



## **Veterinary Science** **Course Outline**

### **Course Description**

Silicon Valley CTE's Veterinary Science course includes 519 hours of a well-designed curriculum that prepares students for employment as a Veterinary Assistant. The program opens doors to numerous career pathways such as: veterinary clinics, laboratories, kennels, animal shelters, wildlife rehabilitation, pet stores, grooming facilities, and animal control agencies. This course includes anatomy and physiology of a variety of animal species, medical terminology, animal behavior, handling and restraint, safety in the workplace and veterinary nursing. Veterinary Science students will acquire advanced animal principles respecting the diversity in the animal kingdom. They will become an advocate for the welfare of animals on many levels that encompass family pets, domestic livestock and our wildlife resources. Each student that successfully completes the course will receive a certificate of completion. In addition, qualified students have the opportunity to participate in an internship with an active community employer within the veterinary medicine sector. The knowledge gained by the students in this course may encourage them to continue on the veterinary pathway.

### **Course Details**

#### **Length of Program and Academic Credits Earned:**

Year-long 3 hour course = 519 hours total (~261/semester)

30 total units (15/semester):

- 20 non-a–g elective credits (10/semester)
- 10 UC a–g “d” elective credits (5/semester)

#### **Pre-Requisites:**

- High School Junior or Senior, or 16 years or older

#### **CTE Classification**

- **Industry Sector:** Agriculture & Natural Resources
- **Industry Pathway:** Animal Science Pathway
- **CA Basic Education Data System (CBEDS) Code:** 4047

#### **Work-Based Learning:**

With a B or better, students may have the opportunity to participate in an internship related to veterinary medicine during their 2nd semester.

#### **Certifications:**

- SVCTE Certificate of Completion awarded with “C” or better average for both semesters.

## Community College Articulations

Students completing the Veterinary Science course with a grade of “B” or better may be granted college credits at the following community college:

Foothill College – Veterinary Technology Program (1.5 units)

More info: [foothill.edu/bio/programs/vettech/](http://foothill.edu/bio/programs/vettech/)

## Possible Education & Career Pathways

For more career information: [www.onetonline.org](http://www.onetonline.org)

College & Career Pathways:	Career Opportunities	O*NET Codes
<p><u>Post-Secondary:</u> Students with a high school diploma and having successfully completed this course have a number of entry-level career opportunities, as well as continuing their education.</p>	<ul style="list-style-type: none"> <li>• Veterinary Assistant</li> <li>• Animal Caretaker</li> <li>• Dog Groomer</li> <li>• Dog Bather</li> <li>• Animal Keeper</li> <li>• Kennel Attendant</li> </ul>	<p>31-9096.00 39-2021.00 39-2021.00 39-2021.00 39-2021.00 39-2021.00</p>
<p><u>Continuing Education: Including Community College, Training Programs, Certifications, etc:</u></p> <ul style="list-style-type: none"> <li>• AS Animal Science</li> <li>• Certificate of Registered Veterinary Technician</li> </ul>	<ul style="list-style-type: none"> <li>• Registered Veterinary Technician</li> <li>• Internal Medicine Veterinary Technician</li> <li>• Emergency Veterinary Technician</li> <li>• Laboratory Animal Caretaker</li> <li>• Animal Breeder</li> <li>• Animal Service Officer</li> </ul>	<p>29-2056.00 29-2056.00 29-2056.00 31-9096.00 45-2021.00 33-9011.00</p>
<p><u>University Majors &amp; Degrees:</u></p> <ul style="list-style-type: none"> <li>• BS Animal Science</li> <li>• BS Animal Husbandry</li> <li>• BS Zoology</li> <li>• BS Animal Behavior</li> </ul>	<ul style="list-style-type: none"> <li>• Zookeeper</li> <li>• Veterinary Technologist and Technician</li> </ul>	<p>19-1023.00 29-2056.00</p>
<p><u>Post-Baccalaureate Degrees:</u></p> <ul style="list-style-type: none"> <li>• Masters or Doctorate in Veterinary Medicine</li> </ul>	<ul style="list-style-type: none"> <li>• Veterinarian</li> </ul>	<p>29-1131.00</p>

**Unit 1: Career Exploration, Readiness & Professionalism (Recurring) 83 hours**

Students will develop personal and professional skills in the classroom that will transfer to the workplace.

- Time management and organization
- Interpersonal skills
- Work with a variety of technology
- Creative thinking and problem solving
- Job search skills including: resume, job applications and effective interview skills
- Careers explored within the veterinary science field
- Ethics

