EL DORADO UNION HIGH SCHOOL DISTRICT
Educational Services

Course of Study Information Page

Course Title: Animal Science #724	
Rationale: This course fulfills a need for students who have a keen interest in Animal Science and who would like to pursue this area as a career.	
Course Description: This course will expand on Animal Science knowledge that was learned in Ag Science 1 and Ag Science 2. Students will learn scientific concepts related to animals and apply these in hands-on situations. The FFA leadership organization and Supervised Agricultural Experience Projects are an integral part of this class.	
How Does This Course Align With or Meet State and District Content Standards? (Please attach a copy of the standards used) – This course meets the state standards for agriculture in the Animal Science Advanced Cluster.	
Length of Course:	1 Year
Grade Level:	11-12
Credit: x Number of units: 5 credits ❑Meets graduation requirements ❒ Request for UC "a-g" requirements ❒ College Prep x Elective x Vocational	
Prerequisites:	Completion of Ag Science 1 and 2, Teacher Permission
Department(s):	Agriculture
District Sites:	PHS
Board of Trustees Adoption Date:	March 11, 2003
Textbook(s)/Instructional Materials:	Miscellaneous Supplementary Materials
Date Adopted by the Board of Trustees:	May 20, 2003

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UNIT # 1: Livestock Tools, Equipment, and Restraint

GOAL: Students shall become familiar with the correct and safe use of livestock facilities, restraint equipment, and tools necessary for animal housing and care.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Name and demonstrate the use of tools commonly used to restrain farm animals.	1. Tool search (actual and pictures) Demonstrations
2. Discuss the purposes of proper handling and restraint as it relates to the safety of both the handler and livestock	2. Teacher Led Discussion and Demonstrations
3. Create a plan of a livestock facility for a species of their choice using accepted rules for facilities.	3. Livestock Facility Project

Content Area Standards (State Agriculture Standards, Animal Science Advanced Cluster)
The students will achieve the following content standards:
2.1 Students will understand the correct and safe uses and selection of animal facilities and housing, restraint equipment, and tools.

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UNIT # 2: Nutrition and Feeds

GOAL: Students shall develop an advanced understanding of the principles involved in animal nutrition and feeds.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Identify three common roughages and four concentrates available in your area and discuss which feeds have the highest content (percentage) of nitrogen, energy, protein, calcium, and phosphorus.	1. Teacher led discussion Feed Identification Lab
2. Identify the major feed additives on the market, explain how each additive affects production, and review governmental regulations pertaining to the use of each.	2. Feed Tag Lab
3. Explain how hormones are used as growth regulators and list the animals on which those hormones are used.	3. Research and Discussion
4. Develop a low cost (specifying actual cost) feed ration for one species of livestock for maintenance, growth, and lactation using concentrates and roughages available locally.	4. Ration Balancing
5. List vitamins and amino acids not synthesized by livestock species and identify feeds high in these specific nutrients.	5. Nutritional Disease Reports
6. Describe the symptoms of five common nutritional diseases caused by vitamin or mineral deficiencies or toxicity and explain the treatment and prevention of these diseases.	6. Nutritional Disease Reports
7. Explain the importance of a consistent feeding regime and list possible metabolic disease problems that may occur due to sudden changes in the ration.	7. Teacher Led Discussion
8. Define “creep-feeding” and explain its value in an animal’s feeding regime.	8. Teacher Led Discussion

9. Given specific data, calculate the rate of gain and cost of feed per pound of gain per day for three livestock species.	9. Feeds Problems
10. Feed and maintain an animal through a full production cycle.	10. Class Supervised Agricultural Experience Program

Content Area Standards (State Agriculture Standards, Animal Science Advanced Cluster)
The students will achieve the following content standards:
2.2 Students will understand principles of animal nutrition. Students will understand the interrelationship between the digestive, endocrine, and circulatory systems. 2.16 Students will understand the principles of feeds and feeding.

