# Advanced Plant & Animal Science Course No. 18302 Credit: 1.0

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

Pathways and CIP Codes:Comprehensive Agricultural Science (01.9999)

Course Description:

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: Career Planning

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Evaluate and implement the steps and requirements to pursue a career opportunity in each of the AFNR career pathways (e.g., goals, degrees, certifications, resumes, cover letter, portfolios, interviews, etc.) |  |

## Benchmark 2: Agribusiness

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Prepare a business plan for a AFNR business. |  |
| 2.2 | Assemble interpret and analyze financial information and reports to monitor AFNR business performance and support decision making (examples: income statements, balance sheets, case flow analysis, inventory reports, break evens analysis, return on investment, taxes, etc.) |  |
| 2.3 | Analyze and assemble the information needed to obtain credit for AFNR businesses. |  |
| 2.4 | Analyze the role of markets, trade, competition and price in relation to an AFNR business sales and marketing plans.  |  |
| 2.5 | Identify and apply strategies to manage or mitigate risk |  |
| 2.6 | Create strategies to improve the production process of an agricultural product for an AFNR facility (e.g., SWOT strengths, weaknesses, opportunities and threats, supply chain management, etc.). |  |
| 2.7 | Construct comprehensive marketing plans for AFNR businesses |  |

## Benchmark 3: Animal Systems

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Analyze animal production procedures to ensure that animal products are safe for consumption (e.g., use in food system, etc.). |  |
| 3.2 | Select and evaluate breeding animals and determine the probability of a given trait in their offspring. |  |
| 3.3 | Select and utilize animal feeds based on nutritional requirements, using rations for maximum nutrition and optimal economic production. |  |
| 3.4 | Correlate the functions of animal cell structures to animal growth, development, health and reproduction. |  |
| 3.5 | Create and evaluate plans and procedures for artificial insemination, estrous synchronization, superovulation, flushing, embryo transfer and other reproductive management practices. |  |
| 3.6 | Design animal housing, equipment and handling facilities for the major systems of animal production. |  |
| 3.7 | Evaluate the effects of environmental conditions on animals and create plans to ensure favorable environments for animals. |  |
| 3.8 | Treat common diseases, parasites and physiological disorders of animals according to directions prescribed by an animal health professional. |  |
| 3.9 | Evaluate the effects of environmental conditions on animals and create plans to ensure favorable environments for animals |  |

## Benchmark 4: Biotechnology

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Analyze the relationship and implications of bioethics, laws and public perceptions on applications of biotechnology in agriculture (e.g., ethical, legal, social, cultural issues). |  |
| 4.2 | Evaluate the outcomes and impacts of biotechnology on the globalization of agriculture. |  |
| 4.3 | Devise and support an argument for or against an ethical issue associated with biotechnology in agriculture |  |

## Benchmark 5: Natural Resources & Environmental Sciences

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | Apply techniques to ensure a safe supply of drinking water and adequate treatment of wastewater according to applicable rules and regulations. |  |
| 5.2 | Evaluate and defend the importance of watersheds to ecosystem function. |  |
| 5.3 | Compare and contrast the impact of conventional and alternative energy sources on the environment and operation of environmental service systems. |  |
| 5.4 | Construct a plan for waste management in given situations (feedlot, fertilizer, chemicals, lagoons, etc.) |  |
| 5.5 | Analyze a strategy for monitoring and supporting environmental service systems through management of a species’ carrying capacity. |  |
| 5.6 | Evaluate how modern lifestyles affect resource consumption and energy use and devise a strategy to prevent the complete loss of a natural resource. |  |
| 5.7 | Analyze how modern perceptions of natural resource management, protection, enhancement and improvement change and develop over time. |  |
| 5.8 | Evaluate the impact of laws associated with environmental service systems for their impact on wildlife, people, the environment and the economy. |  |
| 5.9 | Design a master land-use management plan for a given area that utilizes land capability classes in order to minimize erosion and flooding, maximize development and preservation of topsoil, et cetera. |  |
| 5.10 | Interpret and evaluate GIS data to come to a conclusion about a scenario specific to environmental service systems |  |

## Benchmark 6: Food Products & Processes

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Determine a strategy to prepare and label foods according to the established standards of regulatory agencies. |  |
| 6.2 | Outline procedures to assign quality and yield grades to food products according to industry standards. |  |
| 6.3 | Propose and implement culturally sensitive food processing and distribution practices. |  |
| 6.4 | Examine and respond to consumer concerns about the environment and safety of the food supply using accurate information regarding food products and processing systems and practices |  |

## Benchmark 7: Plant Systems

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 7.1 | Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems. |  |
| 7.2 | Evaluate the impact of using genetically modified crops on other production practices. |  |
| 7.3 | Prepare and implement a plant production schedule based on predicted environmental conditions and desired market target (e.g., having plants ready to market on a specific day such as Mother’s Day, organic production, low maintenance landscape plants, etc.). |  |
| 7.4 | Select and defend the use of nationally/internationally grown or locally/ regionally grown for a production operation system. |  |
| 7.5 | Develop and implement a management plan for plant production. |  |
| 7.6 | Develop and implement a plan for integrated pest management for plant production. |  |
| 7.7 | Apply principles and practices of sustainable agriculture to plant production. |  |
| 7.8 | Harvest, handle and store crops according to current industry standards. |  |
| 7.9 | Create designs using plants |  |

## Benchmark 8: Ag Communications

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 8.1 | Evaluate personal strengths and areas for growth with regard to speaking formally and informally with clarity, logic, purpose and professionalism, and identify ways to improve. |  |
| 8.2 | Compose clear and coherent written documents and visuals (e.g., agendas, audio-visuals, drafts, forms, etc.) that are adapted to the audience needs in both formal and informal settings |  |

## Benchmark 9: Ag Research

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 9.1 | Design plans for use and implementation of reliable research methods to generate data for decision making in workplace and community situations |  |

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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