



S F S THE SCHOOL
FOR FIELD STUDIES

Ecosystems and Livelihoods

SFS 3810

Syllabus

4 credits

The School for Field Studies (SFS)
Center for Environmental Research in Conservation and Development Studies
Siem Reap, Cambodia

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.

Course Overview

The mighty Mekong (derived from Mae Kongkea, meaning ‘big water’), one of Southeast Asia’s most productive and influential rivers, originates high in the Tibetan plateau and weaves south through China, Burma, Thailand, Laos, and Cambodia, finally reaching its terminus in the delta of Vietnam. The Mekong drains an area larger than 310,000 square miles and sheds 110 cubic miles of water into the South China Sea every year.

By world standards, the Mekong catchment and the Tonle Sap Lake are immense, producing over 2.5 million tons of wild fish per year, or roughly two percent of the entire world’s catch. The Mekong River is second only to the Amazon River in biodiversity, hosting hundreds of fish species as well as a plethora of bird, reptilian, and mammal species. As the lower Mekong Basin becomes increasingly populated by humans, the river’s resources are constantly being stretched – very soon sustainability may no longer be viable, and the health and livelihoods of millions of people may be in jeopardy. As the extraction of natural resources by national and international actors intensifies in the region, the Mekong ecosystems must adapt to new conditions forced upon them by the growing human footprint.

This course focuses on the human landscape that envelops the natural ecosystems of the lower Mekong Basin. We examine the high levels of dependence upon natural resources by local populations and critical threats to various ecosystems. Students explore various rural livelihood strategies and discover a spectrum of adaptations to changing environmental conditions. This course also analyzes attempts by international and national actors to find a sustainable balance between human needs and preserving biodiversity, particularly in the fields of ecotourism and community-based natural resource management.

A variety of ecosystems will be visited in order to provide regional themes of learning in this course:

- The Tonle Sap Lake and various terrestrial sites in the Angkor Basin around Siem Reap, Cambodia, a moderately sized urban area in close proximity to the Angkor temple complex.
- The lowland evergreen forests on the sandstone massif of Phnom Kulen National Park.
- The braided Mekong River in Kratie province.
- The deciduous dipterocarp forests of northern Cambodia.
- The semi-evergreen rainforest complex of eastern Cambodia.

Learning Objectives

Students will draw on observations, classes, and field study to recognize major ecosystems of the lower Mekong basin and detail the relationship of human communities with the natural environment. By the end of the course, students should be able to articulate answers to questions related to the following broad themes:

- The diverse ecosystems of Cambodia
- The critical challenges to regional ecosystems, such as natural resource conflicts, degradation and overuse (e.g. fisheries, forests).

- The spectrum of rural livelihoods in Cambodia, the primary drivers of change in livelihood strategies, and ongoing adaptations to changing environmental conditions.
- The opportunities and challenges posed by community-based natural resource management and ecotourism initiatives.

Assessment

The evaluation breakdown for the course is as follows:

Assessment Item	Value (%)
Reading and Class Participation	5
GIS FEX	15
Ecosystems and Livelihoods FEX	40
Stakeholder Scenario	10
Final Exam	30
TOTAL	100

Reading and Class Participation (5%)

You will be assigned to read and present a specific article that relates to the topic of a particular lecture. You will be asked to prepare – solo or in groups of 2 - a short PowerPoint presentation (just a few slides) that summarizes the key elements of the article (title, authors, context, objective, methodology, results, and discussion/conclusion) and discuss its main strengths /weaknesses. You are free to design this presentation as you see fit. Before the class, you will review it with J.-C. Diepart and discuss how it will be integrated into the lecture.

GIS FEX (15%)

During the semester, you will have different opportunities to acquire some basic skills in geographic information systems through data collection in the field and simple data processing using QGIS (<https://qgis.org/en/site/>). Tutorials and field exercises will be co-organized with the Ethics and Development class. Three tutorials are scheduled as well as two field exercises. In Brome village - Preah Vihear province - you will have a chance to take pictures with a drone and learn how to geo-reference the image using QGIS. In Koh Pdao village – Kratie province - you will conduct a simple land survey and use the data collected in the field to produce a land use map of the village.