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UNIT # 3: Animal Physiology

GOAL: Students shall learn the structure, function, and maintenance of the major organ systems of an animal (e.g. respiratory, excretory, endocrine, and digestive), their interrelationships, and their role in maintaining homeostasis.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Demonstrate an understanding of the structure and function of the digestive system by tracing the pathways of food through the four types of livestock digestive systems, with emphasis on function of organs in the digestive process.	1. Teacher Led Discussion Paper Mache Lab
2. Briefly explain the process of respiration, utilizing a diagram of the lungs.	2. Teacher Led Discussion
3. Describe the function of the endocrine system, the location of the glands, and list the hormones that affect growth and reproduction.	3. Endocrine System Presentations

Content Area Standards (State Agriculture Standards, Animal Science Advanced Cluster)
The students will achieve the following content standards:
2.3 Students will understand the structure, function, and maintenance of the major organ systems of animals.

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UNIT # 4: Livestock Breeding and Genetics

GOAL: Students will understand the principles of livestock breeding and Mendelian genetics, and the importance of heritability in a breeding program.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Briefly define the chromosome theory of inheritance.	1. Teacher Led Discussion
2. Draw and describe the difference between oogenesis and spermatogenesis.	2. Playdough Lab
3. Review (from the Basic Core, #250) and define the terms: phenotype, genotype, gene, allele, homozygous, heterozygous, variation, and mutation.	3. Teacher Led Discussion
4. Diagram the phenotypic and genotypic results of a cross, using traits common to modern livestock, which exhibit classic dominant and recessive characteristics.	4. Cross Breeding Project
5. Diagram a dihybrid cross (e.g. using two heterozygous gene pairs), and determine the genotype of he offspring.	5. Teacher Led Discussion
6. Identify an advantage and disadvantage of the following breeding systems and give a situation when each could be used: inbreeding, linebreeding, closebreeding, outcrossing, and crossbreeding.	6. Situational Problems
7. Define hybrid using the cross between a horse and a donkey as an example and explain the genetic effects that make offspring sterile.	7. Teacher Led Discussion
8. Describe the genetic factors that influence the sex of an offspring.	8. Teacher Led Discussion
9. Define prepotency as it relates to genetics and name a famous sire that possessed these characteristics.	9. Pedigree Search
10. Define heritability and explain why selection is important in the livestock industry.	10. Pedigree Search

11. Describe a surgical and a nonsurgical method of embryo transfer and explain the impact that embryo transfer has made on the animal genetics industry.	11. Embryo Transfer Videos
12. List important factors to consider in a bull fertility test.	12. Bull Test Review
13. Explain the process of artificial insemination and its impact on the gene pool in modern livestock.	13. Artificial Insemination Lab
14. List three methods to detect estrus in livestock, explain the importance of detection in a breeding program, and describe the equipment used to detect estrus.	14. Reproduction Videos
15. List the three stages of parturition, explain when each stage begins and ends, describe the proper fetus presentation, and list possible problems that may occur during delivery.	15. Normal Livestock Parturition Videos
16. Verbally outline the development of a prenatal farm animal from fertilization to birth using slides.	16. Chick Embryo Slide Viewing
17. Compare and contrast the estrous cycles of the mare, cow, sow, ewe, and doe rabbit and include the seasons of the year in which they cycle.	17. Estrous Cycle Charts
18. List the gestation periods of the mare, cow, sow, ewe, and doe rabbit.	18. Gestation Charts
19. Define the term freemartin and identify the problems that can occur with freemartins in bovine breeding programs (genetic level).	19. Teacher Led Discussion
20. Describe the proper environment for the female during gestation, parturition, and lactation.	20. Reproduction Videos
21. Describe the proper maintenance and care of male breeding stock.	21. Teacher Led Discussion
22. Identify the recommended breeding age for the bull, stallion, buck, boar, and ram and the potential amount of service (years) for breeding males of each species.	22. Male Breeding Charts
23. Develop a feeding regime for a dam through gestation, parturition, and lactation.	23. Situational Problems
24. Perform the appropriate husbandry practices when handling newborn animals.	24. Hands-on Labs Livestock Parturition Videos
25. Visually identify cross-breeds of commercial livestock and explain the advantages of the cross.	25. Cross Breeding Project

Content Area Standards (State Agriculture Standards, Animal Science Advanced Cluster)
The students will achieve the following content standards:
2.4 Students will understand the structure and function of the endocrine and reproductive systems and how they relate to reproductive management practices and fetal development. 2.5 Students will understand the basic theory of inheritance, the genetic basis for animal selection, the process of fertilization, the role(s) of DNA and RNA, and the process of meiotic division to form sperm and ova.

