COURSE OUTLINE DEVELOPMENT

COURSE OUTLINE

1. Course Title: Agriculture & Sustainable Practices
2. CBEDS Title:
3. CBEDS Number:
4. Job Titles:

Agricultural Production	**Farming**
Market Gardener	**Farm Manager**
Crop Consultant	**Propagator**
Organic Inspectors	**Farm Advisor**
Compost Production & Sales	**Agricultural Supplier**

5. Course Description:
This is a year-long, advanced course in the Agriculture Pathway and is designed to provide the student with theories, principles and techniques related to sustainable food production. It provides a foundation in plant and soil science, integrated pest management, and ecological agriculture. Emphasis includes aspects of organic gardening and farming, tillage, compost production and crop planning and production. This course is intended to successfully prepare those students who plan on majoring in agricultural sciences at a four-year college and/or university. This course includes classroom instruction, practical lab work, research reports and field trips.

Student Outcomes and Objectives:

Students will:

1. Relate the methods of scientific investigation to agricultural productivity.
2. Define 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 the principles and strategies of sustainable agriculture.
9. Optimize the use of water to promote an 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.

Integrated throughout the course are career preparation standards, which include basic academic skills, communication, interpersonal skills, problem solving, workplace safety, technology, and employment literacy.

Pathway

Recommended Sequence	Courses
Introductory	Agriculture Science Basic Core
Skill Building	Animal Anatomy & Physiology *or* Floriculture *or* Ornamental Horticulture
Advanced Skill	**Agriculture & Sustainable Practices** *or* Viticulture

6. Hours: *Students receive up to 180 hours of classroom instruction.*

7. Prerequisites: Algebra 1 or concurrent enrollment, Ag Science Basic Core, Animal Anatomy & physiology or Floriculture or Ornamental Horticulture

8. Date (of creation/revision): July 2011

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Upon successful completion of this course, students will be able to demonstrate the following skills necessary for entry-level employment.

Instructional Units and Competencies	Course Hours	Model Curr. Standards	CA Academic Content Standards	CAHSEE
I. CAREER PREPARATION A. Career Planning and Management. 1. Know the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in careers. a. Students will identify skills needed for job success b. Students will identify the education and experience required for moving along a career ladder. 2. Understand the scope of career opportunities and know the requirements for education, training, and licensure. a. Students will describe how to find a job. b. Students will select two jobs in the field and map out a timeline for completing education and/or licensing requirements. 3. Know the main strategies for self-promotion in the hiring process, such as completing job applications, resume writing, interviewing skills, and preparing a portfolio. a. Students will write and use word processing software to create a resume, cover letters, thank you letters, and job applications. b. Students will participate in mock job interviews. 4. *Develop a career plan that is designed to reflect career interests, pathways, and postsecondary options.* *a. Students will conduct a self—assessment and explain how professional qualifications affect career choices.* *5. Understand the role and function of professional organizations, industry associations, and organized labor in a productive society.* *a. Contact two professional organization and identify the steps to become a member.* *6. Understand the past, present and future trends that affect careers, such as technological developments and societal trends, and the resulting need for lifelong learning.* *a. Students will describe careers in the agriculture industry sector.* *b. Students will identify work-related cultural differences to prepare for a global workplace.* B. Technology. 1. Understand past, present and future technological advances as they relate to a chosen pathway and on selected segments of the economy. 2. Understand the use of technological resources to gain access to, manipulate, and produce information, products and services. 3. Use appropriate technology in the chosen career pathway. C. Problem solving and Critical Thinking. 1. Understand the systematic problem-solving models that incorporate input, process, outcome and feedback components, and apply appropriate problem-solving strategies and critical thinking to work-related issues and tasks.	10 Additional hours are integrated throughout the course.	Transportation Industry Sector, Model Curriculum Standards 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0	Language Arts (8) R 1.3, 2.6 W1.3, 2.5. LC 1.4,1.5 1.6 LS1.2, 1.3, (9/10) R2.1,2.3,2 W2.5 LC1.4 LS 1.1, 2.3 (11/12) R2.3 W2.5 LC1.2 Math (7) NS1.2, 1.7 MR 1.1,1.3 2.7,2.8, 3.1	Lang. Arts R 8.2.1 (9/10) R 2.1, 2.3 W2.5 Math (7) NS 1.2, 1.3, 1.7 MR 1.1, 2.1, 3.1

Italicized text references "negotiated" curriculum; all other text references "guaranteed" curriculum.