**Standards Alignments:**

**CCSS:** RLST 11-12.3, 11-12.4; **WS** 11-12.4, 11-12.7, 11-12.8, 11-12.9, 11-12.10; **REI** 3

**NGSS:**SEP 1, 2, 3, 4, 5, 7, 8; **LS** 1.D, 2.D, 4.B; **ETS** 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ <b>Key Assignment:</b> Student will participate in mock interviews with industry professionals, peers and instructors to increase their communication, interpersonal and employability skill-set.</p> <p><b>Assessment:</b> teacher observation, journaling, questioning, oral defense</p>	2.0, 3.0	D 1.0, D 9.0
<p>✓ <b>Key Assignment:</b> Students will prepare a portfolio including a cover letter and resume through workshop, self, peer editing, as well as teacher instruction and demonstration.</p> <p><b>Assessment:</b> questioning, oral defense, portfolio check</p>	2.0, 3.0	D 1.0, D 9.0
<p>✓ <b>Key Assignment:</b> Students will create and organize a classroom binder and interactive notebook to take with them to their internships including all vital information necessary for optimal job performance.</p> <p><b>Assessment:</b> quarterly binder check, questioning, oral defense</p>	2.0, 3.0, 4.0, 5.0	D 1.0, D 2.0, D 3.0, D 6.0, D 9.0
<p>✓ <b>Key Assignment:</b> Students will individually and collaboratively investigate and explore potential careers within the veterinary science field which will allow them to produce a poster, powerpoint or presentation highlighting their results.</p> <p><b>Assessment:</b> observation, classroom display of poster, presentation with powerpoint</p>	2.0, 3.0, 4.0, 9.0	D 1.0, D 2.0, D 3.0, D 4.0, D 6.0, D 9.0, D 11.0

**Unit 2: The Human Animal Bond** **20 hours**

Students will explore the human/animal bond through their own personal experiences and professional study.

- Human & animal psychology
- Bereavement
- Empathy
- Pet therapy
- Service animals

**Standards Alignments:**  
**CCSS:** RLST 11-12.3, 11-12.4; WS 11-12.4, 11-12.7, 11-12.8, 11-12.9, 11-12.10; REI 3  
**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; LS 1.D, 2.D; ETS 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ <b>Key Assignment:</b> Students will work in groups to research service animals. They will create a powerpoint and present their findings to the class on the history, effects of the human/animal bond, animal contributions to society and roles that animals currently perform.</p> <p><b>Assessment:</b> oral presentation</p>	2.0, 3.0, 4.0, 9.0	D 1.0, D 2.0, D 3.0, D 6.0
<p>✓ <b>Project: Community Oriented-</b> Students will collaborate to organize and create a mobile clinic to serve the veterans and their pets (Vets &amp; Pets). They will work with the Medical Assisting students to perform various pet examinations while Medical Assisting students perform examinations on the pet owner; therefore, individual Project will vary from year to year.</p> <p><b>Assessment:</b> oral presentation with informative brochure designed by students</p>	2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 11.0	D 1.0, D 2.0, D 6.0, D 8.0, D 9.0, D 11.0

**Unit 3: Health & Safety (Recurring)** **86 hours**

Health and safety will be an integral part of this course designed to keep the student safe in school and in the workplace.

- On the job safety
- Classroom/lab safety
- Safety hazards
- work related injury reporting
- Cal OSHA
- AAHA
- Ergonomics
- Substance abuse in the workplace

**Standards Alignments:**  
**CCSS:** RLST 11-12.3, 11-12.4, WS 11-12.4, 11-12.7, 11-12.8, 11-12.9, 11-12.10; REI 3  
**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; LS 1.D, 2.D; ETS 2.A

Key Assignments	CTE Anchor	CTE Pathway
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	Standards	Standards
<p>✓ <b>Key Assignment:</b> Students will be exposed to various lab and safety violations, which will be staged throughout the classroom. Students will work in pairs to identify all of the safety violations and propose corrective action for each of the violations in a written safety report including photographs of the violation. Each pair will present their findings to the class.</p> <p><b>Assessment:</b> informal questioning, oral presentation, quiz</p>	2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 11.0	D 1.0, D 9.0
<p>✓ <b>Key Assignment:</b> Using their personal backpacks, students will individually demonstrate to the instructor and their peers proper ergonomic lifting and safety techniques for various sizes of items, patients, and equipment.</p> <p><b>Assessment:</b> observation, quiz, oral questioning, journaling</p>	2.0, 5.0, 6.0, 11.0	D 1.0, D 6.0, D 9.0

<b>Unit 4: Animal Breeds</b>	<b>10 hours</b>
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Students will explore the various breeds of animals and the breeding practices and technology leading up to our current breeds.

- DNA
- Desired qualities
- Current technology
- Breed identification

**Standards Alignments:**

**CCSS:** RLST 11-12.3, 11-12.4, WS 11-12.4, 11-12.7, 11-12.8, 11-12.9, 11-12.10; REI 3

**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; LS 1.D, 2.D, 3.A, B; ETS 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ <b>Key Assignment:</b> Individual students will choose a breed of dog or cat from a teacher selected list and create an infographic about that breed to include at least 10 different pieces of information and graphics. These individual infographics will be compiled into a class encyclopedia for student reference throughout the year.</p> <p><b>Assessment:</b> observation, gallery walk, interactive notebooks</p>	2.0, 3.0, 4.0	D 1.0, D 3.0, D 4.0, D 5.0, D 9.0
<p>✓ <b>Key Assignment:</b> Using a “fish bowl” or similar activity, students will engage in and observe various discussions related to animal breeding. While observing, they will take notes and record key points from the discussion.</p> <p><b>Assessment:</b> observation, questioning, oral defense, journaling</p>	2.0, 5.0, 8.0, 9.0	D 1.0, D 3.0, D 9.0, D 11.0

**Unit 5: Physical Exam (Recurring) 86 hours**

Students will perform multiple physical exams on a variety of animals throughout the year. They will assess and self-reflect on their role in the clinical setting and their relationship with the animal and other veterinary staff.

