



THE SCHOOL
FOR FIELD STUDIES

Directed Research

SFS 4910

Syllabus
4 credits

The School for Field Studies (SFS)
Center for Tropical Island Biodiversity Studies (TIBS)
Bocas del Toro, Republic of Panamá

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.

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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, this is a field program, and the field can change.

Center Research Direction

The global research question that we want to address during this research course is:

How can the natural resources of the BDT archipelago best be managed in order to promote conservation and sustainable use considering the socio-economic environment?

Course Overview

The aim of this course is to provide students with the opportunity to apply ecological, biological, and/or social-scientific methods to a field research project that addresses a local issue related to the environment. We will investigate the ways that various methods and theories distinguish (or do not) fact from interpretation, cause from correlation, and advocacy from objectivity. The Directed Research topics are driven by the needs and interests of Bocas del Toro. Through the directed research projects, students will contribute to a growing body of scientific research that informs local conservation and resource management decisions.

Each student will join a faculty-led team that will carry out field research, data analysis, and communication of results in one or across several of the following disciplines: ecology, natural resource management and social sciences. All Directed Research projects are collaborative. The course is designed to build on the information students have learned in the Tropical Coastal Ecology, Principals of Resource Management, and Environmental and Socio-economic Values courses as well as Culture and Language, Directed Research lectures and workshops specifically designed to assist students in understanding the scientific process, testing hypotheses, and presenting results in both written and spoken formats. The research projects and topics being conducted this semester will be provided mid-semester.

Learning Objectives

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

1. Understand the process of **designing** a field research project
2. **Conduct** field sampling
3. Manage, interpret, and analyze **data** sets
4. **Communicate** research results to diverse audiences
5. Manage teamwork within the context of **collaborative** research

Assessment

Comprehensive details of all assignments will be provided separately.

Assessment Item	Value (%)
Literature Review	10
Project Summary	15
Peer Review	10
Final Report	30
Presentation and Panel Defense	20
Group Poster and Video	10
Directed Research Skills – Data Management and Participation	5
TOTAL	100

Project Proposal (25%)

The project proposal has two elements: a *Literature Review* and a *Project Summary*.

1. Literature Review (10%)

The main objective of the Literature Review is for students to familiarize themselves with previous research and publications in their chosen Directed Research project. This should draw upon a literature base (where possible) to initially review the 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:

- A full literature review: A critical evaluation of knowledge in the subject area
- 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 (15%)

The main objective of the Project Summary is for students to develop a detailed outline for their Directed Research. The Project Summary should include:

- Aims/Hypothesis(es): A list of questions that the student would like to answer as a result of the research project they will design
- 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
- Predicted Findings & Importance: A list of predicted findings and implications for each

Peer Review (15%)

Each group member will be evaluated by each of their peers and receive the average grade of this evaluation. The grade rubric will assess effort, professionalism, ability to work in a team atmosphere, academic contribution to the project, and quality of the contribution. Each team member will review themselves and in addition provide assessment of their peers. Please note that these reviews are anonymous, and we expect honest and thorough evaluation of work. If the same grade is assigned to each of your peers, your Directed Research professor will ask you to re-evaluate the grades assigned.

Final Report (25%)

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.

Presentation and Panel Defense (20%)

You will present a subset of your DR work in a conference style presentation of 12 min length with additional time for questions. Unless the scope of your DR project is very small, you should not attempt to squeeze in everything from your final report into this presentation. Making sure that you are within the time limit is a very important skill and so thorough rehearsal is important.

Group Poster and Video (10%)

Students will be grouped based on their research project topics and will create and present a scientific poster and short video to the community. Groups will create a video presentation, preferably in Spanish with English subtitles or in English with Spanish subtitles using footage that you have recorded during directed research to present to the community. The videos should outline the goal of the research project, its importance to Bocas and to greater society, methods, results, conclusions and future plans. Videos should be between 3-5 minutes.

Directed Research Skills - Data Management and Participation (5%)

It is important to record and store research data in a manner that is useful. You will need to provide an Excel sheet (or sheets) with your research data in a format that is intelligible to someone else. You 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 so that an outsider can understand the data. Your Directed Research Skills will be graded throughout the DR course by your supervisor. Your final grade will depend upon your attendance to all DR activities, active involvement and competencies in field data collection, data entry and group participation/support.

Grading Scheme

Grade corrections in any of the above items should be requested in writing at least 24 hours after assignments are returned. No corrections will be considered afterwards.

