

Lassen Community College Course Outline

AGR-10 Introduction to Animal Science

3.0 Units

I. Catalog Description

This is a course in principles of Animal Science. Topics will include anatomy, physiology, endocrinology, reproduction, molecular and classical genetics, animal health and animal behavior. The course will provide an overview of the origin, characteristics, adaptation and contribution of farm animals to the agriculture industry. Laboratory exercises will provide an introduction to the empirical method including data collection and analysis. This course has been approved for hybrid delivery.

Diversity Statement: Our commitment to diversity requires that we strive to eliminate barriers to equity and that we act deliberately to create a safe and inclusive environment where individual and group differences are valued and leveraged for the growth and understanding as an educational community.

Recommended Preparation: Successful completion of ENGL105 or equivalent multiple measures placement.

Transfers to both UC/CSU

C-ID AG-AS 104

General Education Area: A

CSU GE Area B

IGETC Area 5

34 Hours Lecture, 51 Hours Lab, 68 Out of Class Hours, 153 Total Hours of Instruction
Scheduled: Fall

II. Coding Information

Repeatability: Not Repeatable, Take 1 Time

Grading Option: Graded or Pass/No Pass Credit

Type: Credit - Degree Applicable

TOP Code: 010200

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Demonstrate effective animal husbandry practices, utilizing available nutrients to develop a least cost method of feeding.
2. Demonstrate animal health practices and prescribe proper treatment.
3. Plan a ranch management calendar for the major farm animal species (beef, sheep, swine, and dairy).

B. Course Objectives

Upon completion of this course the student will be able to:

1. Write a paper using the scientific method.

2. List and discuss characteristics of living organisms. Describe the differences between plant and animal cells, draw cells from a microscope slide, draw and explain Mitosis and Meiosis.
3. Describe the anatomy and physiology of the Digestive System. Compare digestive systems (monogastric and ruminant). Identify the function, size and length of the digestive system.
4. Describe the anatomy and physiology of the skeletal system, find and label parts of a skeleton, orally explain the function and location of the bones.
5. Describe the anatomy and physiology of muscles and nervous systems, produce a sarcomere drawing, and identify muscle groups of support, muscle groups of locomotion and nervous system physiology.
6. Describe the anatomy and physiology of the circulatory, respiratory and urinary systems. Dissect heart and lungs, compare fetal to regular, track the flow of oxygen through this system.
7. Identify the endocrine system with focus on glands and their secretion, the chemical nature of hormones, and regulation of hormones.
8. Describe the role of nutrition in animal health and describe the role of nutrients, TDN and its importance, list the different nutrient values and apply appropriate nutrient values in the feeding process.
9. Describe the functions of the primary and secondary immune system and accurately identify the principles involving vaccination, demonstrate proper vaccination handling, correct selection of injection sites, identify diseases that respond to vaccination, describe role of antibiotics and the effect of antibiotics on bacteria.
10. Explain basic strategies for disease control, prevention and management
11. Describe the anatomy and physiology of the male and female reproductive systems including endocrine relationships on beef, swine, and horses. Discuss appropriate methodology for artificial insemination, embryo transfer and C-sections. Describe the birthing processes; discuss hormones associated with parturition, and synchronization of estrus.

IV. Course Content

- A. Introduction to Animal Biology
 1. Career Opportunities
 2. History
 3. Life cycles of agricultural animals
 4. Natural selection vs Artificial selection
- B. Animal Products
 1. Impact on the world economy
 2. Trends in consumption
 3. Importance of domestic animals to the world and the United States
- C. Meat Production and Consumption
 1. Diet - Health Considerations
 2. Advertising and promotion
 3. Grading of products
- D. The Cell
 1. Anatomy