- Handling
- Grooming
- Preventive treatment & vaccines
- Vital signs
- Restraint
- Behavior assessment
- Evaluate normal health & disease
- Microchipping

**Standards Alignments:**

**CCSS:** RLST 11-12.3, 11-12.4, WS 11-12.4, 11-12.7, 11-12.9, 11-12.10; REI 3  
**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; LS 1.D, 2.D, 3.A, B; ETS 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ <b>Key Assignment:</b> Throughout the year, the students will individually and collaboratively complete multiple comprehensive physical and behavioral exams on a variety of animal species. The students will be guided by a checklist of competencies for proper examination.</p> <p><b>Assessment:</b> quiz, journaling, demonstration, test</p>	2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0, 11.0	D 1.0, D 2.0, D 3.0, D 4.0, D 5.0, D 6.0, D 9.0
<p>✓ <b>Key Assignment:</b> Using proper handling techniques and basic commands learned in class, students will individually walk a dog around school campus, while applying proper restraint skills. Using a checklist or rubric, each student will be assessed on their mastery of skills.</p> <p><b>Assessment:</b> observation, self-assessment, quiz, oral questioning</p>	2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 11.0	D 1.0, D 3.0, D 8.0, D 9.0

**Unit 6: Office Procedures & Medical Records** **39 hours**

Students will learn the proper office procedures necessary to work in a veterinary related setting.

- Office equipment and professional use
- Documentation and retrieval
- Accurate medical recording
- Sales & marketing

**Standards Alignments:**  
**CCSS:** RLST 11-12.3, 11-12.4, WS 11-12.4, 11-12.7, 11-12.9, 11-12.10; REI 3  
**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; LS 1.D, 2.D; ETS 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ <b>Key Assignment:</b> Students will rotate in pairs through a simulated front office to perform office staff duties such as greeting clients, patient intake, phone management, appointment scheduling and chart maintenance to demonstrate mastery in front office skills.</p> <p><b>Assessment:</b> observation, self-assessment, oral questioning</p>	2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0, 11.0	D 1.0, D 2.0, D 3.0, D 6.0, D 8.0, D 9.0, D 11.0
<p>✓ <b>Key Assignment:</b> Through role playing, the students will simulate a client/staff communication activity which will include a checklist with the following skills that must be demonstrated to mastery: greeting client, introduction, acknowledge patient, and investigative questioning.</p> <p><b>Assessment:</b> observation, self-assessment, oral questioning, oral defense</p>	2.0, 3.0, 5.0, 8.0, 11.0	D 1.0, D 2.0, D 3.0, D 6.0, D 9.0

**Unit 7: Veterinary Medical Terminology (Ongoing)** **86 hours**

Medical and veterinary language will be an ongoing part of the entire course. Students will learn to use the proper terms and pronunciation necessary to work in a veterinary hospital, clinic or office.

- Root, suffix and prefix of commonly used terminology
- Veterinary terms and proper pronunciation
- Abbreviations & acronyms
- Reference materials

**Standards Alignments:**  
**CCSS:** RLST 11-12.3, 11-12.4, WS 11-12.4, 11-12.7, 11-12.8, 11-12.9, 11-12.10; REI 3  
**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; LS 1.D, 2.D; ETS 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ <b>Key Assignment:</b> Using medical terminology presented throughout the year, students will individually create a traditional paper or electronic pictorial dictionary of veterinary medical terms to include, but not limited to: definition, illustration, sentence using the term, origin of word and root culminating in a personal dictionary chronicling the year.</p> <p><b>Assessment:</b> self-assessment, quiz, journaling, gallery walk</p>	2.0, 4.0, 5.0, 10.0, 11.0	D 3.0, D 4.0, D 6.0, D 9.0

<b>Unit 8: Anatomy &amp; Physiology</b>	<b>20 hours</b>
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Students will explore the body systems of multiple animals to identify their unique qualities and functions. Hands on labs will allow students to see and identify individual body parts and systems.

- Body systems
- Muscles
- Variety of organs and their functions
- Bones
- Arteries & veins

**Standards Alignments:**

**CCSS:** RLST 11-12.3, 11-12.4; **WS** 11-12.4, 11-12.7, 11-12.9, 11-12.10; **REI** 3

**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; **LS** 1.D, 2.D, 3.A,B; **ETS** 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ <b>Lab:</b> During an examination of a dog cadaver, students will be able to identify the different structures and organ systems through gross anatomy. They will chart their findings and illustrate the different organs.</p> <p><b>Assessment:</b> observation, questioning, oral defense, test, pair share</p>	2.0, 5.0, 6.0, 9.0, 11.0	D 2.0, D 3.0, D 4.0, D 6.0, D 9.0
<p>✓ <b>Key Assignment:</b> Students will create an illustrated notebook that contains the various organ systems learned throughout the course. This notebook will contain illustrations of the organ systems, information related to the system and notes collected from teacher direct instruction.</p> <p><b>Assessment:</b> observation, notebookcheck, test</p>	2.0, 4.0, 5.0, 10.0, 11.0	D 2.0, D 3.0, D 4.0, D 6.0



## Unit 9: Housing & Nutrition

5 hours

Students will learn the importance of proper housing and nutrition of a variety of animals.

