School for International Training | 1 Kipling Road, PO Box 676 | Brattleboro, VT 05302-0676 USA
Tel 888 272-7881 | Fax 802 258-3296 | studyabroad.sit.edu

# Agriculture, Ecology, and Sustainable Futures

ENVI3010 (4 credits)

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

*This syllabus is representative of a typical 3-country program. Note that program locations may change due to Covid-19 precautions. Because courses develop and change over time to take advantage of unique learning opportunities, actual course content varies from semester to semester.*

**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 environmental imperatives and realities?
- What prospects do currently dominant agricultural models, including industrialized agriculture, offer in the quest for 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**
Upon completion of the course, students will be able to:
- 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.

**Language of Instruction**
This course is taught in English

**Instructional Methods**
SIT's teaching and learning philosophy is grounded in the experiential learning theory developed by Kolb (1984; 2015) and informed by various scholars, such as Dewey, Piaget, Lewin, among others. Experiential learning theory recognizes that learning is an active process that is not confined to the formal curriculum; "knowledge is created through the transformation of experience" (Kolb, 2015, p. 49). Learning involves both content and process. Learning is holistic and happens through various life experiences upon which students draw to generate new ways of knowing and being. Learning involves a community and is a lifelong endeavor. Learning is transformational. The suggested four step-cycle of a *concrete experience*, *reflective observation*, *abstract conceptualization*, and *active experimentation* embedded in the experiential learning model is not linear and might not always happen in that specific order, as any learning is highly context dependent. These stages of taking part in a shared experience; reflecting on that experience by describing and interpreting it; challenging their own assumptions and beliefs to generate new knowledge; and ultimately applying new knowledge, awareness, skills, and attitudes in a variety of situations and contexts are important for students to engage in to become empowered lifelong learners.

## Assignments and Evaluation

Assignment Descriptions and Grading Criteria

*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 Assignment*
In each location a local faculty member will assign coursework integrating readings, excursions/site visits/ and in-class lectures.

Assessment

20% Reading, preparation, participation
80% Country assignments as assigned by local faculty each term

Attendance and Participation

Due to the nature of SIT Study Abroad programs, and the importance of student and instructor contributions in each and every class session, attendance at all classes and for all program excursions is required. Criteria for evaluation of student performance include attendance and participation in program activities. Students must fully participate in all program components and courses. Students may not voluntarily opt out of required program activities. Valid reasons for absence – such as illness – must be discussed with the coordinator or other designated staff person. Absences impact academic performance, may impact grades, and could result in dismissal from the program.

Late Assignments

SIT Study Abroad programs integrate traditional classroom lectures and discussion with field-based experiences, site visits and debriefs. It is critical that students complete assignments in a timely manner to continue to benefit from the sequences in assignments, reflections and experiences throughout the program.

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 |

## Program Expectations

- 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.

**SIT Policies and Resources**

Please refer to the SIT Study Abroad Handbook and the Policies section of the SIT website for all academic and student affairs policies. Students are accountable for complying with all published policies. Of particular relevance to this course are the policies regarding: academic integrity, research and ethics in field study and internships, late assignments, academic status, academic appeals, diversity and disability, sexual harassment and misconduct, and the student code of conduct.

Please refer to the SIT Study Abroad Handbook and SIT website for information on important resources and services provided through our central administration in Vermont, such as Library resources and research support, Disability Services, Counseling Services, Title IX information, and Equity, Diversity, and Inclusion resources.

**Course Schedule**

**Please be aware that topics and excursions may vary to take advantage of any emerging events, to accommodate changes in our lecturers' availability, and to respect any changes that would affect student safety. Students will be notified if this occurs*

***Module 1: Ecuador***

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

**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 Sovereignty 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

**SESSION 3: 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 4: ECOLOGY OF AGRICULTURE AND CLIMATE CHANGE**

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

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

### *Module 2: Spain*

**SESSION 5: FOOD AS COMMODITY AND PRODUCTION IN THE COMMONS**

Ostrom et al., 1999. Revisting the commons: Local lessons, Global Challenges. Science 284(5412): 278-282

Beuchelt, T.D. and D. Virchow (2012) Food Sovereignty or the Human Right to Adequate Food: Which Concept Serves Better as International Development Policy for Global Hunger and Poverty Reduction? *Agriculture and Human Values,* 29:2, pp. 259-173.

**SESSION 6: 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/

**SESSION 7: THE ROLE OF AGRICULTURE IN MITIGATING CLIMATE CHANGE AND FOOD INSECURITY**

Mannion A. M. (1995). Agriculture and Environmental 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 8: THE INTERFACE BETWEEN AGRICULTURE, REGENERATIVE ECOSYSTEMS AND THE ENVIRONMENT**

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: trade-offs 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

### *Module 3: South Africa*

**SESSION 9: 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 10: AGRICULTURE AND NATURAL RESOURCES MANAGEMENT IN A DEVELOPING COUNTRY- MALAWI A CASE STUDY**

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

**SESSION 11: LAND TENURE, FARM INPUT SUBSIDY PROGRAM AND FOOD SECURITY**

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

**Session 12: END OF PROGRAM STUDENT PRESENTATIONS**