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UNIT # 5: Animal Health

GOAL: Students shall develop an in-depth understanding of specific health problems, related to cattle, sheep, swine, horses, poultry, and rabbits, and the identification, treatment, and prevention of these problems.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Describe the differences between vaccines, anti-serum, and bacterins and explain how each is used to fight disease.	1. Teacher Led Discussion
2. Identify five categories of pathogens and list the major classes of each.	2. Teacher Led Discussion
3. List the current major infectious diseases for at least four species of livestock in California and describe the symptoms, treatment, prevention, and economic significance of each.	3. Internet Research
4. Identify four noninfectious causes of disease and methods of prevention.	4. Teacher Led Discussion
5. Take the body temperature of four livestock species, compare the readings with the normal temperatures of each species, and discuss factors that may increase or decrease an animal's body temperature.	5. Animal Examination Lab
6. Demonstrate proper methods of subcutaneous and intramuscular injections on livestock.	6. Live or Mock Injection Lab
7. Calculate the correct dosage of medication from the instructions on the label for livestock of various weights.	7. Reading the Label Lab

Content Area Standards (State Agriculture Standards, Animal Science Advanced Cluster)
The students will achieve the following content standards:
2.6 Students will understand the cause of disease as it applies to animal health problems.

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UNIT # 6: Livestock Pests

GOAL: Students shall learn the major internal and external livestock pests, their life cycles, and their control.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Draw the life cycle of an internal parasite that is specific for each of he following: horse, swine, cattle, sheep, poultry, and rabbits and show in the life cycle where each parasite can best be controlled.	1. Parasite Charts and Presentations
2. Draw the life cycle of at least three common external parasites including the possible hosts and methods to control each parasite.	2. Parasite Charts and Presentations
3. Develop a one-year worming and vaccination schedule for a student-owned, animal-related SAE.	3. Vaccination Schedules
4. Explain the value of pasture rotation in parasite control.	4. Teacher Led Discussion
5. Describe production problems associated with the housefly, blowfly, botfly, and horsefly and explain two methods in which theses can be controlled.	5. Group Research and Reporting
6. Define drenching and demonstrate methods on three livestock species.	6. Worming Labs

Content Area Standards (State Agriculture Standards, Animal Science Advanced Cluster)
The students will achieve the following content standards:
2.7 Students will understand the life cycle of internal and external parasites.

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UNIT # 7: Large Animal Management

GOAL: Students shall demonstrate an understanding of the basic principles of care, raising, breeding, selection, and selling of large animals.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Demonstrate proper feeding, handling, and management practices for each species studied.	1. Hands-On Labs
2. Demonstrate proper grooming and showing techniques for at least two large animal species of commercial importance in California.	2. Hands-On Labs
3. Identify animals' behavioral patterns that will make animals easier and safer to handle.	3. Livestock Observation and Teacher Led Discussion
4. List and discuss the different markets available for the sale of livestock.	4. Marketing Project
5. Demonstrate the use of critical thinking, problem solving, communication skills, and available technology in evaluating livestock.	5. Livestock Selection Labs

Content Area Standards (State Agriculture Standards, Animal Science Advanced Cluster)
The students will achieve the following content standards:
2.8 Students will understand the different principles of animal production, marketing, and production record keeping. 2.14 Students will demonstrate an understanding of the process of evaluation and selection of livestock based on current industry standards.

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UNIT # 8: Small Animal Production

GOAL: Students shall understand the basic concepts in the care, raising, breeding, selection, and selling of small animals.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Identify six species of small animals that are of importance to agriculture and list common breeds within each species.	1. Breed Reports
2. Understand the relationship of small animals to agriculture and related industries.	2. Teacher Led Discussion
3. Describe and participate in the marketing of small animals in two occupational areas (e.g. sale of replacement stock and sale of meat animals) and list the advantages and disadvantages of each of the occupational areas related to small animal production.	3. Marketing Project

Content Area Standards (State Agriculture Standards, Animal Science Advanced Cluster)
The students will achieve the following content standards:
2.8 Students will understand the different principles of animal production, marketing, and production record keeping.

