SUSAG 100 Course Outline as of Fall 2004

CATALOG INFORMATION

Dept and Nbr: SUSAG 100 Title: INTRO ECOLOGICAL AG
Full Title: Introduction to Ecological Agriculture
Last Reviewed: 1/28/2019

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	12	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	AG 120

Catalog Description:
Introduction to the concepts and principles of ecology as applied to the design and management of sustainable agroecosystems. Includes an examination of local case studies to connect ecological principles to actual farming practices.

Prerequisites/Corequisites:

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Introduction to the concepts and principles of ecology as applied to the design and management of sustainable agroecosystems. Includes an examination of local case studies to connect ecological principles to actual farming practices. (Grade or P/NP)
Prerequisites/Corequisites:
Recommended:
Limits on Enrollment:

Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**			Effective:	Inactive:
	C	Natural Sciences		Fall 2005	
CSU GE:	**Transfer Area**			Effective:	Inactive:
	B1	Physical Science		Fall 2019	
IGETC:	**Transfer Area**			Effective:	Inactive:
CSU Transfer:	Transferable	Effective:	Fall 2005	Inactive:	
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:
Not Certificate/Major Applicable

COURSE CONTENT

Outcomes and Objectives:
Upon successful completion of this course the student will be able to:
1. Summarize the history of agroecology regionally and world wide.
2. Describe the elements of a natural agroecosystem.
3. Compare and contrast the properties of natural ecosystems, sustainable agroecosystems, and conventional agroecosystems.
4. Evaluate the role of soil fertility in an ecological production system.
5. Analyze chemical and physical properties of soil.
6. Compare and contrast soils for their water holding capacities.
7. Optimize the use of water to promote an ecological use of resources.
8. Summarize the ecological roles of plants and their functional relationships to an agroecosystem.
9. Assess an agroecosystem for its level of sustainability based on indicators of a systainable system.
10. Prescribe ways of converting to a sustainable system through the redesign of an agroecosystem.
11. Identify career opportunities and objectives in sustainable agriculture.

Topics and Scope:

I. Introduction to Agroecology
 A. History of agroecology
  1. Regionally
  2. Worldwide
 B. Ecosystem characteristics
  1. natural ecosystems
  2. sustainable agroecosytems

3. conventional agroecosystems
C. Benefits of a sustainable agroecosystem
1. genetic diversity
2. productivity
3. resilience
4. reliance on external input
II. Ecological Principles
A. Niche
B. Succession
C. Biological diversity
III. Ecological Design Process
A. Steps
1. observation
2. visioning
3. planning
4. development
5. implementation
B. Natural patterns in the garden
IV. Soil
A. Soil minerals
1. macro and micro nutrients
2. signs of nutrient deficiency
B. Soil fertility
1. physical properties of soil
2. building soil life
a. humus
b. compost
c. mulch
d. cover cropping for fertility
V. Water
A. Use of water in agriculture
1. ecology of irrigation
2. optimizing use of the water resource
B. Water in the soil
1. soil moisture
2. water holding capacities
a. saturation
b. field capacity
c. wilting point
C. Water-conserving methods
1. high organic matter content
2. deep mulching
3. water-conserving plants
4. dense planting
5. soil contouring
a. swales
b. contours
6. water catchment
a. harvest and storage of rainwater
b. using greywater
VI. Plants
A. Plant uses

1. multipurpose plants
2. ecological roles of plants
a. mulch makers
b. nutrient accumulators
c. nitrogen fixers
d. soil fumigants and pest repellants
e. insecting plants
f. spike roots
g. wildlife nurturers
i. shelterbelters

B. Annuals and perennials
1. perennial vegetables
2. herbs
3. greens
4. roots and tubers

C. Microclimates

D. Plant communities
1. interplanting
2. polyculture
3. plant guilds

VII. Ecological Pest Management

A. Attracting beneficial insects
1. predatory insects
2. parasitic insects
3. pollinators
4. weed feeders

B. Attracting birds
1. food
2. water
3. shelter
4. protection
5. habitat diversity

C. Use of other animals
1. chickens
2. ducks
3. rabbits
4. other livestock species

VIII. Achieving Sustainability

A. Learning from existing agroecological systems
1. Biological Agriculture
2. Nature Farming
3. Organic Agriculture
4. Biodynamic Agriculture
5. Permaculture

B. Converting to sustainable practices
1. Establishing criteria for agricultural sustainability
2. Production conversion

IX. Career Opportunities in Sustainable Agriculture

Assignment:

1. Specific reading and study assignments from texts and handouts (20-30

pages per week).
2. Develop a soil fertility management plan.
3. Prepare a written evaluation of a local farm's level of sustainability, using the indicators of a sustainable system.
PowerPoint presentation.
2. Interviews with farmers for case studies.
3. Write 2-3 case studies, 3-5 pages each.
4. Quizzes, midterm, final exam.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Field notes/journal; field trip reports.	Writing 30 - 40%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

None	Problem solving 0 - 0%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Performance exams, PowerP	Skill Demonstrations 20 - 30%

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice, True/false, Completion	Exams 30 - 40%

Other: Includes any assessment tools that do not logically fit into the above categories.

None	Other Category 0 - 0%

Representative Textbooks and Materials:
Ecological Principles in Agriculture. Powers, Laura E. and McSorely, Robert. Delmar, 2000.
Agroecology: Ecological Processes in Sustainable Agriculture. Gliessman, Stephen R. Sleeping Bear Press, 1998.
Gaia's Garden: A Guide to Home-Scale Permaculture. Hemenway, Toby. Chelsea Green Publishing Co., 2000.