



**S F S**

THE SCHOOL  
FOR FIELD STUDIES

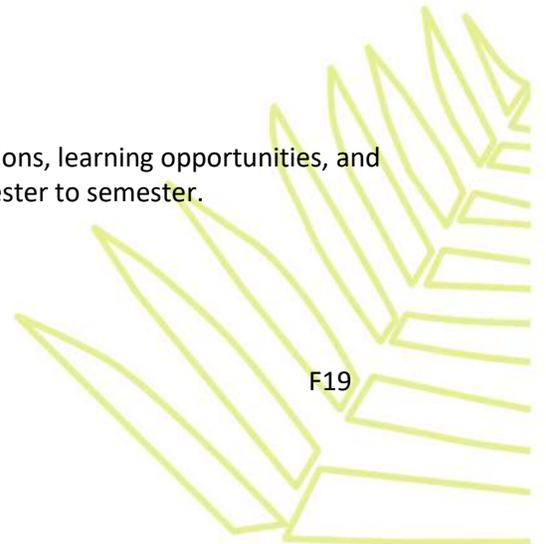
## Directed Research SFS 4910

The School for Field Studies (SFS)  
Center for Climate Studies (CSS)  
Patagonia, Chile

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 may present. In other words, the elephants are not always where we want them to be, so be flexible!

## Center Research Direction

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The Center for Climate Studies' research plan addresses the question: *How can Chile respond to local and global challenges while securing the functionality of its natural and human systems?* Staff and students of SFS-CCS investigate this topic by engaging in research under three core components:

1. Understanding earth, ecological and social systems;
2. The effects of climatic change at multiple scales;
3. Effective response to change.

Through our research, we collaborate with a range of stakeholders and research partners. These connections develop over time, and may include governmental organizations such as CONAF (National Forest Corporation), international NGOs such as The Nature Conservancy, grassroots organizations, local universities and community groups.

## Course Overview

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The aim of this course is to provide students with the opportunity to apply the scientific process in a field research project addressing a local issue related to the environment. This course prepares students to distinguish hidden assumptions in scientific approaches and separate fact from interpretation, cause from correlation, and advocacy from objectivity.

The course will give you an intensive practical field experience conducting research on a topic of immediate relevance to specific clients working in the context of climatic change, ecological concerns and conservation (protected areas, government offices, local communities).

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, earth systems, and conservation. The course is designed to build on the information students have learned in the core courses as well as 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 (see below for the description of activities). Therefore, students will go through the steps of the research process: identification of relevant questions within the economic, ecological and cultural context of a region and client needs; experimental design; field data collection; methods of statistical data analyses; and presentation of results to the interested parties and the scientific community.

## Learning Objectives

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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
5. Being able to manage team work within the context of collaborative research

## Assessment

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We expect active participation in all aspects of DR, from the discussion and analysis of assigned readings and associated literature, the review of new literature, classes, and field components (data collection, data compilation, and data analyses).

The DR experience is both an individual and group effort. All members of the DR group work together to collect data in the field as appropriate for their project. Students will identify and address a distinct question within the overall theme and will be responsible for data analysis, interpretation and communication of their own results. Each topic will address the overall objectives of the research problem at hand, and may use the current data, previous research if available, or a combination of the two. The aim is to give you enough room to develop your own creativity within the context of the Directed Research project at hand. All topics must be related to the general questions and objectives, which are part of the proposed research problem and the overall Center's Strategic Research Plan.

Performance in the Directed Research course will be evaluated based on the assessment items and their proportional weight to your final grade described below.

Assessment Item	Value (%)
Landmark 1	20
Landmark 2	20
First Draft	20
DR Final Paper	30
Oral Presentation	10
Total	100

## Assessment Descriptions

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**Specific Landmarks 1 and 2 will vary with each DR advisor. The exact item to be handed-in will be given to you by your advisor at the beginning of the DR process. Some of the possible topics for Landmark 1 and 2 are discussed below. Your DR advisor may have additional topics or more specific points to cover.**

**Literature Review:** Your DR advisor will indicate the number and type of scientific sources you will be exploring to support your research topic for your DR paper. It is expected that you will find, read, interpret and provide criticism of the scientific literature.

**DR Research Skills and Data Management:** 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 interpretation and group participation/support. It is important to record and store research data in a manner that is useful. You will need to provide (as applicable) Excel sheets with your 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.

**DR Draft (20%):** The first draft is written in the style of a peer-review submission to a journal in the appropriate field. You will have ample opportunity for guidance from your DR supervisor throughout the DR period and especially during DR data analysis week. It is expected that you will integrate exercises from the core classes, and the previous DR classes (scientific method, statistical analyses, etc.) into the generation of a sound first draft.

**DR Final Paper (30%):** The final report is written in the style of a submission to a peer-reviewed journal in the appropriate field. You will have ample opportunity for guidance from your DR supervisor throughout the DR period and especially during data collection, data analysis and draft writing. 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.

**Oral Presentation (10%):** You will present your DR work in a conference style presentation of 10-15 min length with 5 mins of 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 therefore thorough rehearsal is important. Your grade will be based on the clarity, presentation structure, quality and clarity of graphics, and overall information delivery.