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UNIT # 9: Range Management

GOAL: Students shall understand the importance of correct pasture and rangeland management practices for animal health, erosion control, pasture production, and maintaining the balance of living things within an ecosystem.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Define the terms common to rangeland management.	1. Teacher Led Discussion
2. List three ways in which overgrazing or poor rangeland management can negatively affect the environment.	2. Internet Research and Reports
3. Calculate, from information provided, the carrying capacity of an acre of rangeland for a species of livestock.	3. Situational Problems
4. Identify and describe the variety of rangelands found in California.	4. Rangeland Map Project
5. Collect and label three suitable legumes and discuss factors to consider in their selection for rangeland forage.	5. Range Plant Collection
6. Collect, label, and press ten common range plants.	6. Range Plant Collection
7. Collect and identify ten weeds and brush common to California rangelands and discuss control methods for each.	7. Range Plant Collection
8. Identify five plants poisonous to livestock and identify the California rangelands in which they may be found.	8. Teacher Led Discussion

Content Area Standards (State Agriculture Standards, Animal Science Advanced Cluster)
The students will achieve the following content standards:
2.9 Students will understand range management practices.

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UNIT # 10: Waste Management

GOAL: Students will gain a basic knowledge of animal waste management and the importance of disposing of waste inexpensively with the least impact on the environment.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Identify the three main types of agricultural (animal) waste.	1. Teacher Led Discussion
2. Describe two ways to recycle manure where it can be utilized by livestock.	2. Waste Management Plan

Content Area Standards (State Agriculture Standards, Animal Science Advanced Cluster)
The students will achieve the following content standards:
2.10 Students will understand the challenges associated with animal waste management.

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UNIT # 11: Record Keeping

GOAL: Students will understand the importance of accurate record keeping in the Animal Science industry and the consequences of inaccurate records. Students will maintain and complete the California Agricultural Record Book that pertains to their Supervised Occupational Experience Program.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Maintain and complete the following in the California Farm Account Book: Calendar of Operations Business Agreements Budget Journals Loan Payment Summary Inventories Depreciable Property Inventory Non-Depreciable Property Inventory Financial Statement Net Income Summary FFA, School, Community Service Activities	1. California Farm Account Book

Content Area Standards (State Agriculture Content Standards)
The students will achieve the following content standards:
2.11 Students will understand the principles of record keeping.

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UNIT # 12: Supervised Agricultural Experience Programs

GOAL: Students shall appreciate the importance of Supervised Agricultural Experience Programs in the total program of agricultural education.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Develop a long range SAEP plan.	1. SAEP Worksheet and Student Data Sheets

Content Area Standards (State Agriculture Content Standards)
The students will achieve the following content standards:
2.13 Students will understand the relationship between a Supervised Agriculture Experience Program and their preparation for a career in agriculture.

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UNIT # 13: Careers in Animal Science

GOAL: Students will become aware of career opportunities related to Animal Science, skills required for different occupations, and the importance of work to the individual and society.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Identify five potential animal science related careers.	1. Job Search, Internet Search, Interviews, Guest Speakers
2. Identify 5 local potential animal science related careers.	2. Job Shadowing, Newspaper Search

Content Area Standards (State Agriculture Content Standards)
The students will achieve the following content standards:
1.8.3 Utilize resources to learn about an agriculture occupation of their choice.

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UNIT # 14: Leadership Development

GOAL: Students will demonstrate leadership qualities.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Participate in leadership training activities associated with the FFA.	1. FFA Activities

Content Area Standards (State Agriculture Core Standards)
The students will achieve the following content standards:
2.12 Students will recognize the traits of effective leaders.

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UNIT # 15: Animal Welfare

GOAL: Students will develop an appreciation of the public's perception of animal welfare issues.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Communicate the rationale for various animal management practices.	1. Videotaped interviews with the press Controversial topic debates

Content Area Standards (State Agriculture Core Standards)
The students will achieve the following content standards:
2.12 Students will recognize the traits of effective leaders.