# Plant & Animal Science Course No. 18301 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); Plant Science and Industry Operations (01.1101).

Course Description: **Technical Level:** Agricultural Production courses combine content related to animal and plant production, providing comprehensive coverage of the production functions of the agricultural industry. These courses typically cover such topics as care and management of farm animals, crop production and harvesting, plant and animal insect and disease control, efficient resource management, and farm management.

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: Agribusiness - Record Keeping & Accounting Fundamentals

Competencies

| # | DESCRIPTION | RATING |
| --- | --- | --- |
| 1.1 | Maintain production and agribusiness records. |  |
| 1.2 | Define the accounting equation. |  |
| 1.3 | Explain financial concepts associated with production and profit. |  |
| 1.4 | Identify accounting information in AFNR business reporting and management. |  |
| 1.5 | Summarize financial data for use in preparing various business financial statements. |  |
| 1.6 | Maintain accounting information needed to prepare an income statement, balance sheet and cash-flow analysis for an AFNR business. |  |
| 1.7 | Interpret and evaluate financial statements, including income statements, balance sheets and cash-flow analyses. |  |
| 1.8 | Calculate percentages, ratios and related business applications. |  |
| 1.9 | Explain the importance of return on investment for an agribusiness enterprise. |  |
| 1.10 | Interpret business performance data. |  |
| 1.11 | Conduct a breakeven analysis for an AFNR business. |  |
| 1.12 | Analyze data and draw appropriate statistical conclusions. |  |

Benchmark 2: Animal Science - Nutrition and Digestion

Competencies

| # | DESCRIPTION | RATING |
| --- | --- | --- |
| 2.1 | Identify/Describe the Functions Of the Major Digestive track Systems (Monogastric and Ruminant). |  |
| 2.2 | Explain The purpose and benefits of Feed additives and Growth promotants in Animal Production. |  |
| 2.3 | Compare and contrast common types of feedstuffs and the roles they play within the diets of animals. |  |
| 2.4 | Formulate Animal Feed Plans based off Nutritional Requirements Using feed ingredients that promote maximum nutrition and optimal economic production. |  |
| 2.5 | Determine Nutritional values of feedstuffs and their uses based on types of animals, digestive systems, ect.. |  |

Benchmark 3: animal science – safety and handling

Competencies

| # | DESCRIPTION | RATING |
| --- | --- | --- |
| 3.1 | Outline safety procedures for working with animals by species. |  |
| 3.2 | Describe animal husbandry and how it relates to safety and animal behavior. |  |
| 3.3 | Design systems that promote animal welfare and safety. |  |

Benchmark 4: food science – food products and processing

Competencies

| # | DESCRIPTION | RATING |
| --- | --- | --- |
| 4.1 | Describe the factors that affect consumer choices of food. |  |
| 4.2 | Explain the required components of a food label. |  |
| 4.3 | Identify and describe the purpose of common food additives. |  |
| 4.4 | Identify factors that affect food safety and quality. |  |
| 4.5 | Describe nutritional properties of food. |  |
| 4.6 | Describe factors that contribute to food deterioration. |  |
| 4.7 | Describe factors related to food preservation. |  |
| 4.8 | Explain procedures used to process foods safely. |  |
| 4.9 | Describe how processing techniques influence the nutritional value of food. |  |
| 4.10 | List the products and by-products from food animals. |  |
| 4.11 | Describe the processing of meat animals and animal products. |  |
| 4.12 | Explain the relationship between grading, inspecting, and branding of food products. |  |
| 4.13 | Identify the products and by-products of plants. |  |
| 4.14 | Describe how plant products are processed. |  |

Benchmark 5: Plant Science - Basic Soil Properties and Fertility

Competencies

| # | DESCRIPTION | RATING |
| --- | --- | --- |
| 5.1 | Explain the meaning and importance of soil. |  |
| 5.2 | Describe basic physical, biological, and chemical properties of soil and soilless media. |  |
| 5.3 | Identify various types of parent material and soil forming factors. |  |
| 5.4 | Describe how water holding capacity, available water, wilting points, permeability, and leaching, are affected by soil texture. |  |
| 5.5 | Explain considerations for determining N, P, and K for soil fertility and plant growth. |  |
| 5.6 | Perform soil test and interpret soil test data to give fertility recommendations. |  |
| 5.7 | Describe how pH affects soil health and nutrient availability. |  |
| 5.8 | Illustrate the Nitrogen and Oxygen cycles and how each is affected by climate, soil, and plants. |  |

Benchmark 6: Plant Science - Plant Structures and Systems

Competencies

| # | DESCRIPTION | RATING |
| --- | --- | --- |
| 6.1 | Classify plants according to life cycles, plant use, and status as monocotyledons or dicotyledons. |  |
| 6.2 | Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems. |  |
| 6.3 | Determine the influence of environmental factors on plant growth (light, water, temperature, etc). |  |
| 6.4 | Apply knowledge of photosynthesis, respiration, and transpiration to analyze how various environmental factors will affect the rate of each process. |  |
| 6.5 | Illustrate the sink/source of the complete carbon and oxygen cycles. |  |
| 6.6 | Demonstrate the proper use of plants in their environment. |  |

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

Instructor Signature:

For more information, contact:

CTE Pathways Help Desk

(785) 296-4908

pathwayshelpdesk@ksde.org



900 S.W. Jackson Street, Suite 102

Topeka, Kansas 66612-1212

[https://www.ksde.org](https://www.ksde.org/)

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