students will work in their DR group to collect data in the field under the guidance of their research supervisor	10
2	Data Synthesis: Students work closely with their Faculty mentors to synthesize and analyze their data and write up their findings in a structured scientific paper format	5
3	Research Dissemination: Students will prepare, practice, and then present their DR work to a Faculty member not involved in their research, and to relevant stakeholders who will include the local community	3
Total		18 days