Ecosystems and Livelihoods FEX (40%)

Throughout the semester, you will have a chance to visit multiple places across the country to gain better knowledge about livelihoods and natural resource management in rural Cambodia. These excursions are thematically connected to the lectures and group discussions in class. Four important excursions are scheduled this semester for the Ecosystems and Livelihoods class:

1. Visit the agricultural cooperative ECOFARM in Siem Reap province to learn about safe vegetable production and the development of local and resilient food systems through the Participatory Guarantee System (PGS) certification.
2. Visit the Prey Kbal Teuk community forestry site in Siem Reap province to learn about the practicality of forest restoration and the experience of local groups with community-based forest management.

3. Visit the Koh Pdao island on the Mekong River in Kratie province to learn about the development of a community-based ecotourism initiative and its contribution to local livelihoods.
4. Visit the Pu Lu village community in Mondul Kiri province to learn about the transformation of shifting agriculture of local Indigenous groups and their struggle against large-scale rubber plantation and protected area expansion.

During these field trips, you will familiarize yourself with land, forest, water, and fisheries resources managed by communities and interview some community representatives about the importance of these resources in local livelihoods. You will also try to understand how these resource systems have changed in the recent past and how local livelihoods have adapted to these transformations, at the household and community level. Besides interviews organized as focus group discussions, you will also collect data through participant observation, GIS field work, household surveys, etc.

The FEX assignment is conceived as a research process that includes the following aspects:

1. Preparatory work leading up to the excursion: literature review and design of data collection tools (in group).
2. Data collection during the excursion (interviews and other) with the assistance of SFS translators (in group)
3. Post-interview debriefing session (in group)
4. Data analysis and the essay write-up (individual).

The FEX assignment consists of a +/- 5,000 words essay structured like a scientific article. Rubrics of the assignment and an essay template will be provided.

Stakeholder Scenario (10%)

This assessment requires no prior preparation. Students will be given a fictitious land use scenario and assigned the role of a stakeholder. Students will then come up with a position on the land use scenario from the perspective of their assigned stakeholder and debate with other stakeholders.

Final Exam (35%)

You will have one final exam at the end of the semester and you will be given time to study for this. The exam (3 hours) will be combined for CS, ED, and EL and will build on the stakeholder scenario exercise.

Grading Scheme

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

Field Notebook – You will develop a comprehensive field notebook that documents and captures your on-the-ground learning experiences. This notebook should accompany you at all times in the field. Field notes and data from field exercises for our various courses can all be recorded in this notebook, in separate sections. We recommend you use a separate notebook for class lectures. During fieldwork, you might also take photographs or document your observations a GPS device. Make sure to link these data with your fieldnote and store everything in a single folder on your computer.

For papers, you are requested to use the APA citation system and a formal writing style. When referencing field notes and field observations use the following format:

Field notes: (Field interview with boat association representative, 2 October 2022)

Field observation: (Field observation in Jrei village, 7 November 2022)

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

Type: L: Lecture, **FW:** Field Work, **GL:** Guest Lecture, **T:** Tutorial, **D:** Discussion

