THE SCHOOL FOR FIELD STUDIES

Coffee, Chocolate and Sustainable Development in Costa Rica SFS 3141

The School for Field Studies (SFS)
Center for Sustainable Development Studies (CSDS)
Atenas, Costa Rica

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

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

Course Overview

Coffee (*Coffea arabica*, *Coffea canephora*) and chocolate / cacao (*Theobroma cacao*) are iconic food crop species in the Tropics. Their emotionally and physically addictive components have led to $98.2 billion in annual sales of chocolate (International Cacao Organization, Statistics, 2016) and coffee exports totaling $30.6 billion (World's Top Exporters, Coffee, 2016). These tropical crops are intimately intertwined with the natural and political history, culture, and ecology of Costa Rica.

This is an interdisciplinary four-week summer program aiming to explore the deeper social and ecological components that intertwine these crops to our lives and the natural and political history of Costa Rica. We consider how the relations between slavery as part of early cacao production, and the transformation of forested lands to coffee plantations owned by elites, intertwine with current questions of cultural representation, agro-tourism, land use strategies, and agricultural certifications. We will conduct site visits to a variety of coffee and cacao farms and producers to learn how various production methods and policies impact the local flora, fauna and society. Through field research in small groups, we will focus on data collection to conduct in-depth exploration of the relations between cacao & coffee production and climate change, social justice movements, and species conservation.

Specific components of this program will include:

- Visit coffee and chocolate farms to learn about types of production and processing along with farmers' perspectives on their role in the agroecosystems, from mono-crops to organic production.
- Evaluate the ecological impacts of different production methods.
- Analyze different perspectives of indigenous and non-indigenous cacao production system to evaluate differences in cultural significance and production methods.
- Consider social justice issues and the viability of sustainable food certifications for the increasing world population.

These themes will be analyzed and discussed during lectures, discussions and fieldtrips. Additionally, we will explore specific problems during field exercises at different sites throughout the course. At the end of the course, students will actively integrate concepts and methodologies learned in class and field activities by designing and carrying out a brief research project related to the environmental or social aspect of chocolate and coffee production. Results will be presented at a formal symposium at the Center in Atenas. During each step of the process (formulating a topical research question, creating a project proposal, collecting data, analyzing data and presenting research findings) there will be room for discussion with fellow students and faculty, in order to provide a comprehensive introduction to developing applied research methods for achieving conservation goals.

Learning Objectives

The learning objectives of this summer program are:

1) Investigate social and political factors leading to cultivation of coffee and cacao in Costa Rica and the cultural impacts observable today.

2) Explore the intersection of service and agricultural economies in culinary tourism.

3) Assess the direct and indirect impacts of agro-tourism, from agrochemicals to water use and waste production.

4) Examine the ecological effects of various forms of cacao and coffee production.

5) Gauge the biological effects of agroforestry practices through in-field comparison in various ecological regions.

SFS students intercropping beans with coffee at LIFE Monteverde Farm

Assessment

The assessment of student contributions in the SFS-CSDS summer program has the following components:

Assessment Item	Value (%)
EXAM	30
FIELD EXERCISES	
- FEX 1	15
- FEX 2	15
GROUP INVESTIGATION	
- Fieldwork/data quality	10
- Final Paper	10
-Oral presentation	10
-Participation	10
TOTAL	100

Exam (30%): One written examination will be given based on material analyzed in lectures, discussions, readings, and field exercises.

Two Field Exercises (30% total, 15% each): Students will participate in two field exercises (FEXES) analyzing issues covered during this course from different perspectives. It is essential to participate actively in a team effort aiming at the formulation of research questions, and in the collection of data and/or in the discussion of results from these practical exercises. Students are evaluated based on the elaboration of descriptive data analyses, maps, short essays or similar assignments from these exercises.

FEX 1: Ecosystem services and conservation benefits provided by coffee agroforestry – Agroforestry has the potential to conserve biological diversity and mitigate greenhouse gas emissions in agricultural tropical landscapes. By controlling erosion, protecting watersheds and ameliorating climate variability they also represent a viable strategy for climate change adaptation. This exercise addresses different aspects of ecosystem services and conservation benefits in shade grown coffee farms, such as carbon sequestration, the diversity of different taxonomic groups and possible relationships between both.

FEX 2: Historical aspects of Cacao and Coffee – Using the historical focus of the Chocolate tour at the Sibú farm, students will focus on one thread of the history of cacao or coffee production in Costa Rica as related to indigenous culture, afro-Caribbean culture, class and economic development or development policy. The final product will be an in-depth research paper that incorporates oral histories and interviews obtained throughout the course.

Group investigation (40%): students will work in groups to develop a research question relevant to ecological, socio-economic or natural resource management aspects of chocolate or coffee production in Costa Rica under the guidance of a faculty member. Results will be presented at the Center in Atenas. The evaluation criteria will be based on field work and data quality (10%), the integration of concepts, results, and literature in a final paper (10%), the organization of information and communication skills demonstrated during the oral presentation (10%), and their overall participation and team work (10%).

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.