A	95.00 - 100.00%	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	0.00 - 59.99%
		B-	80.00 - 82.99%	C-	70.00 - 72.99%		

General Reminders

Intellectual Property – There are many implications about intellectual property and the use of data and research frameworks beyond your semester experience. Many DR projects form part of ongoing and developing research lines at SFS Centers, the work of which is the intellectual property of SFS faculty. However, faculty are always interested in continuing collaborations, and there is often the possibility for student *co-authorship* on future academic publications. We will discuss the ethics of data gathering and academic publications during the semester, but you can also review in advance SFS's [data policy](#).

Honor Code/Plagiarism – SFS places high expectations on their students and we hold students accountable for their behaviors. SFS students are held to the honor code below. SFS has a zero-tolerance policy towards student cheating, plagiarism, data falsification, and any other form of dishonest academic and/or research practice or behavior. Using the ideas or material of others without giving due credit is cheating and will not be tolerated. Any SFS student found to have engaged in or facilitated academic and/or research dishonesty will receive no credit (0%) for that activity.

“SFS does not tolerate cheating or plagiarism in any form. While participating in an SFS program, students are expected to refrain from cheating, plagiarism and any other behavior which would result in a student receiving credit for work which they did not accomplish on their own. Students are expected to report any instance of cheating or plagiarism by others.”

Deadlines – Deadlines for written and oral assignments are instated to promote equity among students and to allow faculty ample time to review and return assignments before others are due. As such, deadlines are firm; extensions will only be considered under extreme circumstances. Late assignments will incur a penalty of 10% of your grade for each day you are late. After two days past the deadline, assignments will no longer be accepted. Assignments will be handed back to students after a one-week grading period. Grade corrections for any assessment item should be requested in writing at least 24 hours after assignments are returned. No corrections will be considered afterwards.

Content Statement – Every student comes to SFS with unique life experiences, which contribute to the way various information is processed. Some of the content in this course may be intellectually or emotionally challenging but has been intentionally selected to achieve certain learning goals and/or showcase the complexity of many modern issues. If you anticipate a challenge engaging with a certain topic or find that you are struggling with certain discussions, we encourage you to talk about it with faculty, friends, family, the HWM, or access available mental health resources.

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 course is mandatory, it is important that you are prompt for all activities, bring the necessary equipment for field exercises and class activities, and simply get involved.

Course Content

L: Lecture, **FEX:** Field Exercise, **W:** Workshop or structured discussion

DR Coursework Component: The coursework component of the DR is designed to prepare the students to conduct scientific research. The lectures are delivered throughout the semester, in conjunction with the topical courses, so that students are well prepared to work with their faculty mentor on meaningful research. Some of the course activities below will be delivered to the whole class, or as part of your specific DR group once you have selected a given project.			
No	Title and outline	Type	Hours
DR 01	Course introduction Review of the DR syllabus and discussion of the course objectives	L	0.5
DR 02	Analytical Tools for Research This lecture gives an overview of some of the most common statistical methods and tools to analyze scientific data	L	2.0
DR 03	Effective Communication Skills I: Figures and Tables Why do we use figures and tables? How should they look? What should be included?	L	1.0
DR 04	Project Descriptions Faculty introduce DR projects	L	1.0
DR 05	DR Meetings Students meet in their respective DR groups with faculty advisors	W	1.0
DR 06	Scout Field Sites	FEX	3.0
DR 07	Project Proposal - Group Meeting Students meet with DR professors to discuss proposal writing.	L	1.0
DR 08	Effective Communication Skills II: Presenting Data, Scientific Communication	L	1.0
DR 09	How to Write and Present a Scientific Poster	L	1.0
DR 10	Ethics in Research and Human Subjects Research Introduce students to the ethical considerations involved in science	L	1.0
DR 11	DR Prep Day I Students work with DR faculty members in the classroom, laboratory, and field to determine logistics, plan research collection days, and practice field methods	FEX	6.0
DR 12	DR Prep Day II Students work with DR faculty members in the classroom, laboratory, and field to determine logistics, plan research collection days, and practice field methods	FEX	8.0
Total			26.5 Hours

DR Research Component This portion of the DR course is made up of research time, which includes data collection, synthesis, and dissemination. Given the intense nature of the Directed Research project, students receive over 140 contact hours during this period.	Days Allocated
Data Collection Students work within their DR group to go into the field to collect data	10 days
Data Synthesis Students work closely with their faculty mentors to analyze their collected data and write up their findings in a structured scientific paper	5 days
Research Dissemination Students prepare, practice, and deliver presentations for SFS and community audiences.	2 days
Total	17 days