

# V T 54A: COMPARATIVE VETERINARY ANATOMY & PHYSIOLOGY FOR THE VETERINARY TECHNICIAN

## Foothill College Course Outline of Record

Heading	Value
<b>Units:</b>	5
<b>Hours:</b>	4 lecture, 3 laboratory per week (84 total per quarter)
<b>Prerequisite:</b>	CHEM 30A or equivalent.
<b>Advisory:</b>	Not open to students with credit in APAV 54A.
<b>Degree &amp; Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

## Student Learning Outcomes

- Recognize and identify the normal anatomy of selected organs and organ systems of domestic animals and relate it to the clinical practice of veterinary technology.
- Know and explain the normal physiology of selected organs and organ systems of domestic animals and relate it to the clinical practice of veterinary technology.

## Description

Comparative veterinary anatomy and physiology for veterinary technicians. Clinically relevant veterinary anatomy and physiology, including a discussion of the similarities and differences among the major domestic species. Emphasis is placed on the normal structure and function of the major organ systems as the foundation for understanding pathology and the pathophysiology of disease. Intended for students in the Veterinary Technology Program; enrollment is limited to students accepted in the program.

## Course Objectives

The student will be able to:

- Apply and interpret appropriate veterinary medical terminology.
- Recognize, compare, and contrast the chemical basis of life, and how these elements combine to form the biochemical molecules that make up the various cells and tissues that comprise organs and body systems, and demonstrate understanding of the functions of these cells and tissues for the canine, feline, equine, bovine and porcine.
- Recognize, compare and contrast, and demonstrate an understanding of the structure and function of the integument, skeleton, muscle, cardiovascular and respiratory systems in the above listed species.
- Apply this knowledge to the clinical setting, including but not limited to: radiology, pharmacology, restraint and handling, clinical pathology, anesthesia, and nursing care for the above listed species.

## Course Content

- Introduction
  - Overview of anatomy and physiology
    - Terminology
    - General plan of the animal body
    - Levels of organization
    - Homeostasis
  - Chemical Basis of Life
    - Elements, atoms, molecules
    - Chemical bonds
    - Inorganic compounds
    - Organic compounds
  - The Cell
    - Cell anatomy
      - Cell membrane
      - Cytoplasm
      - Nucleus
    - Cell physiology
      - Cell environment
      - Membrane processes
      - Mitosis
      - Meiosis
      - Mutations
  - Tissues
    - Gross and microscopic anatomy
    - Epithelial tissue
      - Characteristics
      - Types
    - Connective tissue
      - Characteristics
      - Components
      - Types
    - Membranes
    - Muscle tissue
      - Skeletal
      - Smooth
    - Cardiac
    - Nervous tissue
    - Tissue healing and repair
  - The Integument and Related Structures
    - Integument
      - Epidermis
      - Dermis
      - Hypodermis
      - Special features
        - Pigment
        - Paw pads
        - Planum nasale
        - Ergots and chestnuts
    - Related structures
      - Hair
      - Skin glands
      - Claws
      - Hooves
      - Horns
  - Skeletal System
    - Bone
      - Terminology
      - Characteristics
      - Structure
      - Function

- e. Shapes
- f. Marrow
- g. Special features
- 2. Axial skeleton
  - a. Skull
  - b. Spinal column
  - c. Ribs and sternum
- 3. Appendicular skeleton
  - a. Thoracic limb
  - b. Pelvic limb
- 4. Joints
  - a. Terminology
  - b. Types
- G. Muscular System
  - 1. Skeletal muscle
    - a. Gross anatomy
    - b. Microscopic anatomy
    - c. Physiology
  - 2. Cardiac muscle
    - a. Gross anatomy
    - b. Microscopic anatomy
    - c. Physiology
  - 3. Smooth muscle
    - a. Gross anatomy
    - b. Microscopic anatomy
    - c. Physiology
- H. Cardiovascular
  - 1. Cardiac anatomy
    - a. Internal
    - b. External
  - 2. Cardiac blood flow
  - 3. Cardiac cycle
  - 4. Heart sounds
  - 5. Electrocardiogram
  - 6. Cardiovascular modifications in the fetus
- I. Blood, Lymph, Immunity
  - 1. Blood composition
    - a. Plasma
    - b. Red cells
    - c. White cells
    - d. Platelets
  - 2. Lymphatics
    - a. Formation
    - b. Characteristics
    - c. Function
    - d. Structures
      - 1) Nodes
      - 2) Spleen
      - 3) Thymus
      - 4) Tonsils
      - 5) Gut-associated lymph tissue
  - 3. Immune system
    - a. Function
    - b. Reactions
    - c. Immunization
      - 1) Passive
      - 2) Active
- J. Respiratory System
  - 1. Structure
    - a. Upper respiratory tract
      - 1) Nose
      - 2) Pharynx

- 3) Larynx
- 4) Trachea
- b. Lower respiratory tract
  - 1) Bronchial tree
  - 2) Alveoli
  - 3) Lungs
  - 4) Thorax
- 2. Function
  - a. Inspiration
  - b. Expiration
  - c. Respiratory volumes
  - d. Alveolar gas exchange
  - e. Control of breathing

## Lab Content

- A. Laboratory Topics
  - 1. Terminology
  - 2. Microscopy
  - 3. Cell Anatomy
  - 4. Tissues
  - 5. Integument
  - 6. Skeletal
  - 7. Muscular
  - 8. Cardiovascular
  - 9. Respiratory

## Special Facilities and/or Equipment

Lecture and laboratory facility with high-quality overhead projector, instructor's computer with internet access, video microscope, visualizer, and DVD. Student computers and ports for student laptops, bench space, anatomy and physiology models, microscopes, microscope slides (cytology and histology), preserved specimens, dissection equipment. Anatomage model loaded with dog and cat specimens.

## Method(s) of Evaluation

- A. Two written midterm exams.
- B. Written final exam.
- C. Laboratory evaluations: quizzes and practical exams.
- D. Emphasis is on skill development and hands-on experience in all required areas. Practical training in the American Veterinary Medical Association Committee on Veterinary Technician Education and Activities List of Essential Skills Expected of Graduate Veterinary Technicians using a set of standard criteria as a guideline for the accomplishment of performance objectives.

## Method(s) of Instruction

Lecture, discussion, laboratory, demonstration.

## Representative Text(s) and Other Materials

Colville, Thomas, and Joanna M. Bassert. Clinical Anatomy and Physiology for Veterinary Technicians. 3rd ed. MO: Mosby Elsevier Publishers, 2016.

Colville, Thomas, and Joanna M. Bassert. Clinical Anatomy and Physiology Laboratory Manual for Veterinary Technicians. MO: Mosby Elsevier Publishers, 2016.

## **Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments**

### A. Reading assignments

1. Weekly reading assignments in the lecture text
2. Weekly reading assignments in the lab manual
3. Viewing of DVDs with written summaries
4. Additional reading assigned as needed to supplement the texts

B. Emphasis is on skill development and hands-on experience in all required areas. Practical training in the American Veterinary Medical Association Committee on Veterinary Technician Education and Activities List of Essential Skills Expected of Graduate Veterinary Technicians using a set of standard criteria as a guideline for the accomplishment of performance objectives

## **Discipline(s)**

Registered Veterinary Technician