- Shelter
- Humane care and use of animals
- Waste management
- Nutritional needs & functions

### Standards Alignments:

**CCSS:** RLST 11-12.3, 11-12.4; WS 11-12.4, 11-12.7, 11-12.8, 11-12.9, 11-12.10; REI 3

**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; LS 1.D, 2.D; ETS 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ <b>Key Assignment:</b> Students will pair up and research two different animal shelters anywhere in the United States. They will collect information regarding shelter services and service cost for the consumer. As a public service, each student will be required to inform at least two family members or friends regarding the information collected.</p> <p><b>Assessment:</b> pair share, oral presentation, oral defense, quiz</p>	2.0, 3.0, 4.0, 5.0, 8.0, 9.0, 10.0, 11.0	D 1.0, D 2.0, D 6.0, D 9.0
<p>✓ <b>Key Assignment:</b> Students will participate in a “open fishbowl” discussion or similar activity regarding the importance of spaying/neutering or not spaying/neutering. A pre and post opinion survey and reflective journal entry will be required from each student.</p> <p><b>Assessment:</b> observation, questioning, oral defense, journaling</p>	2.0, 5.0, 9.0	D 1.0, D 2.0, D 3.0, D 4.0, D 5.0, D 9.0
<p>✓ <b>Key Assignment:</b> Students will research and prepare recipes for healthy, homemade dog treats. They will prepare a shopping list of ingredients necessary, appropriately measure ingredients and calculate nutritional value of each snack.</p> <p><b>Assessment:</b> observation, pair share, journaling, quick write</p>	2.0, 3.0, 5.0, 7.0, 9.0, 10.0, 11.0	D 1.0, D 2.0, D 3.0, D 9.0

## Unit 10: Dentistry

15 hours

Students will learn basic dental anatomy and preventative dental care for a variety of animals.

- Dental anatomy
- Age determination
- Dental problems and diseases
- Preventive dental care
- Veterinary dental products

### Standards Alignments:

**CCSS:** RLST 11-12.3, 11-12.4; **WS** 11-12.4, 11-12.7, 11-12.9, 11-12.10; **REI** 3  
**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; **LS** 1.D, 2.D, **ETS** 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ <b>Lab:</b> Individually and in groups, students will use a cadaver to examine and perform a dental prophylaxis to practice using industry standard equipment, determine age, and chart their findings.</p> <p><b>Assessment:</b> observation, oral defense, pair share, self-assessment, quiz</p>	2.0, 4.0, 5.0, 6.0, 7.0, 9.0, 10.0, 11.0	D 2.0, D 3.0, D 5.0, D 6.0, D 9.0
<p>✓ <b>Lab:</b> Students will examine a model of a dog and a cat mouth to identify the various disease conditions and traumas displayed. In turn students will chart their findings, discuss with a partner their observations, assessments and individually defend their findings to their instructor in a one on one student conference.</p> <p><b>Assessment:</b> observation, chart check, pair share, self-assessment, quiz</p>	2.0, 5.0, 6.0, 9.0, 11.0	D 2.0, D 3.0, D 5.0, D 6.0

### Unit 11: Parasitology (Recurring)

**15 hours**

Using a variety of techniques, students will be able to identify parasites and their role in disease transmission.

- Sanitation & disease control
- Disease transmission
- Identify types of parasites and their life cycles
- Prevention

**Standards Alignments:**

**CCSS:** RLST 11-12.3, 11-12.4; **WS** 11-12.4, 11-12.7, 11-12.9, 11-12.10; **REI** 3  
**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; **LS** 1.B, 1.D, 2.D; **ETS** 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ <b>Key Assignment:</b> Students will properly prepare and place a microscope slide on the stage of a microscope to identify microscopic parasites, chart their findings through illustration and journaling.</p> <p><b>Assessment:</b> observation, oral defense, quiz, self-assessment, journaling, oral questioning</p>	2.0, 5.0, 6.0, 9.0, 10.0, 11.0	D 3.0, D 6.0
<p>✓ <b>Key Assignment:</b> After instructor demonstration and by using an animal prop, students will perform an examination on the skin using the proper tools for scraping to check for mites on</p>	2.0, 5.0, 6.0, 11.0	D 3.0, D 6.0

the skin. Proper technique and documentation will be demonstrated to their partner first, followed then by the instructor to demonstrate mastery. <b>Assessment:</b> demonstration, oral questioning, oral defense, quiz		
✓ <b>Lab:</b> Students will use an otoscope to be able to identify any parasites in the ear and accurately label and/or draw their observations. <b>Assessment:</b> observation, oral questioning, oral defense, quiz, demonstration	2.0, 5.0, 6.0, 11.0	D 3.0, D 6.0

<b>Unit 12: Pharmacology</b>	<b>10 hours</b>
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Students will be introduced to various drugs used in veterinary medicine and their effects on animals.

