# 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);Manufacturing 48.0000;

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.

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:

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