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	<60.00%
		B-	80.00 - 82.99%	C-	70.00 - 72.99%		

SFS students harvesting cacao at La Iguana Chocolate Farm

General Reminders

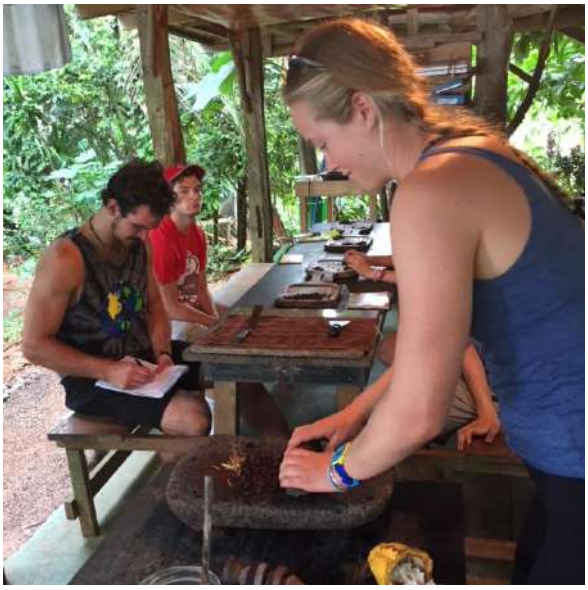
Plagiarism: Using the ideas and material of others without giving due credit, is cheating and will not be tolerated. A grade of zero will be assigned if anyone is caught cheating or aiding another person to cheat, either actively or passively (e.g., allowing someone to look at your exam).

The readings assigned for each lecture and exercises are listed in the syllabus, or will be assigned prior to, or after, the lecture. The material will be provided in the form of an anthology to save printing paper and reduce waste. You are expected to read these materials before class, and use them as background information for discussion. If you stay for summer 2, readings will be more specific to the subject of the research component implemented at the end of that session.

Deadlines for assignments are established to promote equity among students, to allow faculty enough time to review and return comments and grades before other assignments are due; and to avoid clashes with other activities and courses. Therefore, deadlines are firm, and extensions will only be considered under extreme circumstances.

When appropriate, the files and additional materials should be placed in the assigned folder of the students drive in the CSDS server. Please check ahead of time with the professor in charge regarding the assignments' deadlines. 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 not be accepted anymore. Assignments will be handed back to students after a one-week grading period.
All grade revisions should be in writing explaining the issues at hand within the 24 hours after receiving the grade in any activity, be this an exam or field related work.

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.



SFS students grinding cacao on an indigenous *metate* at La Iguana Chocolate Farm

Course Content

Key: L= lecture, **FL**= field lecture, **GL=** guest lecture, **Lab**= classroom lab, **B**= briefing, **D** = discussion, **P** = students' presentation

	Lecture Title	Readings	Type	Contact hours
01	**Costa Rica conservation history:** – Socio-economic drivers of deforestation in CR – History of Conservation – Evolution of the National System of Protected areas (SINAC)		L	1
02	**General Orientation and Introduction to the Program**		L	0.5
03	**Agroecology:** – Basic concepts – nutrient cycling and hydrology in agro-ecosystems – Productivity and food security – Sustainable agriculture in the tropics	(Hunter et al., 2017) (Perfecto & Vandermeer, 2008).	L	1.5
04	**The role of chocolate and coffee in Costa Rica's development:** Origin and adaptation of these crops. Economic, political and environmental reasons favoring cultivation in Costa Rica. Economic and social impacts of production.	(Bacon et al, 2008).	L	1.5
05	**FT 1: Organic coffee farm** – Farm interpretation and AFS management – Sustainable agricultural practices on small farms – Organic farming – AFS management	(Tscharntke et al., 2011).	FL	2
06	**FT 1: CoopeAtenas** Example of farmer organization for coffee production		FL	2
07	**FT 2: Tirimbina Rainforest Reserve**		FL	2
08	**The intertwined histories of cacao, coffee and Costa Rica:** How Costa Rica cultural was formed and influences by coffee production. Impacts of limited cocoa production. How this crops impact social norms and views.	(Gordon-Chipembere, 2016).	L	1.5

09	**Rainforest Alliance Certification** −Implementation and challenges of sustainable practices at CSDS −RFA programs and activities		L	1
10	**Intro to Research component and Group Division**		L	1
11	**Evaluating environmental and social food certifications**: Comparison of social and environmental sustainability of food certification. Their adoption in Costa Rica. Do these certification support sustainable livelihoods and agricultural practices?	(Bacon & Sundstrom et al., 2014).	L	1
12	**Data management and analysis workshop** −Organize data using Excel −Measures of location and dispersion −Graphic representation of data		Lab	2
	Agroforestry and landscape connectivity −The role of forest fragments and shade-grown coffee in tree species conservation at a landscape scale −Ecological processes in altered tropical landscapes	(Häger et al., 2015).	FL, D	1
13	**Species richness associated with agricultural methods** a) Species area relationships b) Habitat alteration and defaunation c) Landscape composition and matrix quality d) Species persistence in the agroscape	(Cruz-Angón, Baena & Greenberg, 2009).	L	1.5
14	**Race and class in relation to cacao and coffee production:** Cultural significance of these crops in indigenous and Caribbean groups. Does agrotourism promote and protect cultural traditions?	(Slingerland & Díaz Gonzalez, 2006). (Posas, 2013).	L	1.5

