

VALLEY ROP COURSE OUTLINE

COURSE TITLE: **Veterinary Science 1**

VALLRY ROP #: AG-4020-Vet1
CDE #: 454

CBEDS TITLE: Animal Science
CBEDS #: 4020

CTE SECTOR: Agriculture & Natural Resources
CTE PATHWAY: Animal Science

JOB TITLES:

| | |
|---|------------|
| NonFarm Animal Caretakers | 39-2021.00 |
| Farm Workers, Farm & Ranch Animals | 45-2093.00 |
| First-line Supervisor/Managers of Animal Husbandry & Care-works | 45-1011.08 |
| Animal Breeders | 45-2021.00 |
| Horse Rancher | |
| Sheep Rancher | |
| Livestock Rancher | |
| Sales Representative, Wholesale & Manufacturing, Technical & Scientific Products | 41-4011.00 |
| Sales Representative, Wholesale & Manufacturing, Except Technical & Scientific Products | 41-4012.00 |
| Retail Sales Person (pet shop) | 41-2031.00 |

DATE APPROVED: January 2004
REVISED DATE(S): December 2008 / March 2009/Oct 2009

HOURS: 180 per year

CREDITS: 10 per year

PREREQUISITES: Agriculture Biology or Biology

ARTICULATION(S): None

COURSE DESCRIPTION:

This course provides students with knowledge and hands-on application with both large and small animals. It covers anatomy and physiology, basic animal skills, animal health and sanitation, infectious diseases identification and control, breeding and breeding systems, feed and nutrition, environment and ecology, marketing of animals/livestock evaluation, financial planning and record keeping, and clinical practices. It explores careers in veterinary sciences. The course takes the students from basic through advanced training and experience in services related to raising and caring of animals.

- Animal Health and Sanitation
- Reproductive Physiology
- Large and Small Animal Anatomy and Physiology
- Breeding and Breeding Systems
- Parturition
- Feeds & Nutrition
- Infectious Disease Identification & Control
- Livestock Evaluation
- Animal Handling
- Career Opportunities and Portfolio Development
- Genetics
- Cell Biology
- Marketing of Animals
- Financial Business Planning and Record Keeping

TEXTBOOKS:

Introduction to Veterinary Sciences, Meecee Baker, James Lawhead Del Mar Publishers, 2005

The Science of Agriculture, A Biological Approach, Ray Herren, Del Mar Publishers, 1998

Delmar's Veterinary Technician Dictionary, Ray Herron, Janet Amunndson Romich Del Mar Publishers, 2000

COURSE COMPETENCIES:

Upon completion of this course, the student will:

- Students will demonstrate knowledge of the systems that make up the anatomy and physiology of animals
- Students will demonstrate knowledge of history/evolution, care and management of the systems of various animal species
- Students will be able to demonstrate knowledge of breeding and genetics as it relates to animals and humans
- Students demonstrate clinical practices as it relates to veterinarian care to animals
- Students will demonstrate knowledge of common diseases and disease prevention as it relates to animal care
- Student will be exposed to educational and industry opportunities as it relates to the field of study in this course
- Students will develop a portfolio and use it in for higher education and employment
- Students will be prepared academically and technically for: four year college, technical training and employment

INSTRUCTIONAL METHODS:

- Lecture
- Discussion
- Demonstration
- Group and Individual Research Projects through use of technology
- Content Based Exams
- Field Trips
- Guest Speakers
- Hands on Application through Lab Procedures

EVALUATION METHODS:

Assessment opportunities, which allow continuous evaluation of students' progress, will be embedded throughout the course and should be a learning experience. All students will be expected to achieve mastery of all topics; often, demonstrations of mastery will occur in a public forum. Students will be expected to demonstrate knowledge and skill competencies in a variety of ways.

The following strategies, which include both formal and informal assessment techniques will include, but are not limited to:

- Quizzes
- Unit Exams
- Semester Exams
- Homework
- Class Discussion
- Special Assignments and Projects
- Specialty Project
- Lab Exercises
- Demonstration
- Portfolio and Interactive Notebook