- Drug storage, handling and identification
- Classification of drugs
- Uses of various drugs
- Abbreviations/written prescription interpretation
- Controlled substances
- Pharmacy math

**Standards Alignments:**  
**CCSS:** RLST 11-12.3, 11-12.4; **WS** 11-12.4, 11-12.7, 11-12.8, 11-12.9, 11-12.10; **REI** 3  
**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; **LS** 1.D, 2.D; **ETS** 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
✓ <b>Key Assignment:</b> In collaborative groups, students will participate in a classroom scavenger hunt to find and identify different medications. Using a teacher provided graphic organizer the students will place them in the correct drug category. <b>Assessment:</b> observation, quick write	2.0, 5.0, 6.0, 7.0, 9.0, 11.0	D 6.0, D 9.0
✓ <b>Key Assignment::</b> Students will calculate dosages of different medications to properly fill and label a prescription. Students will also count tablets and capsules with a pill counter for practical training. <b>Assessment:</b> observation, demonstration, oral questioning, oral defense	2.0, 5.0, 6.0, 7.0, 11.0	D 6.0, D9.0
✓ <b>Lab:</b> Students will calculate proper dose of drug and prepare a syringe with injectable medication. Students will properly handle a syringe and inject an animal patient with an injectable solution. They will demonstrate their technique first to a peer and then to the instructor for feedback and evaluation. <b>Assessment:</b> demonstration, oral questioning, oral defense, quick write	2.0, 5.0, 6.0, 7.0, 11.0	D 3.0, D 9.0

**Unit 13: Laboratory Procedures** **8 hours**

Students will collect and analyze laboratory specimens while using industry standard laboratory diagnostic equipment.

- Care and proper use of laboratory equipment
- Collection and labeling of laboratory specimens
- Interpret results from laboratory tests

**Standards Alignments:**

**CCSS:** RLST 11-12.3, 11-12.4; **WS** 11-12.4, 11-12.7, 11-12.9, 11-12.10; **REI** 3

**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; **LS** 1.D, 2.D; **ETS** 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ <b>Key Assignment:</b> Students will identify the parts and function of the microscope for proper handle, transport, use and maintenance of the equipment. These skills will be used throughout the remainder of the course.</p> <p><b>Assessment:</b> quiz, observation, quiz</p>	2.0, 5.0, 6.0, 7.0, 11.0	D 6.0
<p>✓ <b>Lab:</b> Students will collect and chart the results of urine, blood and fecal samples to analyze by using the appropriate laboratory diagnostic equipment.</p> <p><b>Assessment:</b> oral questioning, oral defense, quiz</p>	2.0, 5.0, 6.0, 7.0, 11.0	D 1.0, D 2.0, D 3.0, D 6.0, D 8.0

**Unit 14: Surgical Nursing & Anesthesia** **10 hours**

Students will be provided the opportunity to learn the basic skills associated with surgical nursing.

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| <ul style="list-style-type: none"> <li>● Identification of common anesthetic agents</li> <li>● Maintenance of anesthetic equipment</li> <li>● Stages and complications of anesthesia</li> </ul> | <ul style="list-style-type: none"> <li>● Surgical instrument identification</li> <li>● Sterilization procedures</li> <li>● Aseptic technique</li> </ul> |
|---|---|

**Standards Alignments:**

**CCSS:** RLST 11-12.3, 11-12.4; **WS** 11-12.4, 11-12.7, 11-12.9, 11-12.10; **REI** 3

**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; **LS** 1.D, 2.D, 3.A,B; **ETS** 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards

<p>✓ <b>Key Assignment:</b> Using the dog mannequin, students will demonstrate to their peers and instructor: intubation, patient positioning, and patient care during surgery with the aid of various monitoring equipment.</p> <p><b>Assessment:</b> observation, oral questioning, oral defense, quiz</p>	2.0, 5.0, 6.0, 7.0, 9.0, 11.0	D 3.0, D 5.0, D 6.0, D 9.0
<p>✓ <b>Key Assignment:</b> Students will identify surgical instruments for surgical pack assembly and properly label pack for sterilization.</p> <p><b>Assessment:</b> observation, oral questioning, oral defense, quiz</p>	2.0, 5.0, 6.0, 7.0, 9.0, 11.0	D 3.0, D 6.0, D 9.0
<p>✓ Using a checklist by instructor, students will identify, properly handle and log the different anesthetic agents.</p> <p><b>Assessment:</b> journaling, quiz</p>	2.0, 5.0, 6.0, 7.0, 9.0, 11.0	D 2.0, D 3.0, D 6.0, D 9.0

<b>Unit 15: Emergency Procedures</b>	<b>10 hours</b>
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Students will be exposed to simple life-saving techniques for emergencies they may encounter in the veterinary clinic.

- Animal CPR
- Identify and recognize emergency equipment, supplies and medication

**Standards Alignments:**  
**CCSS:** RLST 11-12.3, 11-12.4; **WS** 11-12.4, 11-12.7, 11-12.9, 11-12.10; **REI** 3  
**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; **LS** 1.D, 2.D; **ETS** 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ <b>Key Assignment:</b> Using skills learned from the previous unit students will use the dog mannequin to demonstrate proper intubation first to their peers for feedback/suggestions and then to instructor to assess for mastery.</p> <p><b>Assessment:</b> observation, oral questioning, oral defense, quiz</p>	2.0, 5.0, 6.0, 7.0, 9.0, 11.0	D 3.0, D 9.0
<p>✓ <b>Key Assignment:</b> Students will participate in a classroom scavenger hunt to identify the emergency drugs and correctly categorize them using the proper emergency log.</p> <p><b>Assessment:</b> quick write, quiz, journaling</p>	2.0, 5.0, 6.0, 7.0, 9.0, 11.0	D 2.0, D 3.0, D 4.0, D 6.0, D 9.0
<p>✓ <b>Key Assignment:</b> After CPR and First Aid training, students will perform CPR techniques on dogs and cats using the most current techniques and drugs. Students will demonstrate mastery and defend their technique.</p> <p><b>Assessment:</b> observation, oral questioning, oral defense, quiz</p>	2.0, 5.0, 6.0, 7.0, 9.0, 11.0	D 3.0

<p>✓ <b>Key Assignment:</b> Students will identify the classroom CRASH cart contents, discuss with a partner the functions and create an inventory list. Students will rotate through the job of keeping the inventory stocked and recorded.</p> <p><b>Assessment:</b> journaling, quiz, oral questioning, oral defense</p>	2.0, 5.0, 6.0, 7.0, 9.0, 11.0	D 2.0, D 3.0, D 4.0, D 6.0, D 9.0
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<b>Unit 16: Radiology</b>	<b>10 hours</b>
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Students will gain a basic understanding of radiology in the veterinary clinic.

- Proper use of radiology equipment
- Safety precautions including Personal Protective Equipment (PPE)
- Restraint and positioning for the x-ray patient
- Radiology log entry
- Proper labeling of radiographs

**Standards Alignments:**  
**CCSS:** RLST 11-12.3, 11-12.4; **WS** 11-12.4, 11-12.7, 11-12.9, 11-12.10; **REI** 3  
**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; **PS** 4.A, **LS** 1.D, 2.D; **ETS** 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ <b>Lab:</b> Students will properly restrain and position dogs, cats, and birds on the x-ray table to take a radiograph and properly log the entry.</p> <p><b>Assessment:</b> demonstration, oral questioning, oral defense, quiz</p>	2.0, 5.0, 6.0, 7.0, 9.0, 11.0	D 1.0, D 3.0, D 9.0
<p>✓ <b>Key Assignment:</b> In small groups students will properly label and develop radiographs using the x-ray illuminator and radiographic cassettes. Students will also maintain and monitor the condition of x-ray cassettes.</p> <p><b>Assessment:</b> demonstration, oral questioning, oral defense, quiz</p>	2.0, 5.0, 6.0, 7.0, 9.0, 11.0	D 1.0, D 3.0, D 9.0
<p>✓ <b>Lab:</b> Students will identify, properly maintain and use personal protective equipment such as thyroid collar, apron and gloves. They will x-ray PPE quarterly for any defects in equipment and replace damaged items.</p> <p><b>Assessment:</b> demonstration, oral questioning, oral defense, quiz</p>	2.0, 5.0, 6.0, 7.0, 9.0, 11.0	D 3.0

## Unit 17: Specialty Animals/Exotics 6 hours

Students will be exposed to various species of exotic animals and study their basic needs for health, habitat and nutrition.

- Role of specialty animals
- Habitat
- Nutrition
- Behavior
- General health
- Genetics

### Standards Alignments:

**CCSS:** RLST 11-12.3, 11-12.4; **WS** 11-12.4, 11-12.7, 11-12.8, 11-12.9, 11-12.10; **REI** 3

**NGSS:** SEP 1, 2, 3, 4, 5, 7, 8; **LS** 1.D,2.D, 3.A, 3.B; **ETS** 2.A

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ <b>Key Assignment:</b> Students will observe demonstrations of animal handling of a variety of different species by local community experts and record the event through video to develop a presentation for peer students.</p> <p><b>Assessment:</b> oral questioning, oral defense, quiz, oral presentation</p>	2.0, 4.0, 5.0, 6.0, 7.0, 9.0, 11.0	D 3.0, D 4.0, D 6.0, D 9.0, D 11.0
<p>✓ <b>Key Assignment:</b> Students will research through the internet and reference books to collect nutrition and habitat information of an assigned species to be presented to peer students. Students will incorporate video clips from community expert assignment.</p> <p><b>Assessment:</b> oral questioning, oral defense, quiz, oral presentation</p>	2.0, 4.0, 5.0, 10, 11.0	D 3.0, D 4.0, D 6.0, D 9.0, D 11.0

## Instructional Materials

Textbooks:	Electronic Media/Supplemental Print Materials/Online Resources:
<p><i>Introduction to Veterinary Science</i> 2<sup>nd</sup> edition James B. Lawhead and MeeCee Baker – Delmar © 2009 ISBN-13: 978-1-4283-1225-8</p>	<p><i>Tasks for the Veterinary Assistant</i> 1<sup>st</sup> edition Paula Pattengale - Lippincott Williams &amp; Wilkins © 2005 ISBN: 0-7817-4243-9</p> <p><i>Learning Veterinary Terminology</i> 2<sup>nd</sup> edition Douglas F. McBride – Mosby © 2002 ISBN-13: 978-0-323-01329-1</p>

***An Illustrated Guide to Veterinary Medical Terminology*** 1<sup>st</sup> edition  
 Janet Amundson Romich - Delmar © 2000  
 ISBN: 0-7668-0751-7

***Clinical Textbook for Veterinary Technicians*** 4<sup>th</sup> edition  
 Dennis M. McCurnin - W.B. Saunders © 1998  
 ISBN: 0-7216-2196-1

## Standards Assessed in this Course

### CTE Anchor Standards

- 1.0 Academics: Academics standards are aligned to pathways; see below.
- 2.0 Communications: Acquire and use accurately sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats.
- 3.0 Career Planning and Management: Integrate multiple sources of career information from diverse formats to make informed career decisions, solve problems, and manage personal career plans.
- 4.0 Technology: Use existing and emerging technology, to investigate, research, and produce products and services, including new information, as required in the sector workplace environment.
- 5.0 Problem Solving and Critical Thinking: Conduct short, as well as more sustained, research to create alternative solutions to answer a question or solve a problem unique to the sector using critical and creative thinking, logical reasoning, analysis, inquiry, and problem-solving techniques.
- 6.0 Health and Safety: Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the sector workplace environment.
- 7.0 Responsibility and Flexibility: Initiate, and participate in, a range of collaborations demonstrating behaviors that reflect personal and professional responsibility, flexibility, and respect in the sector workplace environment and community settings.
- 8.0 Ethics and Legal Responsibilities: Practice professional, ethical, and legal behavior, responding thoughtfully to diverse perspectives and resolving contradictions when possible, consistent with applicable laws, regulations, and organizational norms.
- 9.0 Leadership and Teamwork: Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution.
- 10.0 Technical Knowledge and Skills: Apply essential technical knowledge and skills common to all pathways in the sector following procedures when carrying out experiments or performing technical tasks.

### Agriculture & Natural Resources Sector — Animal Science Pathway Standards

#### **D 1.0 Evaluate the necessary elements for proper animal housing and animal-handling equipment.**

- D 1.1 Design an animal facility focusing on appropriate space and location requirements for habitat, housing, feed, and water.



- D 1.2 Select habitat and housing conditions and materials, such as indoor and outdoor housing, fencing materials, air flow/ventilation, and shelters, to meet the needs of various animal species.
- D 1.3 Interpret animal behaviors and execute protocols for safe handling of animals.
- D 1.4 Defend the purpose and the safe and humane use of animal husbandry tools, such as hoof trimmers, electric shears, elastrators, dehorning tools, and scales.
- D 2.0 Apply principles of animal nutrition to ensure the proper growth, development, reproduction, and economic production of animals.**
- D 2.1 Assess the flow of nutrients from the soil, through the animal, and back to the soil.
- D 2.2 Explore the principles for providing proper, balanced rations for a variety of production stages in ruminants and monogastrics.
- D 2.3 Compare the digestive processes of the ruminant, monogastric, avian, and equine digestive systems.
- D 2.4 Distinguish how animal nutrition is affected by the digestive, endocrine, and circulatory systems.
- D 3.0 Apply principles of comparative anatomy and physiology to uses within various animal systems.**
- D 3.1 Compare and contrast animal cells, tissues, organs, and body systems.
- D 3.2 Develop efficient procedures to produce consistently high-quality animals that are well suited for their intended purposes.
- D 3.3 Relate the importance of animal organs to the health, growth, and reproduction of animals.
- D 4.0 Demonstrate understanding of animal reproduction, including the function of reproductive organs.**
- D 4.1 Illustrate animal conception, including estrus cycles, ovulation, and insemination.
- D 4.2 Research the gestation process and basic fetal development.
- D 4.3 Explain the parturition process, including the identification of potential problems and their solutions.
- D 4.4 Select animal breeding methods based on reproductive and economic efficiency.
- D 4.5 Select a breeding system based on the principles of genetics.
- D 5.0 Discuss animal inheritance and selection principles, including the structure and role of deoxyribonucleic acid (DNA).**
- D 5.1 Evaluate a group of animals for desired qualities, and discern among them for breeding selection.
- D 5.2 Select animals, based on quantitative breeding values, for specific characteristics.
- D 5.3 Research and discuss current technology used to measure desirable traits.
- D 5.4 Predict phenotypic and genotypic results of a dominant and recessive gene pair.
- D 5.5 Research the role of mutations, both naturally occurring and artificially induced, and hybrids in animal genetics.
- D 6.0 Prescribe and implement a prevention treatment program for animal diseases, parasites, and other disorders.**
- D 6.1 Evaluate the signs of normal health in contrast to illness and disease.
- D 6.2 Analyze the importance of animal behavior in diagnosing animal sickness and disease.
- D 6.3 Research common pathogens, vectors, and hosts that cause disease in animals.

- D 6.4 Evaluate preventative measures for controlling and limiting the spread of diseases, parasites, and disorders among animals.
- D 6.5 Discuss procedures used at the local, state, and national levels to ensure biosecurity of the animal industry.
- D 6.6 Explain the health risk of zoonotic diseases to humans, their historical influence, and future implications.
- D 6.7 Discuss the impacts on local, national, and global economies, as well as on consumers and producers, when animal diseases are not appropriately contained and eradicated.
- D 7.0 Explore common pasture and rangeland management practices and their impact on a balanced ecosystem.**
- D 7.1 Evaluate a rangeland and identify methods of rangeland improvement used in an effective animal production program.
- D 7.2 Summarize how rangeland management practices affect pasture production, erosion control, and the general balance of the ecosystem.
- D 7.3 Develop a management plan for rangelands, including how to calculate carrying capacity, for a variety of animal species and locations.
- D 7.4 Evaluate a plan to balance rangeland use for animal grazing and for wildlife habitat.
- D 8.0 Explain challenges associated with animal waste management.**
- D 8.1 Assess treatment and disposal management systems for animal waste.
- D 8.2 Compare various methods for using animal waste and the environmental impacts associated with each method.
- D 8.3 Research the health and safety regulations that are an integral part of properly managed animal waste systems.
- D 9.0 Assess animal welfare concerns and management practices that support animal welfare.**
- D 9.1 Evaluate the early warning signs of animal distress and how to rectify the problem.
- D 9.2 Discuss consumer concerns with animal production practices relative to human health.
- D 9.3 Summarize federal and state animal welfare laws and regulations, such as those dealing with abandoned and neglected animals, animal fighting, euthanasia, and medical research.
- D 9.4 Research the regulations for humane transportation and harvesting of animals, such as those delineated by the U.S. Department of Agriculture (USDA) Food Safety and Inspection Service and the Humane Methods of Slaughter Act.
- D 10.0 Demonstrate understanding of the production of large animals (e.g., cattle, horses, swine, sheep, goats) and small animals (e.g., poultry, cavy, rabbits).**
- D 10.1 Formulate and implement optimum requirements for diet, genetics, habitat, and behavior in the production of large and small animals.
- D 10.2 Develop, maintain, and use growth and management records for large or small animals to make data-driven management decisions.
- D 11.0 Demonstrate understanding of the production of specialty animals (e.g., fish, marine animals, llamas, and tall, flightless birds).**
- D 11.1 Assess specialty animals' role in agriculture (e.g., fish farms, pack animals, working dogs).
- D 11.2 Explore the unique nutrition, health, and habitat requirements for specialty animals.
- D 11.3 Synthesize and implement optimum requirements for diet, genetics, habitat, and behavior in the production of specialty animals.
- D 11.4 Develop, maintain, and utilize growth and management records for specialty animals to make data-driven management decisions.

**D 12.0 Understand how animal products and by-products are processed and marketed.**

- D 12.1 Research animal harvest, carcass inspection and grading, and meat processing safety regulations and practices and the removal and disposal of non-edible by-products, such as those outlined in Hazard Analysis and Critical Control Point, Sanitation Standard Operating Procedures, and good manufacturing practices documents.
- D 12.2 Compare the relative importance of the major meat, dairy, and egg classifications, including the per-capita consumption and nutritive value of those classifications.
- D 12.3 Discuss how meat-based, dairy, and egg retail products are produced.
- D 12.4 Describe how non-meat products, such as wool, pelts, hides, and by-products, are harvested and processed.
- D 12.5 Evaluate how meat products and non-meat products are marketed.
- D 12.6 Compare the value of animal by-products to nonagricultural industries.
- D 12.7 Apply point-of-origin safety and sanitation procedures in the production, harvest, handling, processing, and storing of meat products.

**Common Core State Standards**

**Reading Standards for Literacy in Science and Technical Subjects – RLST (Standard Area, Grade Level, Standard #)**

- RLST 11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text
- RLST 11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.

**Writing Standards – WS – (Standard Area, Grade Level, Standard #)**

- WS 11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- WS 11-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
- WS 11-12.8 Gather relevant information from multiple authoritative print and digital sources (primary and secondary) using advanced searches effectively; assess the strengths and limitations of each source in terms of task, purpose and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citations including footnotes and endnotes.
- WS 11-12.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.
- WS 11-12.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

## **Next Generation Science Standards:**

### **Scientific and Engineering Practices**

- SEP 1 Asking questions (for science) and defining problems (for engineering)
- SEP 2 Developing and using models
- SEP 3 Planning and carrying out investigations
- SEP 4 Analyzing and interpreting data
- SEP 5 Using mathematics and computational thinking
- SEP 7 Engaging in argument from evidence
- SEP 8 Obtaining, evaluating, and communicating information

### **Disciplinary Core Ideas**

- LS 1.D: Information Processing
- LS 2.D: Social Interactions and Group Behavior
- LS 3: Heredity: Inheritance and Variation of Traits
- LS 4.B: Natural Selection
- ETS2.A: Interdependence of Science, Engineering, and Technology