Sustainable Agriculture
ENVS 325 - 01E
FALL 2015

Faculty Instructor:  Dr. Kelly Garbach
Email: kgarbach@luc.edu Phone: (773) 508-2948
Office & Lab: BVM Hall 424; IES 317
Office Hours: T/Th 2:30 p.m. – 3:30 p.m. in BVM Hall 424,
and by appointment

Class Meeting Times: T/Th 10 – 11:15 am, IES #218

Course Description: The course is based on a framework of interdisciplinary analyses of agroecosystems. We will engage in classroom presentations, discussions, lectures, and hands-on activities in the Ecodome greenhouse. We will explore the concepts governing the functioning of agroecosystems in relation to resource availability, ecological sustainability, and socio-economic viability. Throughout the semester we will examine strategies to increase resource use efficiency while minimizing negative impacts on the environment. Our work aims to build the skills to conduct comparative analysis of approaches to agriculture and its sustainability, including historical examples and trends, and alternative systems.

Objectives: We will examine challenges of food production, management decisions, and environmental change facing agroecosystems. Students in this course will work towards the following objectives:

<table>
<thead>
<tr>
<th>Course Objectives</th>
<th>Course learning outcomes</th>
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<tbody>
<tr>
<td>Learning fundamental principles, generalizations, or theories</td>
<td>• Identify key attributes of different agroecological systems</td>
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<td>• Characterize agroecosystems and their performance</td>
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<td>Learning to apply course material to improve thinking, problem solving, and decisions.</td>
<td>• Investigate societal trends in agriculture and outcomes for the natural resource base and human well-being</td>
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<td>• Evaluate potential approaches to increase agricultural sustainability</td>
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<td>Developing a clearer understanding of, and commitment to, personal values.</td>
<td>• Integrate personal experience with course content to enhance personal understanding and decision-making</td>
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**Readings:** We will draw from the core text (below) and supplemented with additional resources, which will be posted on Sakai, sakai.luc.edu.

I will announce readings in class and on Sakai. Please keep up to date on your email and check Sakai regularly to ensure that you don’t miss anything. All readings should be completed before the start of class so that you are prepared to actively contribute to our discussions.

**Core Readings**

**Expectations & Course Norms:** This course is a professional working group among colleagues. Extend the professional courtesies that you wish to receive (e.g. in e-mail correspondence and in discussion). Use of cell phones is limited to emergencies; no texting or personal calls during class. Use of laptops, tablets and other devices is acceptable for course-related activities only. These devices should not distract others. Attend the course meetings on-time and prepared to discuss readings and actively engage in group discussions. All participants should use their Loyola email to facilitate communication through Sakai and other shared resources.

The course is a dynamic and respectful place to question and explore diverse ideas, including those voiced by students, faculty and our guest speakers. Collegial debate and disagreement can be a healthy part of this process; this approach allows space for divergent views. Each of us brings a unique perspective to the discussion that can enrich the learning experience for everyone.

**Course Tasks & Evaluation**
Grades will be assigned in the course according to the following:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Maximum Percent Value</th>
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<tbody>
<tr>
<td>Class Participation</td>
<td>10%</td>
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<tr>
<td>Discussion leadership</td>
<td>10%</td>
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<tr>
<td>Crop planning and sustainability outlook</td>
<td>30%</td>
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<tr>
<td>Intercrop experiment</td>
<td>20%</td>
</tr>
<tr>
<td>Quizzes (two quizzes, 5% each)</td>
<td>10%</td>
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<tr>
<td>Final Exam</td>
<td>20%</td>
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Class Participation (10%)
Throughout the semester we will have guest speakers, brainstorming and discussions, hands-on activities, review questions, and written reflections. Participation includes both attendance and completion of in-class activities. You are responsible for material covered in presentations, class discussions, and activities. Please come by office hours anytime if you have questions or would like to discuss further.

Discussion leadership (10%)
Working in teams, students will facilitate short in-class discussions over the course of the semester in collaboration with your colleagues from class. This activity will allow you to select aspects of agroecology that interest you most for further discussion and investigation. Student teams will choose one thoughtfully selected resource and lead a short in-class discussion. Resources may include: a piece from popular press, such as The New York Times, or an on-line science resource such as The New Scientist, TED (Technology Environment and Design) Talks, Radio Lab, Science Friday, or other relevant sources.

Crop planning and sustainability outlook (30%)
We will work with a farm client on crop plans and sustainability outlook. After learning about the farm and consulting with the farm manager, student teams will develop proposals that include two main elements: 1) an updated crop plan (15%); 2) detailed natural history of several crops in use or those proposed for future plans (15%).

This work will include a trip to the LUREC farm, planned for Saturday, October 17th. Farm plans and natural histories will be presented and documented in a format suitable for sharing with the general public.

