SIT Study Abroad
School for International Training

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Agriculture, Ecology, and Sustainable Futures

ENVI 3010 (4 credits / 60 hours)

International Honors Program (IHP)
Food Systems: Agriculture, Sustainability, and Justice

PLEASE NOTE: This syllabus is representative of a typical term. Because courses develop and change over time to take advantage of unique learning opportunities, actual course content varies from semester to semester. In addition, considerations of student safety may change some course content.

Course Description

Food production ranks among the most environmentally significant of human activities. Agriculture is practiced in every corner of the planet and in all but the most extreme of ecosystems. Life-sustaining agricultural practices are, however, often linked to habitat and biodiversity loss, deforestation and greenhouse gas emissions, and increasingly to the extensive use of chemicals and non-point source pollution. Producing food uses twice as much water as all other human activities combined. In this context, and given new challenges posed by climate change, rapid urbanization and shifts in the balance of the global economy, how can we hope to sustain or even increase food production to meet the needs of 9 billion people while ensuring the ecological health of our agricultural systems and the green infrastructure our communities rely on?

This comparative course will explore, among other questions:

- How to reach global food security objectives while taking into account local and global environmental imperatives and realities?
- What prospects do currently dominant agricultural models, including industrialized agriculture, offer in the quest for global food security?
- What do agroecology and alternative models of agriculture, including traditional methods and scales, have to offer in our search for solutions?
- What role will science, technology and innovation play in creating a more food secure world?
- How will global climate change and associated changes in weather patterns, including increasingly severe weather events, rising sea levels, and changes in long-predictable weather patterns affect productivity and local environments, creating new threats, vulnerabilities and opportunities?
- How will new technologies change landscapes and affect biodiversity, offer opportunities on marginal lands, accelerate or decelerate deforestation and degradation?
- What systems, methods and tools can we look to that empower local producers to promote both productivity and ecological health?
- In a rapidly urbanizing world, how can urban agriculture contribute to local food security?

Course Goals

- Cultivate a community of respect, curiosity, and mutual support.
- Honor every member of our learning community as a whole human.
- Realize the ways in which we are all teachers *and* learners.
- Introduce students to capitalist processes which shape agrifood systems.
- Encourage students to embrace and grapple with uncertainty and complexity.
- Promote empathy, self-reflection, and critical thinking as complementary and mutually reinforcing learning skills.
- Ask questions that genuinely interest you.

Learning Outcomes

- Identify and describe the primary/common forms of agricultural production.
- Demonstrate understanding of basic ecological principles, cycles, and models.
- Identify and compare the ecological dimensions of various agricultural models.
- Distinguish between traditional, non-traditional and alternative agricultural systems.
- Define and describe the globalization of agricultural production/systems.
- Discuss the role of technology in driving agricultural change and emergent opportunities and challenges related to technological innovation.
- Identify and describe the relationships between, and the interrelatedness of, agricultural systems and climate change, resilience planning and food security.
- Compare challenges and best practices across the countries studied.

COURSE SCHEDULE AND READINGS

Topics covered in each module will draw on site visits, guest lectures, and other activities, in addition to the assigned readings. The order of the modules may be rearranged to respond to activities or opportunities presented in each Country Program.

Module 1: USA (12 hours)

Discuss in broad terms the foundations of the US food systems and compare modes of agricultural production (industrial -small scale, conventional-agroecologial)

SESSION 1: INTRODUCTION TO AGRICULTURE: BASIC PRINCIPLES OF ECOLOGY AND ECOSYSTEM SERVICES

Altieri, M.A. and C.I. Nichols (2012). Agroecology Scaling up for Food Soverignty and Resilience

SESSION 2: AGRICULTURAL PRODUCTION SYSTEMS: FROM INDUSTRIAL TO AGROECOLOGICAL

Altieri, M.A. and V.M. Toledo (2011). The agroecological revolution in Latin America: rescuing nature, ensuring food sovereignty and empowering peasants, Journal of Peasant Studies, 38:3, 587-612

Module 2: Ecuador (16 hours)

SESSION 1: BIODIVERSITY CONSERVATION AND FOOD SOVEREIGNTY

Torres B., Maza O.J., Aguirre P., Hinojosa L., Günter S. (2015) The Contribution of Traditional Agroforestry to Climate Change Adaptation in the Ecuadorian Amazon: The Chakra System. In: Leal Filho W. (eds) Handbook of Climate Change Adaptation. Springer, Berlin, Heidelberg.

Constitution of Ecuador: http://pdba.georgetown.edu/Constitutions/Ecuador/english08.html
Chapters: Healthy environment and Food Sovereignty

SESSION 2: ECOLOGY OF AGRICULTURE AND CLIMATE CHANGE

Zambrano-Barragán C., Zevallos O., Villacís M., Enríquez D. (2011) Quito's Climate Change Strategy: A Response to Climate Change in the Metropolitan District of Quito, Ecuador. In: Otto-Zimmermann K. (eds) Resilient Cities. Local Sustainability, vol 1. Springer, Dordrecht

FAO, 2017. Tracking adaptation in agricultural sectors. http://www.fao.org/3/a-i8145e.pdf pp.1-23

SESSION 3: MEASURING SUCCESS IN SUSTAINABLE FUTURES FOR AGRICULTURE

The story of agriculture and the sustainable development goals: https://farmingfirst.org/sdg-toolkit#section_2

https://unstats.un.org/sdgs/files/report/2018/TheSustainableDevelopmentGoalsReport2018.pdf

Ecological Footprint Calculator: https://www.footprintcalculator.org/

Module 3: Malawi (16 hours)

SESSION 1: AGRICULTURE AND NATURAL RESOURCES MANAGEMENT IN A DEVELOPING COUNTRY-MALAWI A CASE STUDY

FAO (2013). **Climate Smart Agriculture source book. www.fao.org**

SESSION 2: THE ROLE OF AGRICULTURE IN MITIGATING CLIMATE CHANGE AND FOOD INSECURITY

Mannion A. M. (1995). Agriculture and Environmnetal Change. Temporal and Environmental Dimension. John & Wiley, London.