COURSE OUTLINE:

| Unit of Instruction | Estimated Hours | |
|--|------------------------|----------|
| | Class / Lab | |
| Introduction | 3 | 3 |
| <ul style="list-style-type: none">• Purpose of course/outline• Grading, Tests and Classroom/Laboratory Procedures• Introduction to Portfolio and Inter Active Notebook• Attitude and Ethics in classroom and industry | | |
| Basic Animal Skill | 3 | 3 |
| <ul style="list-style-type: none">• Safety (animals, medications, chemicals, first aid and fire)• Handling, transporting, and restraint of large and small animals• Basic breed and external anatomy identification of large and small animals | | |
| Anatomy and Physiology | | |
| <ul style="list-style-type: none">• Cell Biology | 3 | 1 |
| <ul style="list-style-type: none">○ Cell Makeup, Structure and Function○ Mitosis and Cancer○ Mammal Reproduction○ Clinical Practices | | |
| <ul style="list-style-type: none">• Tissue Types and Functions | 3 | 1 |
| <ul style="list-style-type: none">○ Epithelial○ Connective○ Muscle○ Nerve○ Clinical Practices | | |
| <ul style="list-style-type: none">• Musculoskeletal System | 3 | 1 |
| <ul style="list-style-type: none">○ Bone Structure○ Joint types and Movement○ Axial and Appendicular Skeletons○ Bone Growth and Remodeling○ Clinical Practices | | |
| <ul style="list-style-type: none">• Circulatory System | 3 | 1 |
| <ul style="list-style-type: none">○ Blood Components and Functions○ Mammal Heart Functions○ Blood Vessels and Blood Flow○ Electrocardiograms, Heart Sounds and Blood Pressure○ Clinical Practices | | |
| <ul style="list-style-type: none">• Respiratory System | 3 | 1 |
| <ul style="list-style-type: none">○ The Respiratory Tract○ Mechanism of Breathing○ Clinical Practices | | |
| <ul style="list-style-type: none">• Renal System | 3 | 1 |
| <ul style="list-style-type: none">○ Renal Functions○ Kidney Structures and Urine Regulation○ Urine and Blood Evaluation○ Clinical Practices | | |
| <ul style="list-style-type: none">• Digestive System | 3 | 1 |
| <ul style="list-style-type: none">○ Digestive System Structures○ Monogastric and Ruminant Digestion○ Clinical Practice | | |

| | | |
|---|-----------|----------|
| • Endocrine System | 3 | 1 |
| ○ Function of Glands and Hormones | | |
| • Nervous System | 3 | 1 |
| ○ Brain Functions | | |
| • Lymphatic System | 3 | 1 |
| ○ Functions of the Lymphatic System | | |
| Reproductive Physiology | 5 | 2 |
| • Genetics | | |
| ○ Gene Transfer | | |
| ○ Animal Breeding | | |
| ○ Social Concerns | | |
| ○ Terminology | | |
| • Male Anatomy | | |
| ○ Parts of the male reproductive system | | |
| ○ Functions of the male reproduction | | |
| ○ Spermatogenesis | | |
| • Female Anatomy | | |
| ○ Parts of the female reproductive system | | |
| ○ Functions of the female reproduction | | |
| ○ Oogenesis | | |
| Gestation and Parturition | 6 | 2 |
| • Pre-Partum Care | | |
| • Difficult Births | | |
| • Normal Births | | |
| • Post-Partum Care | | |
| Animal Health and Sanitation | 10 | 5 |
| • Animal Health Evaluation | | |
| ○ Posture and Stance | | |
| ○ Movement and Voice | | |
| ○ Appetite | | |
| ○ Sexual Activity | | |
| • Maintaining Animal Health | | |
| ○ Disease Concept | | |
| ○ Animal Management Steps | | |
| ▪ Housing | | |
| ▪ Exercise and Sunlight | | |
| ▪ Sanitation of eating utensils | | |
| ▪ Pasture Rotation | | |
| ○ Proper Feeding Techniques | | |
| ○ Disease Prevention and Control | | |
| • Cleaning and Disinfectants | | |
| ○ Procedures and Disinfections | | |
| ○ Types of Disinfections | | |
| ○ Applying Disinfectants | | |
| Infectious Diseases Identification & Control | 20 | 9 |
| • Non-Living Agents | | |
| ○ Trauma | | |
| ○ Toxins | | |

- Bacterial Toxins
 - Zootoxins
 - Phytotoxins
- Living Agents
 - Bacteria
 - Fungi
 - Virus
 - Protozoa
 - Internal Parasites
 - External Parasites
- Spread of Disease
 - Direct Contact
 - Indirect Contact
 - Carrier Animals
 - Contaminant Soils
 - Contaminated Food or Water
 - Air-born Infection
 - Vector Infections
- Protection against Disease
 - Resistance
 - Immunity
- First Line of Defense
 - Bleeding
 - Phagocytes
- Inflammation
- Secondary Defense
- Disease Control

Bacteria and Disease **3** **2**

- General Characteristics
 - Diplococcus
 - Staphlococcus
 - Streptococccus
- Bacteria and their Structure
- Bacterial Spores
- Bacterial Diseases

Viruses and Viral Disease **3** **2**

- Classification of Viruses
- Control of Viruses
- Characteristics

External Parasites **3** **2**

- External Parasites and Disease
- Types
- Life Cycles
- Prevention and Management

Internal Parasites **5** **2**

- Types
- Characteristics and Life Cycles
- Prevention and Management
- Internal Parasite and Disease
- Internal Parasites in Small and Large Animals

Other Disease Factors **5** **2**

| | | |
|---|----------|----------|
| • Nutrition and Disease | | |
| • Poison and Disease | | |
| • Stress and Disease | | |
| • Heredity and Disease | | |
| • Environment and Disease | | |
| Breeding and Breeding System | 2 | 2 |
| • Types of Breeding | | |
| • Management | | |
| • Clinical Practices | | |
| Feed and Nutrition | 7 | 4 |
| • Digestive Systems of Animal and Poultry | | |
| • Ration Formulation | | |
| • Roughages and Concentrates | | |
| • Macro/Micro Nutrients | | |
| • Feed Labels and Labeling | | |
| • Pet Food Labels | | |
| • Basic Feeds and Feeding | | |
| • Nutrients | | |
| ○ Protein, Fats and Carbohydrates | | |
| ○ Minerals | | |
| ○ Fibers | | |
| ○ Vitamins | | |
| Environment and Ecology | 5 | 2 |
| • Environmental Relationships | | |
| • Wildlife Management | | |
| • Plant/Animal Relationships | | |
| Marketing of Animals/Livestock Evaluation | | |
| • Finished Animals | | |
| • Weaned Animals | | |
| • Yearlings | | |
| • Breeding Stock Types | | |
| • Livestock Evaluation | | |
| ○ Breeding Stock | | |
| ○ Market Animals | | |
| ○ Carcass Evaluation and Breakdown | | |
| Financial Planning & Record Keeping | 2 | 2 |
| • Loans | | |
| • Tax Planning | | |
| • Profit and Loss | | |
| • Public Relations | | |
| • | | |
| Career Opportunities & Portfolio Development | 5 | 3 |
| • Career Opportunities | | |
| ○ Careers in Veterinary Sciences | | |
| ○ Further Education | | |
| ○ Industry Opportunities | | |
| • Portfolio Development | | |
| ○ Higher Education Application | | |
| ○ Employment Applications | | |
| ○ Letters of Introduction | | |

- Resume
- Interview Practices
- Work Samples
- Interactive Notebooks

Clinical Practices **7** **3**

- Medical Terminology
- Lab Skills
- Pharmacology
- Radiology
- Medical Records
- Administration of Medications
- Common Surgical Practices

Total Hours **123 Class Hours** **57 Lab Hours**

Other Course Information

- Key Assignments
 - Specialty Area Assignment
 - Animal Dissections
 - Construct a Model of DNA
 - Speech on Animal Rights
 - Vaccinations of various animals for diseases
 - Study of Internal Parasites
- Certificates
 - To earn ROP Certification for this course, the student must complete one full year (two semesters) with a grade of C or better.

Academic Standards

State high school standards applicable to ROP Veterinary Science I
Biology/Life Sciences Content Standards

Cell Biology

Standard 1.0 The fundament

Standard Integrated:

1. Weekly Laboratory Activities Reports

Students will complete a series of labs and reports on a weekly basis that correspond with the units being taught. The labs will include dissections, sample tests, and examine structures and tissues

Foundation Standards (FS) M 8.0- S 1.a, 1.c, 1.d, 1.f, 1.m- CR 2.3, 2.2, 2.7- CW 1.5- CWO 1.1, 1.2 –T 4.1, 4.6- PS-PT 5.1, 5.3-HS 6.2, 6.3, 6.4, 6.5, 6.6- RF 7.1, 7.2
Pathway Standard(PS) D1.3, D1.4, D2.2, D2.3, D2.4, D3.1, D4.1,D4.2,D4.3,D4.5, D5.4, D5.5, D6.1, D6.2, D6.3, D6.4, D6.5, D6.6, D9.3, D9.4, D10.1, D10.2, D11.1, D11.2, D11.3, D11.5, D12.3, D12.6

2. Career Preparation 101 Project

Students will prepare collection of work that will include a resume, cover letter and job application. Students will answer questions through an interview and do a demonstration on basic skills and practices through veterinary science . Students will compile score sheets and rubrics through this process.

Foundation Standards-H-SS 12.2,12 2.5, 12.4.3-CW 2.5, 2.5-CWO 1.1, 1.2, LS 2.3, CPM 3.1, 3.2, 3.3, 3.4, 3.5, 3.6-T 4.1, 4.5-HS 6.1, 6.2-ELR 8.1, 8.2, 8.3
Pathway Standards- D10.1, D10.2, D11.1, D11.2, D11.3, D11.4

3. Student Veterinary Science Presentation

Students will create a multimedia presentation an animal health issue. Students will create a power point and do a demonstration on their topic area.

Foundation Standards- S 1.m –CR 2.1, 2.2, 2.6, 2.8, 2.1 CW- 1.2, 1.3, 2.6-CWO 1.1, 1.2 –LS 1.7, 2.2, 2.4 –T 4.6 –PS-CT 5.3,
Pathway Standards-D6.1, D6.2, D6.3, D6.4, D6.5, D6.6, D8.1, D8.2,D8.3, D9.1, D9.2, D9.3, D9.4

4. Disease Research Paper

Develop a research paper on a disease in the species of their choice. They will research the topic complete a 5-7 page paper, complete with a bibliography and date to accompany the topic.

Foundation Standards-S 1.a, 1.d, 1.m-CR 2.2, 2.3, 2.6, 2.8, 2.1, 2.3, 2.4 CW 1.1, 1.3, 2.3- CWO 1.1, 1.2, 1.3 –T 4.6
Pathway Standards D6.1, D6.2, D6.3, D6.4, D6.5, D6.6, D6.7

5. Veterinary Science Terminology

Students will learn veterinary medical terminology through each unit taught. They will have quizzes and tests on the terms.

Foundation Standards CWO 1.1, 1.2
Pathway Standards- D2.2, D2.4, D3.1, D4.1, D4.2, D5.1, D6.1, D6.3, D6.4, D10.1, D10.2, D11.1, D11.2, D11.3, D11.4

6. Animal Physical Examinations

Students will perform bi-weekly-monthly physical exams on different types of animals. They will perform regular tests and use equipment and tools used in the Veterinary Industry.

Foundation Standards CWO 1.1,1.2, -T 4.6- PS-CT 5.1,5.3 HS 6.2, 6.4, 6.5,6.6-RF 7.1, LT 9.1, 9.6
Pathway Standards- D1.3, D1.4,

CAREER PREPARATION STANDARDS:

- A. **PERSONAL SKILLS** - Students will understand how personal skill development affects their employability. This skill includes positive attitudes, self-confidence, honesty, responsibility, initiative, self-discipline, personal hygiene, time management, and the capacity for lifelong learning.
1. Demonstrate an understanding of classroom policies and procedures.
 2. Discuss importance of the following personal skills in the business environment:
 - a. positive attitude
 - b. self-confidence
 - c. honesty
 - d. perseverance
 - e. self-management/work ethic
 - f. pride in product/work
 - g. dependability
 3. Identify acceptable work attire.
 4. Establish goals for self-improvement and further education/training.
 5. Prioritize tasks and meet deadlines.
 6. Understand the importance of initiative and leadership.
 7. Understand the importance of lifelong learning in a world of constantly changing technology.
- B. **INTERPERSONAL SKILLS** - Students will understand key concepts on group dynamics, conflict resolution, and negotiation. This skill includes the ability to work cooperatively, accept supervision, assume leadership roles, and show respect for others. This standard includes an understanding of sexual harassment laws and an appreciation of cultural diversity in the workplace.
1. Identify and discuss behaviors of an effective team.
 2. Explain the central importance of mutual respect in the workplace relations.
 3. Discuss and demonstrate strategies for conflict resolution and negotiation, and explain their importance within the business environment.
 4. Understand laws that apply to sexual harassment in the workplace, and identify tactics for handling harassment situations.
 5. Work cooperatively, share responsibilities, accept supervision and assume leadership roles.
 6. Demonstrate cooperative working relationships and proper etiquette across gender and cultural groups.
- C. **THINKING AND PROBLEM-SOLVING SKILLS** - Students will exhibit critical and creative thinking skills, logical reasoning, and problem-solving. These skills include applying basic skills in order to calculate, estimate, measure; identify, locate, and organize information/data; interpret and follow directions from manuals, labels, and other sources; analyze and evaluate information and solutions.
1. Recognize the importance of good academic skills and implement a plan for self-improvement as needed.
 2. Read, write, and give directions.
 3. Exhibit critical and creative thinking skills and logical reasoning skills, and employ these skills for problem solving.
 - a. Work as a team member in solving problems.
 - b. Diagnose the problem, its urgency, and its causes.
 - c. Identify alternatives and their consequences.
 - d. Explore possible solutions.
 - e. Compare/contrast the advantages and disadvantages of alternatives.
 - f. Determine appropriate action(s).
 - g. Implement action(s).

- h. Evaluate results of action(s) taken.
- D. **COMMUNICATION SKILLS** - Students will understand principles of effective communication. This standard includes effective oral and written communication, listening skills, following and giving directions, requesting and giving information, asking questions.
- 1. Use communication concepts in application of skills, techniques, and operations.
 - a. Prepare written material.
 - b. Analyze written material.
 - 2. Understand and implement written instructions, from technical manuals, written communications, and reference books.
 - 3. Present a positive image through verbal and nonverbal communication, and understand the power of body language in communication.
 - 4. Demonstrate active listening through oral and written feedback.
 - 5. Give and receive feedback.
 - 6. Demonstrate assertive communications (both oral and written).
 - 7. Demonstrate proper etiquette in workplace communications, including an awareness of requisites for international communications (languages, customs, time zones, currency and exchange rates).
 - 8. Demonstrate writing/editing skills as follows:
 - a. Write, proofread, and edit work.
 - b. Use correct grammar, punctuation, capitalization, vocabulary, and spelling.
 - c. Select and use appropriate forms of technology for communication.
 - 9. Exhibit a proficiency in the use of reference books.
 - 10. Research, compose, and orally present information for a variety of business situations utilizing appropriate technology.
- E. **OCCUPATIONAL SAFETY** - Students will understand occupational safety issues, including the avoidance of physical hazards in the work environment. This includes the safe operation of equipment, proper handling of hazardous materials, appropriate attire and safety accessories, avoidance of physical injuries, interpretation of warning and hazard signs and terminology, and following and understanding safety-related directions.
- 1. Discuss and implement good safety practices, including the following (if applicable to course):
 - a. personal
 - b. lab
 - c. fire
 - d. electrical
 - e. equipment
 - f. tools
 - g. interpretation of Material Safety Data Sheets (MSDSs)
 - h. Environmental Protection Agency (EPA)
 - i. Occupational Safety and Health Administration (OSHA)
 - j. American Red Cross Standards (ARC)
 - k. Networking Safety Standards
 - 2. Apply sound ergonomic principles in organizing one's work space.
- F. **EMPLOYMENT LITERACY** - Students will understand career paths and strategies for obtaining employment within their chosen field. This includes traditional job preparation skills, such as resumes, application forms, cover letters, sources of employment information, and interviewing skills, but also includes an overview of the industry and an understanding of labor market trends.
- 1. Explore career opportunities and projected trends; investigate required education, training and experience; and develop an individual education plan.
 - 2. Identify steps for setting goals and writing personal goals and objectives.
 - 3. Examine aptitudes related to career options; relate personal characteristics and interests to educational and occupational opportunities.

4. Develop a career portfolio, including the following documents:
 - a. job application
 - b. resume(s)
 - c. appropriate cover and follow-up correspondence
5. Identify and demonstrate effective interviewing techniques.
- G. **TECHNOLOGY LITERACY** - Students will understand and adapt to changing technology by identifying, learning, and applying new skills to improve job performance. Students should understand the role of technology in their chosen field and should be able to use all appropriate technology. Students should also feel confident in their ability to learn new technology by generalizing from what they know, adapting skills to new situations, and identifying and using sources of information and of further learning.
 1. Demonstrate the ability to use personal computers for loading and retrieving data, information gathering, measurements, and writing.
 2. Identify the characteristics and explain the importance of adapting to changes, being flexible, and evaluating goals when working in the industry.
 3. Understand the importance of lifelong learning in adapting to changing technology.
- H. **IMPORTANCE OF ETHICS** – Students will understand proper ethics in the workplace.
 1. Discuss social and ethical responsibilities in the industry.
 2. Demonstrate ethical choices in workplace situations.