AGRI 0196 - INTRODUCTION TO SUSTAINABLE AGRICULTURE

Catalog Description

Hours: 54 lecture
Description: Introduction to the concepts and principles of agroecology as applied to the design and management of sustainable agricultural systems. Includes examination of case studies connecting sustainable agriculture principles to farming practices. (CSU, UC)

Course Student Learning Outcomes

- CSLO #1: Assess an agroecosystem for its level of sustainability based on indicators of a sustainable system.
- CSLO #2: Describe the values, themes, methods, and history of sustainable agriculture regionally and worldwide.
- CSLO #3: Summarize the ecological roles of plants and their functional relationships to an agro ecosystem.
- CSLO #4: Evaluate systems of water and soil management promoting the sustainable use of resources.

Effective Term

Spring 2019

Course Type

Credit - Degree-applicable

Contact Hours

54

Outside of Class Hours

108

Total Student Learning Hours

162

Course Objectives

1. Relate the methods of scientific investigation to agricultural productivity.
2. Describe the nature of scientific inquiry.
3. Describe the values, themes, methods, and history of sustainable agriculture regionally and worldwide.
4. Define sustainable agriculture.
5. Describe the characteristics of a natural ecosystem.
6. Compare and contrast the properties of natural ecosystems, sustainable agroecosystems, and conventional agroecosystems.
7. Evaluate the role of soil fertility in an ecological production system.
8. Discuss and evaluate the principles and strategies of sustainable agriculture.
9. Evaluate systems of water management promoting ecological use of resources.
10. Summarize the ecological roles of plants and their functional relationships to an agroecosystem.
11. Assess an agroecosystem for its level of sustainability based on indicators of a sustainable system.
12. Prescribe ways of converting to a sustainable system through the redesign of a conventional agroecosystem.
13. Identify career opportunities and objectives in sustainable agriculture.

General Education Information

- Approved College Associate Degree GE Applicability
  - AA/AS - Social Sciences
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- CSU Transferable
- UC Transferable

Methods of Evaluation

- Classroom Discussions
  - Example: Instructor provided prompts will be given based on course content. Example: What can we learn from traditional farming systems in developing countries by applying directed selection in a way that promotes sustainability? How do your own personal consumer choices exert pressure on the selection of the genetic material used by farmers?
- Essay Examinations
  - Example: Essay examinations will be given on course content. Example: Compare and contrast in essay format, the properties of natural ecosystems, sustainable agroecosystems, and conventional agroecosystems. Discuss at least four specific practices of each. Finally, explain at least two concerns raised about the impacts these practices are having on the sustainability of agriculture. Assignment will be evaluated based upon accuracy and development of ideas. Essay will be graded based on utilizing a rubric developed by the instructor and shared with students.
- Objective Examinations
  - Example: Objective examinations will be given on course content. Example: True or False: Nikolai Vavilov's contribution to botany was his theory that crops originated in places that have the greatest diversity of that crop.
- Reports
  - Example: A series of short written reports will be completed by students based on required reading. Example: In chapter 3 of The Sheer Ecstasy of Being a Lunatic Farmer titled Small is Okay what does Joel Salatin mean when he writes, "Localization is about being connected to the ecological umbilical"?

Repeatable

No

Methods of Instruction

- Lecture/Discussion
- Distance Learning

Lecture:

1. An instructor developed lecture is prepared using embedded images containing due dates, topics, learning outcomes and informational web sites to present the concepts used to evaluate an agriculture operation for factors of sustainability. Students will then apply the concepts to respond to discussion prompts. (Course Objectives 11, 12)

Distance Learning

1. The instructor may use instructor-developed lecture content to initiate, maintain and monitor effective instructor/student contact. For example, an instructor may develop an online text, audio and/or video lecture (with captions), which explains the concept of Organic production practices or other USDA marketing programs. After reading/listening/watching the assigned lecture content students may be asked to participate in a discussion board assignment which explains their understanding and addresses the relevance of the lecture content. (Course Objectives 3, 8, 10, 13)

Typical Out of Class Assignments
Reading Assignments

1. Read the assigned pages from the textbook and supplemental sources and be prepared to discuss various management tools of sustainable agriculture practices throughout history. 2. Students will be responsible for reading current media articles regarding sustainable agricultural practices and society's perception of those practices. They will then discuss the issues by applying scientific and ecological methodology to issues. For example, students will read current media articles regarding synthetic and natural fertilizers and discuss the scientific accuracy or inaccuracy of the facts supporting the perceptions and opinions presented in the article.

Writing, Problem Solving or Performance

1. Complete a series of mini in-class opinion papers reporting on current issues in sustainable food production before and after the topic is discussed in class. 2. Students will compose a term paper drawing on material presented in the class, in reading materials as well as additional resources. Grading will be based on content and accuracy. The paper should be submitted in the following format: 1. Topic Title 2. Brief Summary 3. Introduction outlining the issue and approaches to investigate the questions raised. 4. Discussion of all facets of the issue including programs in place by public or private organization to address the issue and relationship to all facets of sustainability. 5. Conclusions including proposed solutions and methodologies for addressing the issue and your assessment of the progress being made by public/private organizations in addressing the issue. The following are potential topics: -Population growth and sustainable agriculture practice productivity -The benefits and problems of inorganic fertilizer use in agriculture -Regulation and release of recombinant plants, animals and microorganisms into the environment -The Green Revolution and Sustainability -Biotechnology and sustainable agriculture -National Organic Program and Sustainability

Other (Term projects, research papers, portfolios, etc.)
Required Materials

- Agroecology: The Ecology of Sustainable Food Systems
  - Author: Stephen R. Gliessman
  - Publisher: CRC Press
  - Publication Date: 2014
  - Text Edition: 3rd
  - Classic Textbook?: No
  - OER Link:
  - OER:
- The Ecology of Agroecosystems
  - Author: John Vandermeer
  - Publisher: Jones & Bartlett Publishers
  - Publication Date: 2010
  - Text Edition: 2nd
  - Classic Textbook?: No
  - OER Link:
  - OER:
- Taking Sides: Clashing Views in Sustainablilty
  - Author: Robert W. Taylor
  - Publisher: McGraw Hill
  - Publication Date: 2010
  - Text Edition: 19th
  - Classic Textbook?: No
  - OER Link:
  - OER:
- Nature's Matrix: Linking Agriculture, Conservation and Food Sovereignty
  - Author: Ivette Perfecto, John Vandermeer, Angus Wright
  - Publisher: Earthscan Publications
  - Publication Date: 2009
  - Text Edition: 1st
  - Classic Textbook?: No
  - OER Link:
  - OER:

Other materials and-or supplies required of students that contribute to the cost of the course.