15	**Introduction to Life Monteverde coffee farm**		FL	2
16	**Monteverde Reserve orientation**		FL	2
17	**Guest lecture and orientation at Sibu Chocolate**: Chocolate tasting accompanied by history of cacao and modern fine chocolate production.		L	1.5
18	**Agrotourism as a development model:** How farming families and foreigners are harnessing interest in agriculture. Who benefits from agrotourism? What motivates tourists? Is agrotourism environmentally and socially sustainable?	(Vivanco, 2007).	L	1.5
19	**Benefits of sustainable agricultural practices on biodiversity**		L	1.5
20	Discussion AFS in biodiversity, rural development, climate change, adaptation and mitigation – Agroforestry and C-storage potential – Agroforestry and resilience to climate change – The role of functional diversity: potential synergies between conservation and climate change adaptation and mitigation	(González-Valdivia et al., 2017). (Richards & Mendez, 2014).	D	1.5
21	**Training research component**		Lab	2
22	**Field work**		Lab	15
23	**Data analysis & writing**		Lab/D	15
24	**Presentations**		P	
	Total instructional hours:			**63.5**

Reading List

Bacon, Christopher & Méndez, V & Fox, Jonathan. (2008). Cultivating Sustainable Coffee: Persistent Paradoxes. Confronting the Coffee Crisis: Fair Trade, Sustainable Livelihoods and Ecosystems in Mexico and Central America.

Bacon, C. M., W. A. Sundstrom, et al. (2014). Explaining the 'hungry farmer paradox': Smallholders and fair trade cooperatives navigate seasonality and change in Nicaragua's corn and coffee markets. *Global Environmental Change* 25: 133-149.

Blackman, A. and Naranjo, M.A. (2012). Does eco-certification have environmental benefits? Organic coffee in Costa Rica, *Ecological Economics*.

Cruz-Angón, A., Baena, M. L., & Greenberg, R. (2009). The contribution of epiphytes to the abundance and species richness of canopy insects in a Mexican coffee plantation. *Journal of Tropical Ecology*, *25*(5), 453-463.

González-Valdivia N.A., Cetzal-Ix W., Basu S.K., Casanova-Lugo F., Martínez-Puc J.F. (2017) Diversity of Trees in the Mesoamerican Agroforestry System. In: Ahuja M., Jain S. (eds) Biodiversity and Conservation of Woody Plants. Sustainable Development and Biodiversity, Vol 17. Springer, Cham.

Gordon-Chipembere, N. (July 11, 2016). African-Costa Rica Voices in the National Achieves: A History of Slavery and Cacao Production. *Tico Times*.

Häger, A., et al. (2015). Effects of management and landscape composition on the diversity and structure of tree species assemblages in coffee agroforests. *Agriculture, Ecosystems & Environment* 199: 43-51.

Hunter, M.C. et al. (2017). Agriculture in 2050: Recalibrating targets for sustainable intensification. *BioScience* 67: 386-391.

Lohse, R. (2010). Cacao and slavery in Matina, Costa Rica, 1650-17-50 in Black and Blackness in Central America, ed. L. Gudmendson and J. Wolfe, Duke University Press.

Moguel, P., & Toledo, V. M. (1999). Biodiversity conservation in traditional coffee systems of Mexico. *Conservation Biology*, *13*(1), 11-21.

Paige, J. (1997). Coffee and Power: Revolution and the Rise of Democracy in Central America, Chapter 3, Neo-Liberalism and Agro-Industry in Costa Rican. *Harvard University Press*.

Perfecto, I. and Vandermeer, J. (2008). Biodiversity Conservation in Tropical Agroecosystems. Annals of the New York Academy of Sciences, 1134: 173-200.

Posas, P. (2013). Shocks and Bribri Agriculture Past and Present. *Journal of Ecological Anthropology* 16, no. 1: 43-60

Richards, M. B. and Mendez, V. E. (2014), Interactions between Carbon Sequestration and Shade Tree Diversity in a Smallholder Coffee Cooperative in El Salvador. *Conservation Biology*, 28: 489-497

Slingerland, M.A. ; Díaz Gonzalez, E. (2006). Organic cacao chain for development: The case of the Talamanca small-farmers association In: Agro-food chains and networks for development / Ruben, R., Slingerland, M.A., Nijhoff, H., Dordrecht : Springer, (Wageningen UR Frontis Series 14) - p. 165 – 177.

Tscharntke, T. et al. (2011). Multifunctional shade-tree management in tropical agroforestry landscapes–a review. Journal of Applied Ecology 48(3): 619-29.

Vivanco, L. A. (2007). Green encounters: Shaping and contesting environmentalism in rural Costa Rica (Vol. 3). Berghahn Books.