# Advanced Plant & Animal Science Course No. 18302 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: Course imparts the knowledge and skills needed to bring animal and plant products to market. They may cover a wide variety of topics, including care and maintenance of animals or plants, quality selection and preservation, equipment care and sanitation, government regulations, and marketing and consumer trends. Agricultural Processing courses may present an overview of agricultural processing or may specialize in particular types of products.

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.

**Prerequisite: 18301 – Plant and Animal Science**

## Benchmark 1: Agribusiness - Marketing & Risk Management

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Summarize supply and demand. |  |
| 1.2 | Assess why prices change. |  |
| 1.3 | Explain what a commodity is and give examples of commodities in agriculture. |  |
| 1.4 | Analyze how agricultural commodities are traded and sold. |  |
| 1.5 | Determine marketing strategies that are most likely to be effective in an AFNR business. |  |
| 1.6 | Implement and evaluate marketing strategies with agricultural commodities, products, and services. |  |
| 1.7 | Investigate the methods of marketing in AFNR as related to agricultural commodities, products, and services and to agricultural goods in domestic and international markets. |  |
| 1.8 | Determine ways to help mitigate risk for agribusinesses. |  |
| 1.9 | Explain futures contracts and their use in agriculture. |  |
| 1.10 | Explain hedging and its importance to producers and consumers of agricultural commodities. |  |
| 1.11 | Calculate net price paid/received for agricultural commodities when hedging is used. |  |
| 1.12 | Define and give examples of value-added products in agriculture. |  |
| 1.13 | Explain how value-added products can benefit agricultural producers. |  |

## Benchmark 2: Animal Science - Reproduction

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Explain components that affect the reproductive efficiency of female animals (Age, Size, life cycle, etc.). |  |
| 2.2 | Determine and select proper sires based off the Expected Progeny Differences. |  |
| 2.3 | Explain the Male and Female Reproductive organs of the major animal species |  |
| 2.4 | Compare the advantages and disadvantages of natural breeding vs Artificial insemination. |  |
| 2.5 | Explain Genetic inheritance in Agricultural Animals. |  |
| 2.6 | Evaluate the use of practices such as Embryo Transfer, Flushing, Estrous Synchronization and any other tools used within the animal reproduction industry. |  |
| 2.7 | Explain the materials, methods, and processes of Artificial insemination. |  |

## Benchmark 3: Animal Science - Biosecurity

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Explain the purpose of Biosecurity. |  |
| 3.2 | Determine how Biosecurity measures effect disease rates among animals. |  |
| 3.3 | Evaluate the steps used in biosecurity for a hog farm. |  |
| 3.4 | Discuss the protocols of biosecurity on a local, state, and national level used to ensure the protection of the animal industry. |  |

## Benchmark 4: Environmental and Natural Resources

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Describe the interdependence of organisms within an ecosystem. |  |
| 4.2 | Identify common trees, plants, and wildlife species in your area. |  |
| 4.3 | Discuss the procedures for conducting resource inventories and population studies. |  |
| 4.4 | Identify indicators of biological health of an ecosystem. |  |
| 4.5 | Identify methods of improving the biological health of an ecosystem. |  |
| 4.6 | Give examples of primary and secondary succession species in a community of organisms. |  |
| 4.7 | Discuss the factors that influence population density and population dispersion. |  |
| 4.8 | Discuss factors that influence the establishment and spread of invasive species. |  |
| 4.9 | Describe techniques to harvest and process wildlife, forest, and aquatic species. |  |

## Benchmark 5: Plant Science - Weed, Disease, and Pest Control

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | Describe the general principles of Integrated Pest Management. |  |
| 5.2 | Identify and analyze major local weeds, insect pests, and infectious and non-infectious plant diseases. |  |
| 5.3 | Read and interpret pesticide labels to calculate pesticide application rates. |  |
| 5.4 | Explain procedures for proper handling, use, and storage of pesticides. |  |

## Benchmark 6: Plant Science - Fertilizer Applications

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Identify and list characteristics of common solid, gas, and liquid fertilizers. |  |
| 6.2 | Develop and implement a fertilization plan for specific plants or crops. |  |

## Benchmark 7: Plant Science - Horticulture

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 7.1 | Identify common plant materials used in floral design. |  |
| 7.2 | Identify floral design tools and supplies. |  |
| 7.3 | Explain the principles and elements of floral design. |  |
| 7.4 | Design floral arrangements using the principles of floral design. |  |
| 7.5 | Describe greenhouse structures. |  |
| 7.6 | Explain greenhouse climate controls. |  |
| 7.7 | Identify and explain the function of plant growth regulators. |  |
| 7.8 | Propagate and grow floriculture and greenhouse crops. |  |
| 7.9 | Price floral designs and greenhouse crops. |  |

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](mailto:pathwayshelpdesk@ksde.org)



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