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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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## 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 ecological and social systems;
2. The effects of climate 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 climate change 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.

**Please be aware that DR topics may change based on local conditions, research permits, learning opportunities, and faculty expertise.**

## 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 a group effort. All members of the DR group work together to collect data in the field. Students will identify and address a distinct question within the overall project 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 (%)
Literature Review	15
DR Draft Paper	20
Peer Review	10
DR Final Paper	30
Oral Presentation	10
Research Skills and Data Management	10
Reflective Assessment	5
Total	100

## Assessment Descriptions

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**Literature Review (15%):** 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 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 supervisors 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.

**Peer Review (10%):** Each group member will be evaluated by each of their peers within the collaborative DR group option and will receive the average grade of this evaluation. The grade rubric will assess:

effort, professionalism, and 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 on their peers. For assessment, a rubric outlining grading components and the weighting for each is provided in the last page of this document.

**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(s) 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 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.

**DR Research Skills and Data Management (10%):** 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.

**Reflective Assessment (5%):** At the end of the DR period, each student will write a brief one-page reflection that self-assesses their DR experience. Students should reflect on challenges faced, goals achieved, their time management, and what they might improve or have learned for the future.

## 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.

No.	Lecture Title and Description	Time (Hours)
DR01	<b>DR Course Introduction</b> The strategic research direction, as well as the impact of research of CCS at the local and national level, is discussed.	1.0
DR02	<b>DR Scientific Writing</b> Structure of a scientific paper and publishing scientific work	1.0
DR04	<b>Qualitative Research Skills and Methods</b> Introduction to qualitative research and the methods used	1.5
DR05	<b>Quantitative Research Skills and Methods</b> Introduction to quantitative research and the methods used	1.5
DR06	<b>DR Project Descriptions and Introductions</b> Faculty introduce the DR projects running this semester	1.0
DR07	<b>Ethics in Research</b> Faculty and students will discuss problems associated to ethical issues in research, such as data manipulation, pattern recognition, plagiarism, animal rights, and related questions. Also discussed will be human rights protection.	1.0
DR08	<b>Risk and Time Management in DR</b> The most common sources of risks while doing field research within the context of Costa Rica will be discussed and analyzed during this lecture. Special emphasis is given to sound planning and time management in the design of scientific research.	1.0

No.	Lecture Title and Description	Time (Hours)
DR09	<b>DR Skill Preparation and Methodology Design</b> Students will learn different methods to carry out scientific research by identifying relevant questions and designing testable hypotheses. Alternative methods of scientific inquiry are discussed (i.e., deductive, inductive, hypothetical-deductive, etc.)	1.0
DR10	<b>Stat training</b> Statistical classes (t-test, ANOVA, regression, correlation, contingency table analyses, multivariate techniques) will be delivered and adapted by each professor depending on the characteristics of the research project	2.0
DR11	<b>Literature Review Skills</b> Students will learn the use of different databases and repositories available in the internet. In addition, they will get acquainted with resources available at the Center, such as previous reports and gray literature, in addition to peer-review papers.	1.0
DR12	<b>Data Management and Analysis</b> Dealing with research data, entry and organisation of data and using appropriate methodology used to analyse data	1.0
DR13	<b>Effective Scientific Communication Skills</b> Oral presentation skills and communication of scientific results including through poster sessions and conferences.	1.0
DR14	<b>Project Proposal and Final Report</b> Faculty will discuss the requirements and expectations of all components of their projects with a particular emphasis on the project proposal	1.0
Total Hours		<b>15 hours</b>

**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 and mentored nature of the Directed Research project, students receive over 140 contact hours during this time period.

Research Component Activity	Days Allocated
<b>Data Collection/Field Work</b> Students work within their DR group to go into the field to collect data	10 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	10 days
<b>Research Dissemination</b> Students prepare, practice, and then deliver presentations for both internal SFS and community audiences.	2 days
<b>Total</b>	<b>22 days</b>