A selection of students will have the opportunity to present their findings to the larger community, as part of a special event. Part of this selection will be made through reviews of your peers.

## Grading Scheme

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Grade corrections for any of the above items should be requested in writing at least 24 hours after assignments are returned. No corrections will be considered afterwards. The grading scheme is the following:

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

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**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** 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 land and water-based activities, bring the necessary equipment for field exercises and directed research, and simply get involved.

## Course Content

**DR Coursework Component:** The coursework component of the DR is designed to prepare 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.

**DR Research Component:** This portion of the DR course is made up of research time, which includes: data collection, synthesis; and dissemination.

Course element	Type
<b>DR01 Field Site Scout</b> Students meet in their respective mentoring groups with their faculty advisor to discuss research methods on-site.	FEX
<b>DR02 Course introduction</b> Review of the DR syllabus and discussion of the course objectives	L
<b>DR03 Project Descriptions</b> Faculty introduce DR projects	L
<b>DR04 DR Meetings</b> Students meet with their respective DR groups and faculty advisor	W
<b>DR05 Methods and Analytical Tools for Research</b> Students are given examples of some of the most common quantitative and qualitative methods for analyzing scientific data and the ramifications of these general types of analysis. Students will also be given examples of some of the risks that need to be addressed in the overall process of data collection and field work.	W
<b>DR06 Ethics in Research &amp; Human Subjects Research</b> Introduce all students to an overview of ethical considerations for research, regardless of discipline.	L
<b>DR07 Project Proposal - Group Meeting</b> Students meet in their mentoring groups with their DR professor to discuss proposal writing.	W
<b>DR08 Effective Communication Skills I: Figures and Tables</b> Students meet in their mentoring groups with their DR faculty member to discuss the use of figures and tables and their content and format. Students work with their respective mentors to discuss general rules, using examples from the DR project.	W
<b>DR9 DR Prep Day I- Method Testing</b> Students work in their mentoring group with their DR faculty member in the classroom and in the field to determine logistics, plan research collection days and practice field methods	FEX

<b>DR10 DR PREP DAY II/DR FIELDWORK BEGINS</b> Students work in their mentoring group with their DR faculty member in the classroom and in the field to determine logistics, plan research collection days and practice field methods. This day may also be used as a full collection day if methods and logistics are confirmed.	L
<b>DR11 Field Work (7 days in the field)</b> Students meet in their respective DR groups with faculty advisors	FEX
<b>Landmark 1 Due:</b> Students will submit their work assigned under Landmark 1.	
<b>Landmark 2 Due:</b> Students will submit their work assigned under Landmark 2.	
<b>Landmark 3 Due:</b> Students will submit their draft paper.	
<b>DR12 Data Analysis and write up of final paper (3-4 days)</b>	W
<b>DR13 Preparation time for oral presentation (1-2 days)</b>	W
<b>DR 14 Oral Presentations I- Class Presentations</b> <b>DR 14s Oral Presentations II- Community Presentations</b>	P

<b>Research Component Activity</b>	<b>Days Allocated</b>
<b>Data Collection/Field Work</b> Students work within their DR group to go into the field to collect data	7 days
<b>Data Synthesis and Write Up</b> Students work closely with their faculty mentors to analyze their collected data and write up their findings in a structured scientific paper	15 days
<b>Research Dissemination</b> Students prepare, practice, and then deliver presentations for both internal SFS and community audiences.	3 days
<b>Total</b>	<b>25 days</b>

## Example Landmarks

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### **Landmark 1: Methods draft and Data organization**

#### *Individual submission*

We expect this to be a steady workflow during the prep and field portions of the DR. Once we return to the Center, your job will be to format and prepare the following files for submission. Even in the instance of group papers, this section should be written individually so all group members are clear on methods and have practice articulating them. You are welcome to work on any part of this with others, but submissions are individual.

1. Draft of the Methods section including citations where relevant, focusing on fieldwork methods
  - a. All field methods, with citations to previous studies using those methods where relevant
  - b. What are the methods? Imagine you are describing this study in such detail that it could be replicated in the future. Include here any of the sampling you conducted, sample sizes for each method, materials used, site description (park, trail, plots), brief description of analytical frames or approaches.
  - c. Notes on analysis methods—this can be in narrative or bullet-point format but it should be clear that you have plans for each part of your dataset.
2. Compilation of research data, cleaned and organized for analysis
3. Google Sheet of Methodology for each group (5 minimum per student)
4. Part of this grade includes engagement in field activities

### **Landmark 2: Justification of Study and Literature Review**

#### *Group Submission with individual responsibility for contribution to Google Sheet of literature*

This submission should be an initial draft of the introduction to the paper, including citations where relevant. Start broad, narrow to the research question including the following components in approximately 3-5 pages, double-spaced:

1. Justification of study in relation to relevant local, national and international dynamics.
2. Site description in relation to social and/or ecological processes. Contextual background information on the location being studied. Conceptual and theoretical background, as relevant to topic of study.
3. Summary of research questions, which connect in clear ways to the site and study context.
4. Google Sheet of Literature Review for each group (5 minimum per student)