

Minnesota State College Southeast

BIOL 1240: Introduction to Agroecology

A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 3

Lab Hours/Week: 2

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: Goal 03 - Natural Science, Goal 10 - People/Environment

This course provides an introduction to the theory of agroecology and the current practices of sustainable agriculture. The components of farm management will be studied within the context of a complex ecosystem. Class time will be spent in lecture, lab, field studies and field trips to integrate concepts in agroecology, with actual practices in sustainable agriculture. (Prerequisite: none) (4 credits: 3 lecture/1 lab)

B. COURSE EFFECTIVE DATES: 05/01/2018 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Management of soil, water, and nutrients in an agricultural system
2. Historical and contemporary paradigms and practices in agriculture and food production
3. Biotic components and biodiversity in agroecology
4. Societal aspects of food production and farming practices on the local, regional, national, and global scale

D. LEARNING OUTCOMES (General)

1. Describe the ecological principles that support agroecosystems and compare the ecology and economy of agroecosystem landscapes at different scales
2. Describe the biological, physical, and chemical factors that affect plant growth and reproduction and how these factors are managed for agricultural production, particularly in southeast Minnesota
3. Examine conventional and alternative agricultural paradigms and practices from an agroecological perspective and incorporate the analyses of system productivity, resilience, diversity, and equitability
4. Discuss the ways in which socioeconomic, cultural, and political dynamics influence local and global food systems
5. Assess the challenges and opportunities encountered when developing and managing sustainable urban and small farm agricultural systems
6. Analyze current popular models of agroecology with a critical understanding of potential biological and sociological flaws
7. Identify innovative, sustainable food production strategies through the perspective of biological and sociological systems to determine how they are ecologically sound
8. Communicate in written and oral formats an understanding of sustainable agriculture concepts and their basis in a naturally functioning ecosystem

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

Goal 03 - Natural Science

1. Demonstrate understanding of scientific theories.
2. Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.
3. Communicate their experimental findings, analyses, and interpretations both orally and in writing.

Goal 10 - People/Environment

1. Describe the basic institutional arrangements (social, legal, political, economic, religious) that are evolving to deal with environmental and natural resource challenges.
2. Evaluate critically environmental and natural resource issues in light of understandings about interrelationships, ecosystems, and institutions.
3. Propose and assess alternative solutions to environmental problems.
4. Articulate and defend the actions they would take on various environmental issues.

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted