# Agricultural Food Science Course No. 18305 Credit: 1.0

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

Pathways and CIP Codes: **Animal Science, Health, and Related Industries (01.0901); Diversified Agricultural Science (01.0000)**

Course Description: Course imparts the knowledge and skills needed to produce and manufacture food products for the consumer market. These courses focus on food products while covering a variety of topics, such as quality selection and preservation, equipment care and sanitation, government regulations, marketing, consumer trends, and product research and development.

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: APPLYING PRINCIPLES OF SCIENCE

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Explain the application of chemistry and physics to food science. |  |
| 1.2 | Explain how the chemical and physical properties of foods influence nutritional value and eating quality. |  |
| 1.3 | Determine chemical and physical properties of food products. |  |
| 1.4 | Identify and explain common weights and measures used in the food products and processing industry. |  |
| 1.5 | Weigh and measure food products and perform conversions between units of measure. |  |
| 1.6 | Use weights and measures to formulate and package food products. |  |

## Benchmark 2: FOOD NUTRIENTS AND ADDITIVES

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Explain the Food Guide Pyramid in the relation to essential nutrients for the human diet. |  |
| 2.2 | Discuss the application of industry standards in the food products and processing industry. |  |
| 2.3 | Design a daily food guide for a healthful diet. |  |
| 2.4 | Discuss common food constituents (e.g., proteins, carbohydrates, fats, vitamins, minerals). |  |
| 2.5 | Compare and contrast food constituents and their relative value to product taste, appearance, etc.. |  |
| 2.6 | Analyze food products to identify food constituents.  |  |
| 2.7 | Identify common food additives (e.g., preservatives, antioxidants, buffers, stabilizers, colors, flavors). |  |
| 2.8 | Describe the purpose of common food additives. |  |
| 2.9 | Formulate and explain incorporation of additives into food products.  |  |

## Benchmark 3: SAFETY AND SANITATION

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Describe the effects food-borne pathogens have on food products and humans. |  |
| 3.2 | Explain techniques and procedures for the safe handling of food products. |  |
| 3.3 | Evaluate food product handling procedures. |  |
| 3.4 | Explain the importance of developing and maintaining Sanitation Standard Operating Procedures (SSOP). |  |
| 3.5 | Describe contamination hazards (physical, chemical and biological) associated with food products and processing. |  |
| 3.6 | Identify the seven principles of HACCP. |  |
| 3.7 | Explain the implementation of the seven principles of HACCP. |  |
| 3.8 | Perform quality-assurance tests on food products. |  |
| 3.9 | Explain the importance of record keeping in a food products and processing system. |  |
| 3.10 | Discuss documentation procedures in a food products and processing system.  |  |
| 3.11 | Explain safety standards that must be observed in facility design and equipment use. |  |
| 3.12 | Outline guidelines for personnel safety in the food products and processing industry. |  |
| 3.13 | Identify reasons for using a planned maintenance program to maintain equipment and facilities. |  |
| 3.14 | Develop a basic equipment and facility maintenance program.  |  |

## Benchmark 4: FOOD PRESERVATION, PACKAGING & STORAGE

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Identify methods of food preservation and give examples of foods preserved by each method. |  |
| 4.2 | Preserve foods using various methods and techniques. |  |
| 4.3 | Explain materials and methods of food packaging and presentation. |  |
| 4.4 | Identify and explain storage conditions to preserve product quality.  |  |
| 4.5 | Select and utilize packaging materials in storing processed foods and raw food products. |  |
| 4.6 | Analyze the foods stored in various packaging materials to determine which materials retain desirable food qualities. |  |
| 4.7 | Select methods and conditions for storing raw and processed food products. |  |
| 4.8 | Compare and contrast foods stored under varying conditions for quality, shelf life and intended use. |  |

## Benchmark 5: RESEARCH & DEVELOPMENT

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | Discuss the history and describe and explain the components (e.g., processing, distribution, byproducts) of the food products and processing industry. |  |
| 5.2 | Discuss how research and industry developments lead to improvements in the food products and processing industry. |  |
| 5.3 | Describe factors in planning and developing a new food product (e.g., regulation, creativity, and economics). |  |
| 5.4 | Identify and describe accepted animal treatment and harvesting techniques. |  |
| 5.5 | Describe the effects food-borne pathogens have on food products and humans.  |  |
| 5.6 | Describe the importance of premortem and post-mortem inspections of animals for harvest.  |  |
| 5.7 | Describe the importance of performing quality-assurance tests on food products.Identify quality and yield grades of food products. |  |
| 5.8 | Discuss factors that affect quality and yield grades of food products. |  |
| 5.9 | Select raw food products based on yield grades, quality grades and related selection criteria. |  |
| 5.10 | Plan and create a new food product.  |  |
| 5.11 | Perform sensory-testing and marketing functions to characterize and determine consumer preference and market potential. |  |

## Benchmark 6: FOOD LABELING AND REGULATIONS

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Explain the purposes of organizations that are part of or regulate the food products and processing industry. |  |
| 6.2 | Explain the importance and usage of industry standards in food products and processing. |  |
| 6.3 | Discuss the application of industry standards in the food products and processing industry. |  |
| 6.4 | Explain the purpose of Good Manufacturing Practices (GMP). |  |
| 6.5 | Explain the importance of food labeling to the consumer. |  |
| 6.6 | Explain the required components of a food label. |  |
| 6.7 | Prepare and label foods according to the established standards of regulatory agencies. |  |
| 6.8 | Prepare a plan for implementation of industry standards in food products and processing programs.  |  |

## Benchmark 7: MARKETING & SALES

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 7.1 | Explain the nature of marketing plans. |  |
| 7.2 | Implement marketing research to obtain and evaluate information for the creation of a marketing plan. |  |
| 7.3 | Obtain, develop, maintain, and improve a food product in response to market opportunities. |  |
| 7.4 | Use marketing strategies and processes to determine and meet client needs and wants. |  |
| 7.5 | Explain the concept of advertising.  |  |
| 7.6 | Define state and federal laws governing advertising practices.  |  |
| 7.7 | Describe product information for use in selling. |  |
| 7.8 | Identify customer's buying motives for use in selling.  |  |
| 7.9 | Explain the principles of supply and demand. |  |
| 7.10 | Determine product-line profitability. |  |

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

Instructor Signature:

For more information, contact:

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