Intercrop experiment and supporting observations (20%)
Over the course of the semester we will conduct an experiment in the ecodome greenhouse exploring crop interactions and conducting quantitative analysis of the cropping system. We will support this experiment with observations of environmental conditions in the greenhouse. This experiment investigates questions encountered in both research and management of agroecosystems.

Taken together, the crop planning and sustainability outlook and intercrop experiment fulfill the university’s engaged learning requirement.

Quizzes (5% each, 2 quizzes)
Quizzes will cover material from lectures, guest presentations, readings, and in-class activities. They will be in presented in the same format as the final exam with a mix of essay and short answer questions.
Final Exam (20%)

Our final will be cumulative and cover material from lectures, guest presentations, readings, and in-class activities; it will be presented as a mix of essay and short answer questions. The final must be taken during designated class period. If you require alternative arrangements, please make them in advance so that we can request the proper approvals from the University and Institute of Environmental Sustainability.

Evaluation

Final letter grades will be calculated as follows, based on the cumulative percentage from the tasks listed above.

A: 94-100        A-: 90-93
B+: 87-89        B: 83-86        B-: 80-82
C+: 77-79        C: 73-76        C-: 70-72
D+: 65-69        D: 60-64        F: <60

Academic Honesty: I follow the College of Arts and Sciences definition of academic honesty: http://luc.edu/cas/pdfs/CAS_Academic_Integrity_Statement_December_07.pdf Breaches of this policy will automatically lead to zero points for the assignment/quiz/exam in question. I reserve the right to impose more severe penalties, including a failing grade for the course. All breaches of the policy will be reported to the Dean’s office.

Accessibility: Please let me know as soon as possible if you require consideration for a disability. I will be happy to work with you. Disabilities must be registered with the Services for Students With Disabilities (SSWD) office, and consideration will begin after I am made aware of the need. The University policy on accommodations and participation in courses is available at: http://www.luc.edu/sswd/

Overview of topics & activities: This is a draft schedule for the course topics and activities. Dates will be updated as the course progresses. Any changes will be announced in class and on Sakai. You are responsible for staying up-to-date on class schedule and activities.
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Draft in-class activities &amp; Guest Speakers</th>
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<tbody>
<tr>
<td>1</td>
<td>25-Aug</td>
<td>Introduction</td>
<td>Overview</td>
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<td></td>
<td>27-Aug</td>
<td>Cropping Systems</td>
<td>Student teams formed</td>
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<td>2</td>
<td>1-Sep</td>
<td>Agroecosystems</td>
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<td></td>
<td>3-Sep</td>
<td></td>
<td>Kevin Erickson - microgreens</td>
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<td>3</td>
<td>8-Sep</td>
<td></td>
<td>Tentative - Transplant intercrop experiment</td>
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<td>10-Sep</td>
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<td>4</td>
<td>15-Sep</td>
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<td>Winthrop garden tour</td>
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<td></td>
<td>17-Sep</td>
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<td>Emily Zach - LUREC Farm</td>
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<td>5</td>
<td>22-Sep</td>
<td>Abiotic Factors: Light &amp; Temp</td>
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<td>24-Sep</td>
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<td>6</td>
<td>29-Sep</td>
<td>Society &amp; Agroecology</td>
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<td>1-Oct</td>
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<td>Zach Grant - Local Food Systems and Small Farms Advisor</td>
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<td>7</td>
<td>6-Oct</td>
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<td>No Class – Fall Break</td>
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<td></td>
<td>8-Oct</td>
<td>Abiotic Factors: Moisture &amp; Soil</td>
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<td>8</td>
<td>13-Oct</td>
<td>Biotic Factors</td>
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<td>15-Oct</td>
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<tr>
<td>SAT</td>
<td>17-Oct</td>
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<td>LUREC FARM VISIT</td>
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<td>9</td>
<td>20-Oct</td>
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<td>Anthony Boatman - A Just Harvest</td>
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<td></td>
<td>22-Oct</td>
<td>Species Interactions</td>
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<td>10</td>
<td>27-Oct</td>
<td>Population Ecology</td>
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<td>29-Oct</td>
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<td>11</td>
<td>3-Nov</td>
<td>Genetic Resources</td>
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<td>5-Nov</td>
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<td>12</td>
<td>10-Nov</td>
<td>Agroecosystem Diversity</td>
<td>Tentative - David Miller, Iroquois Valley Farm</td>
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<td>12-Nov</td>
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<tr>
<td>13</td>
<td>17-Nov</td>
<td>Animals in Agroecosystems</td>
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<td>19-Nov</td>
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<td>14</td>
<td>24-Nov</td>
<td>Community &amp; Culture</td>
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<td>15</td>
<td>26-Nov</td>
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<td>No Class – Thanksgiving Break</td>
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<td>1-Dec</td>
<td>Review &amp; Synthesis</td>
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<td>3-Dec</td>
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<tr>
<td>Exam</td>
<td>Tuesday,</td>
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<td>Final Exam Period, 1-3 p.m.</td>
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<td>Dec 8th</td>
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