2. Physiology
- E. Principles of Genetics
 1. Mitosis and Meiosis
 2. Segregation and recombination
 3. Phenotypic and genotypic relations
 4. Sex linked, sex influenced, sex limited
 5. Transcription and translation
- F. Anatomy and Physiology
 1. Digestive System
 2. Muscular System
 3. Skeletal System
 4. Nervous System
 5. Circulatory System
 6. Respiratory System
 7. Urinary System
- G. Application of Endocrinology
 1. Endocrine glands and their secretion
 2. Chemical nature of hormones
 3. Regulation of hormones
- H. Animal Nutrition
 1. Nutrients
 2. Livestock feeding management practices
 3. Comparative digestion (monogastric/ruminant)
- I. Reproduction
 1. Basics of anatomy and physiology
 2. Artificial insemination
 3. Embryo transfer
 4. C-sections
 5. Palpation
- J. Physiology of Growth
 1. Prenatal growth
 2. Postnatal growth
 3. Nutritional and environmental impacts
- K. Physiology of Lactation
 1. Anatomy of mammary gland
 2. How milk is made
 3. Factors effecting lactation
- L. Animal Health and Disease
 1. Primary immune system
 2. Secondary immune system
 3. Vaccinations
 4. Zoonotic diseases
- M. The Scientific Practices of the Following Industries
 1. Beef and Dairy
 2. Sheep and Goats
 3. Swine

4. Horse
 5. Poultry
- N. Animals as a Tool for the Environment
1. Grazing plan
 2. Animal welfare issues
 3. Public policy and consumer awareness
 4. Grass Management

V. Lab Activities

Individual Laboratory Activities may include but are not limited to:

1. Career exploration
2. Disease diagnoses
3. Cell Laboratory (Mitosis and Meiosis)
4. Heart and lung dissection
5. Blood flow and blood typing
6. Immune system and Vaccinations
7. Skeletal system/ Bone hunt and Identification
8. Ruminant/ monogastric Dissection and comparison
9. Reproduction (AI and ET)
10. Ultrasound (reproduction and carcass analysis)
11. DNA samples and analysis
12. Mendelian genetics (managing herds against simple recessive traits)
13. Animal Health program/Vaccination and titer evaluation(disease prevention)
14. Animal behavior and animal handling

VI. Assignments

A. Appropriate Readings

Students will be assigned readings from the representative text and other sources as assigned (journals, magazine articles, industry publications).

B. Writing Assignments

The student will write at least one paper using scientific methodology, and several written measures to demonstrate understanding of course content, using mixed format, essay examinations, and a final term paper written on a topic of interest appropriate to the course objectives and course content.

C. Expected Outside Assignments

Outside assignments may include weekly essays related to each learning unit, relevant research studies and field trips to area farms and ranches.

D. Specific Assignments that Demonstrate Critical Thinking

The student will be required to write a term paper relating to a current topic of political and economic importance within the Agriculture Industry. (I.E. animal rights, management system alternatives or consumer awareness.) The students critique and recommendations for alternatives will measure critical thinking.

VI. Methods of Evaluation

Traditional Classroom Evaluation

Student grades will be determined by the following:

- A. Final Exam
- B. Participation in classroom and lab activities
- C. Quizzes, essays, written assignments
- D. Term paper

Hybrid Evaluation

Quizzes and exams could be administered in person and/ or online. Students will be expected to complete online assignments and activities equivalent to in class assignments and activities for the online portion of the course. Electronic communication, both synchronous and asynchronous (chat/forum) will be evaluated for participation and to maintain effective communication between instructor and students.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Traditional Classroom | <input type="checkbox"/> Correspondence Delivery |
| <input checked="" type="checkbox"/> Hybrid Delivery | <input type="checkbox"/> Online Delivery |

Traditional Classroom Delivery

Lecture, discussion, audio-visual media, field trips, labs and other appropriate methods to be determined by the instructor.

Hybrid Delivery

Hybrid modality may involve face to face instruction mixed with online instruction. A minimum of 1/3 of instruction, including 100% labs, will be provided face to face. The remaining hours will be taught online through a technology platform as adopted by the district.

VIII. Representative Texts and Supplies

Fields, Tom; *Scientific Farm Animal Production*, 12th edition, 2018, Pearson, ISBN: 9780135187258

IX. Discipline/s Assignment

Agricultural Production

X. Course Status

Current Status: Active

Original Approval Date: 2/27/1990

Revised By: Brian Wolf

Curriculum/Academic Standards Committee Revision Date: 12/5/2023

Revised for IPR, no change: 03/15/2022