2. Use and apply critical thinking and decision making skills to make informed decisions, solve problems, and achieve balance in the multiple roles of personal, home, work and community life. D. Health and Safety. 1. Know policies, procedures, and regulations regarding health and safety in the workplace, including employers' and employees' responsibilities. 2. Understand critical elements of health and safety practices related to a variety of business environments. E. Responsibility & Flexibility. 1. Understand the qualities and behaviors that constitute a positive and professional work demeanor. 2. Understand the importance of accountability and responsibility in fulfilling personal, community, and work-place roles and how individual actions can affect the larger community. 3. Understand the need to adapt to varied roles and responsibilities. F. Ethics and Legal Responsibilities 1. Know the major local, district, state, and federal regulatory agencies and entities that affect the industry and how they enforce laws and regulations. 2. Understand the concept and application of ethical and legal behavior consistent with workplace standards. *a. Contact a business and obtain a copy of their rules for employment.* *b. Role play difference ethical scenarios.* 3. Understand the role of personal integrity and ethical behavior in the workplace. G. Leadership and Teamwork. 1. Understand the characteristics and benefits of teamwork, leadership, citizenship in the school, community, and workplace settings for effective performance and attainment of goals. 2. Understand the ways in which professional associations, such as FFA, and competitive career development activities enhance academic skills, career choices, and contribute to promote employability. 3. Know multiple approaches to personal conflict resolution and understand how to interact with others in ways that demonstrate respect for individual and cultural differences and for the attitudes and feelings of others.				

Instructional Units and Competencies	Hours	Model Curr. Standards.	CA Academic Standards	CAHSEE
A .Introduction to Agroecology and Sustainable Agriculture 1. Definition of terms related to sustainable agriculture 2. Common themes of sustainable agriculture 3. The three "E's" of sustainability a. Economic viability b. Environmental health c. Equity (social) 4. Students will prepare a written evaluation of a local farm's level of sustainability.	10	Agriculture & Natural Resources Industry G6.0, G6.4	H/SC. 11; US History; 11.2	
B. Concepts of Agroecology and Sustainability 1. Agroecology as a science 2. Ecosystem characteristics 3. Ecological Principles 4. Steps in the ecological design process 5. Natural patterns in garden 6. Students will create a poster identifying the global impact of sustainable agriculture.	15	Agriculture & Natural Resources Industry G9.0	S. 8; Physical Science 6	**S. 9-12; Biology ; 1**
C. History of Sustainable Agriculture 1. Worldwide, United States, Regionally 2. Advent and crises of modern agriculture 3. Barriers to developing agriculture sustainability	20	Agriculture & Natural Resources Industry C1.0, C1.1, C1.3	S. 9-12; Biology; 2	
D. Principles of Sustainable Agriculture 1. Soil fertility and nutrient cycling 2. Enhancing and maintaining biological diversity a. students will formulate and test hypotheses regarding soil fertility in a productive system 3. Integrated pest management (IPM) 4. Input reduction 5. Water management 6. Conservation of natural resources 7. Ecosystem (agroecosystem) management 8. Benefits of sustainable agroecosystem a. students will evaluate and compare conventional vs. organic system field trials	25	Agriculture & Natural Resources Industry C10.0, C10.1, C10.2, C12.0, C12.1, C12.3	S. 8; Physical Science 6	
E. Achieving Sustainability 1. Learning from existing agroecological systems 2. Converting to sustainable practices a. students will analyze agricultural productivity in conventional vs. sustainable systems and write a 2 -3 page report on findings	45	Agriculture & Natural Resources Industry G9.0, G9.2	S. 8; Physical Science 6c S. 8; Physical Science 9 H/SC 12; Econ.; 12.2.2	
F. Specific Strategies 1. Soil fertility and nutrient cycling a. students will develop a soil fertility enhancement plan 2. Water Management 3. Enhancing and maintaining biological diversity 4. Integrated pest management (IPM) a. students will research and present how to attract beneficial insects, attracting birds and use of other animals 5. Input reduction (efficient use of inputs) 6. Conservation of natural resources 7. Ecosystem (agroecosystem) management 8. Animal Husbandry	55	Agriculture & Natural Resources Industry C2.0, C2.1, C2.4, G5.1		

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Instructional Units and Competencies	Hours	Model Curr. Standards.	CA Academic Standards	CAHSEE
G. Case Studies 1. National perspective 2. Local case studies a. students will conduct interviews with farmers for case studies b. students will write two to three case studies based on interviews		Agriculture & Natural Resources Industry Sector C1.0, C1.3		
H. Career Opportunities in Sustainable Agriculture		Agriculture & Natural Resources Industry 3.0		

10. Additional recommended/optional items

a. Articulation: None

b. Academic credit: 10 units for the year

c. Instructional strategies:

Methods of Instruction:

- Lecture and Discussion
- Audio visual materials
- Research Readings & Written Presentations
- Homework Assignments
- Group & Individual Activities
- Discussion & Group Dynamics
- Quizzes, Tests & Final Exam
- Guest Speakers
- Field Trips/Internet Exploration
- Seminar Presentation
- Field work

Assessment Methods:

- Quizzes, Tests, Final Exam 40%
- Laboratory investigation and write-ups 20%
- Writing assignments 10%
- Leadership & critical thinking activities 10%
- Research report and seminar presentation 10%
- Field work 10%

d. Instructional materials:

Powers, Laura E. and McSorely, Robert, Ecological Principles in Agriculture. Delmar, 2000.

Gliessman, Stephen R., Agroecology: Ecological Processes in Sustainable Agriculture. Sleeping Bear Press, 1998.

Hemenway, Toby, Gaia's Garden: A guide to Home-scale Permaculture. Chelsea Green Publishing co., 2000.

CDE Biological Science Content Standards
Research Handouts
Videos
DVD's
Internet

e. Certificates: None