Munasinghe M and Swart R (2005). Primer on climate change and sustainable development. Cambridge University Press, United Kingdom

SESSION 3: THE ROLE AND DEVELOPMENT OF AGRI-BIOTECHNOLOGY IN THE DEVELOPING WORLD

Ruttan, Vernon W., *Controversy about Agricultural Technology: Lessons from the Green Revolution* (International Journal of Biotechnology, 6(1), pp. 43-54: 2004).

SESSION 4: LAND TENURE, FARM INPUT SUBSIDY PROGRAM AND FOOD SECURITY

Barrow C.J (1995). Developing the Environment, Problems and Management. Longman Group

Module 4: Italy (16 hours)

SESSION 1: THE INTERFACE BETWEEN AGRICULTURE, ECOSYSTEM AND THE ENVIRONMENT IN THE ITALIAN PIEDMONT

Gliessman, S. R. (2006). The Agroecosystem Concept. *Agroecology: The Ecology of Sustainable Food Systems*. http://doi.org/10.1007/978-1-4612-3252-0

Power, A. G. (2010). Ecosystem services and agriculture: tradeoffs and synergies. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, *365*(1554), 2959–2971. http://doi.org/10.1098/rstb.2010.0143

Compagnoni A., Pinton R., Zanoli R. (2000): "Organic Farming in Italy", in GRAF S., WILLER H. (eds.): "Organic Agriculture in Europe: Current Status and Future Prospects of Organic Farming in Twenty-five European Countries", SÖL, Bad Durkheim.

SESSION 2: THE NEXUS BETWEEN BIODIVERSITY PRESERVATION, CLIMATE CHANGE AND AGRICULTURAL YIELD

Organisation for Economic Co-operation and Developement. (2015). Agriculture and Climate Change. Trade and Agriculture Directorate, (September). Retrieved from https://www.oecd.org/tad/sustainable-agriculture/agriculture-climate-change-september-2015.pdf

Kremen, C., & Miles, A. (2012). Ecosystem Services in Biologically Diversified versus Conventional Farming Systems : Benefits , *17*(4), 1–23. http://doi.org/10.5751/ES-05035-170440

Díaz, S., Fargione, J., Chapin, F. S., & Tilman, D. (2006). Biodiversity loss threatens human well-being. *PLoS Biology*. http://doi.org/10.1371/journal.pbio.0040277

SESSION 3: BIODIVERSITY INTEGRATION AND RURAL DEVELOPMENT IN NORTHERN ITALY: CASE STUDIES

Peano, C., Baudino, C., Tecco, N., Girgenti, V. 2015. Green marketing tools for fruit growers associated groups: Application of the Life Cycle Assessment (LCA) for strawberries and berry fruit eco-branding in northern Italy, Journal of Cleaner Production,104, 59-67.

Peano, C., Tecco, N., Dansero, E., Girgenti, V., Sottile, F. 2015. Evaluating the sustainability in complex agri-food systems: The SAEMETH framework, Sustainability, 7,

Banterle, A., Cereda, E., Fritz, M. 2013. Labelling and sustainability in food supply networks: A comparison between the German and Italian markets. British Food Journal, 115 (5),. 769-783.

Beccali, M., Cellura, M., Iudicello, M., Mistretta, M. 2009. Resource consumption and environmental impacts of the agrofood sector: Life cycle assessment of italian citrus-based products. Environmental Management, 43 (4),. 707-724.

Flanders, L.Indicators of Sustainable Development (ISD)(1999) Progress from Theory to Practice, pp. 10-15. Division for Sustainable Development, Department of Economic and Social Affairs, United Nations: New York, NY, USA

SESSION 4: STUDENT PRESENTATIONS

Evaluation and Grading Criteria

ASSESSMENT TASKS

Reading, preparation, and participation

This course depends on you being prepared for class discussion. For each class, you should read the assigned readings, prepare one or two questions, and raise them in class. These may be clarifying, reflective, or provocative questions about the readings, and can relate to your experiences outside the classroom. You will be assessed based on your contribution to group discussions, including your questions and responses to peers' questions, as well as your active listening and sharing of air-time.

Country-Specific Assingment

In each loation the relevant local faculty member will assign coursework integrating readings, excusrions/sitevisits/ and in-class lectures.

ASSESSMENT

20% Reading, preparation, participation

80% Country assingments as assigned by local faculty each term

Grading Scale

94–100%	A
90–93%	A-
87–89%	B+
84–86%	B
80–83%	B-
77–79%	C+
74–76%	C
70–73%	C-
67–69%	D+
64–66%	D
below 64%	F

Expectations and Policies

- Show up prepared.
- Complete assignments on time.
- Be attentive, engaged, and respectful with hosts, lecturers, and everyone else you meet.
- Do not cheat or plagiarize.
- Respect difference.
- Take ownership of your own learning as an individual and as a group.

Please refer to the SIT Study Abroad Handbook for policies on academic integrity, ethics, warning and probation, diversity and disability, sexual harassment, and the academic appeals process.

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