# Sustainable/Alternative Agriculture Course No. 18310 Credit: 1.0

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| **Student name:**  |  | **Graduation Date:** |  |

Pathways and CIP Codes: Diversified Agricultural Science (01.0000); Natural Resources and Environmental Sustainability (03.0101)

Course Description: Sustainable/Alternative Agriculture courses explore technological and environmental changes and concerns. These courses address alternative approaches to food production including, but not limited to water resources management, organics, low-input, natural, and sustainable production methodology and practices. Course content may include comparing the effects of alternative production practices to those of conventional production practices.

Special Note: The AFNR College and Career Ready Skills are to be taught throughout the course utilizing FFA and SAE programming found at the Kansas Ag Ed website. Specific activities may be found in the SAE for All Teachers Guide and at National FFA.org. The AFNR College and Career Ready Skills competencies can be found at Kansas Ag Ed.

Opportunities in Agriculture Education & FFA:Classroom and laboratory instruction integrates and/or is supplemented by experiential, project, and leadership and personal development through FFA .Students should be introduced to FFA through leadership activities and College and Career Ready Skills. Specific FFA information and activities may be found in the “National FFA Student Handbook, 16thedition”. Student activities, scoring rubrics, grading examples, and teacher lessons are all found in the “FFA Student Handbook Teachers Guide”. Additional information can be found at [www.ffa.org](http://www.ffa.org/).

Workplace Skills, Supervised Agricultural Experience and Record Keeping: Classroom and laboratory instruction integratesand/or is supplemented by experiential, project, and work based learning through SAE. Specific SAE activities that support the College and Career Ready Skills may be found in the “SAE for All Guide”. Students should be introduced to Foundational SAE’s and the AET student portfolio system. Student activities, scoring rubrics, grading examples, and teacher lessons are all found in the “SAE for All Teachers Guide”. Additional information is found in the SAE Individual Learning Guides and Teacher Editions and in the AFNR College and Career Ready Competency Profile found at *Kansas Ag* *Ed.*

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: Define sustainability and discuss the principles and concepts of sustainable agriculture.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Define sustainable agriculture and discuss the principles of this idea. |  |
| 1.2 | Explain the concept of sustainable agriculture. |  |
| 1.3 | Discuss the connections between sustainable agriculture and human health. |  |
| 1.4 | Identify professional organizations and resources within the sustainable agriculture industry. |  |
| 1.5 | Contrast the concepts of biotechnology and genetic engineering with the concept of sustainability. |  |
| 1.6 | Explain the importance of conservation of resources. |  |

## Benchmark 2: Describe soil formation and management and assess its relevance to plant and animal production and natural resource management.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Describe soil characteristics and how they affect the use of land. |  |
| 2.2 | Explain how various soil management techniques affect environmental growing conditions. |  |
| 2.3 | Explain organic matter and how to maintain organic matter. |  |
| 2.4 | Describe the importance of nutrient management to soil ecosystems. |  |
| 2.5 | Identify techniques of vermiculture. |  |
| 2.6 | Illustrate crop rotation. |  |
| 2.7 | Explain the use of cover crops and green manure and animal manures. |  |
| 2.8 | Identify methods of conservation tillage. |  |
| 2.9 | Explain soil testing, soil pH and the effects of liming. |  |
| 2.10 | Differentiate between primary, secondary and micronutrients. |  |
| 2.11 | Analyze fertilizer formulas and ratios. |  |
| 2.12 | Identify application methods for fertilization. |  |
| 2.13 | Define soil productivity. |  |

## Benchmark 3: Describe organic production methods and steps to organic certification.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Define organic and its current impact on current agricultural methods. |  |
| 3.2 | Differentiate between conventional agriculture and organic production. |  |
| 3.3 | Clarify the types of organic certification and list the steps to becoming certified. |  |
| 3.4 | Discuss organic production systems in the United States. |  |

## Benchmark 4: Identify the importance of crop management and its relationship to sustainable agriculture.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Determine appropriate plant material based on planting season and beneficial rotation schedule. |  |
| 4.2 | Identify plants that work well together in companion planting settings. |  |
| 4.3 | Develop a management schedule for school and community gardens. |  |
| 4.4 | Describe water collection and micro irrigation systems. |  |
| 4.5 | Demonstrate sustainable agriculture practices in the school greenhouse environment. |  |

## Benchmark 5: Identify pests and determine control methods on plant and animal production.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | Explain water requirements for different crops. |  |
| 5.2 | Recognize critical periods of water use. |  |
| 5.3 | Explain soil moisture. |  |
| 5.4 | Determine the frequency of irrigation and amount of water needed. |  |
| 5.5 | Describe different methods of irrigation. |  |
| 5.6 | Discuss sources of water and water quality. |  |
| 5.7 | Identify mulching principles and materials. |  |

## Benchmark 6: Describe methods and benefits of composting.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Outline biological processes involved in composting. |  |
| 6.2 | List materials needed for compost production. |  |
| 6.3 | Explain the environmental factors that affect compost management. |  |
| 6.4 | Demonstrate how to utilize composting materials. |  |
| 6.5 | Construct a vermicomposting bin. |  |

## Benchmark 7: Describe the components of management intensive grazing (MIG).

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 7.1 | Explain the major environmental advantages of the optimum MIG. |  |
| 7.2 | Identify the limiting factors of the optimum MIG system. |  |
| 7.3 | Compare the individual forage allotment needs of each grazing species. |  |
| 7.4 | Describe the production and management of forage supplies. |  |
| 7.5 | Outline various grazing system designs. |  |
| 7.6 | Explain economic considerations for the optimum MIG system. |  |
| 7.7 | Prepare and present farmer case studies focusing on MIG. |  |

## Benchmark 8: Analyze principles of marketing and evaluate the various marketing models associated with sustainable agriculture.

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 8.1 | Determine and analyze your niche as a Market Farmer. |  |
| 8.2 | Utilize marketing strategies to develop a marketing plan that includes a record keeping system. |  |
| 8.3 | Create a chart identifying direct marketing models. |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

CTE Pathways Help Desk

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