No	Title and outline	Type	Time (hrs)	Required Readings
EL1	Course intro (social-ecological systems in Cambodia)	L	1.5	
EL2	Agrarian transition and livelihoods transformations in Cambodia	L	1.5	
EL3	Biophysical environment and forest ecosystems in Cambodia	L	1.5	Theilade et al. (2022)
EL4	Traditional uses of forests and forest ecosystem services	L	1.5	Clements et al. (2010)
EL5	Understanding basic stat in Excel	T	1.0	
EL6	Deforestation in Cambodia	L	2.0	Kong et al. (2019)
EL7	Community-based natural resources management in Cambodia (+ excursion briefing)	T	2.0	Persson & Prowse (2017)
EL8	Kbal Spean: semi-evergreen forest and sacred carvings (Siem Reap province)	FW	2.0	
EL9	Developing interview questions for FEX	L	2.0	
EL10	GIS tutorial (jointly with ED)	T	1.0	
EL11	Lowland agriculture in Cambodia (+ excursion briefing)	L	2.0	Dayet et al. (2024)
EL12	ECOFARM agricultural cooperative (Siem Reap province)	FW	2.0	
EL13	Agricultural development and food security in the Mekong Delta (Vietnam)	GL	1.5	
EL14	Guest lecture on wild bees conservation	GL	1.5	
EL15	Phnom Kulen: protected area and ecotourism (Siem Reap)	FW	2.0	
EL16	Tbeng Lech village: community forestry and forest inventory (Siem Reap province)	FW	4.0	
EL17	Upland agriculture in Cambodia	L	2.0	Mahanty & Milne (2016)
EL18	Hydropower dams in the Mekong basin	L	1.5	Mahanty et-al. (2023)
EL19	Koh Pdao: ecotourism and livelihood (Kratie province)	FW	2.0	
EL20	Koh Pdao: GIS - land survey (Kratie province)	FW	2.0	
EL21	GIS tutorial (jointly with ED)	T	1.0	
EL22	GIS tutorial (jointly with ED)	T	1.0	
EL23	Swidden agriculture and land conflicts (+ excursion briefing)	L	1.0	Leemann (2019)
EL24	Bunong workshop (Mondul Kiri province)	FW	1.0	
EL25	Swidden agriculture and land struggles (Mondul Kiri province)	FW	2.5	
EL26	Tonle Sap lake and flood plain	L	1.5	Jones and Sok (2015)

No	Title and outline	Type	Time (hrs)	Required Readings
EL27	Interview with fishermen (Siem Reap province)	FW	1.5	
EL28	Community-based ecotourism and community fisheries management (Battambang province)	FW	1.0	
EL29	Stakeholder scenario	D	2.0	
EL30	Exam Review		1.0	
		Total	50	
		UMN Instructional Hours*	60	

*UMN defines an instructional hour as a 50-minute block. SFS syllabi are written in full 60-minute hours for programming purposes. Therefore 50 full hours = 60 UMN instructional hours (for four credit courses) and 25 full hours = 30 UMN instructional hours (for two credit courses).

Reading List

- Clements, T. John, A., Nielsen, K., An, D. Tan, S. & Milner-Gulland, E.J. (2010). Payments for biodiversity conservation in the context of weak institutions: Comparison of three programs from Cambodia. *Ecological Economics*, 69, 1283–1291.
- Dayet, A., Diepart, J.-C., Castella, J.-C., Sieng, S., Kong, R., Tivet, F and Demenois, J. (2024). Can organic rice certification curb the pressure of the agrarian transition in Cambodia? A farming system approach. *Agricultural Systems*, 21, 103953, pp. 2-14.
- Jones, R.W & Sok, S. (2015). Impacts and Implications of Deep Fisheries Reforms on the Governability of Small-Scale Fisheries in Tonle Sap Lake, Cambodia. In S. Jentoft & R. Chuenpagdee (Eds.), *Interactive Governance for Small-Scale Fisheries* (pp. 539-557), MARE Publication Series 13. Switzerland: Springer International Publishing.
- Kong, R., Diepart, J.-C., Castella, J.-C., Lestrelin, G., Tivet, F., Belmain, E., & Bégué, A. (2019). Understanding the drivers of deforestation and agricultural transformations in the north-western uplands of Cambodia. *Applied Geography*, 102, 84–98.
- Leemann, E. (2019). Who is the community? Governing territory through the making of ‘indigenous communities’ in Cambodia. *Geoforum*, 119(4), 238-250.
- Mahanty, S. & Milne, S. (2016). Anatomy of a boom: Cassava as a ‘gateway’ crop in Cambodia’s north eastern borderland. *Asia Pacific Viewpoint* 57(2), 180-193.
- Mahanty, S., Chann, S., & Suong, S. (2023). The emotional life of rupture at Cambodia's Lower Sesan 2 hydropower dam. *Environment and Planning E: Nature and Space*, 25148486231162087.
- Persson, J., & Prowse, M. (2017). Collective action on forest governance: An institutional analysis of the Cambodian community forest system. *Forest Policy and Economics*, 83, 70–79.
- Theilade, I., Phourin, C., Schmidt, L., Meilby, H., van de Bult, M., & Friberg, K. G. (2022). Evergreen forest types of the central plains in Cambodia: floristic composition and ecological characteristics. *Nordic Journal of Botany*.