Veterinary Technician
Mississippi Curriculum Framework

Veterinary Technology - CIP: 51.0808 (Veterinary/Animal Health Technology/Technician and Veterinary Assistant)

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The Office of Curriculum and Instruction (OCI) was founded in 2013 under the Division of Workforce, Career, and Technical Education at the Mississippi Community College Board (MCCB). The office is funded through a partnership with The Mississippi Department of Education (MDE), who serves as Mississippi's fiscal agent for state and federal Career and Technical Education (CTE) Funds. The OCI is tasked with developing statewide CTE curriculum, programming, and professional development designed to meet the local and statewide economic demand.

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NATIONAL STANDARDS

The 2022 Veterinary Technology curriculum framework adopts the standards as put forth by the American Veterinary Medical Association (AVMA) © Council on Education (COE) © and the Committee on Veterinary Technical Education and Activities (CVTEA) ©. This curriculum framework is mapped to the required skills found in the Veterinary Technology Student Essential and Recommended Skills List found at https://www.avma.org/ProfessionalDevelopment/Education/Accreditation/Programs/Pages/cvtea-pp-appendix-i.aspx . The Skills List represents the complex role of the veterinary technician and encourages instruction in motor, critical thinking and critical application skills at the entry veterinary technician level.

In reviewing this curriculum document, skills from the Veterinary Technology Essential and Recommended Skills List have been mapped to the particular courses in the program of study where they are covered. Required tasks are denoted by an **asterisk (*)**. ***Italicized*** text denotes hands-on (psychomotor) skills; all other text denotes didactic (knowledge-based) skills.

The licensing exam for the technicians is the Veterinary Technology National Examination (VTNE) ©.

The Veterinary Technician National Examination (**VTNE**) © is owned and administered by the AAVSB. The VTNE is used to evaluate entry-level veterinary technicians' competency to practice and to be credentialed. The computer-based exam is given in three testing windows a year and is constantly updated, reviewed and reevaluated by highly-qualified item writers so that it remains a valid tool. Most states and provinces require a passing score on the VTNE as one criterion for credentialing. The AAVSB contracts with the administering agencies to provide the exam. PSI is the exam vendor for examination development and administration services regarding the VTNE. The exam is administered at PSI Testing

Industry Credentials, Certifications, And Professional Licensure

See the “Industry Credentials, Certifications, and Professional Licensure”
https://www.mccb.edu/assessment

Industry Job Projection Data

A summary of occupational data is available from the Mississippi Department of Employment Security.
https://mdes.ms.gov/information-center/labor-market-information/

Articulation

Check with the local community college CTE administration for articulation agreements.

Dual Enrollment

See the “Procedures Manual for Dual Enrollment and Accelerated Programs”
http://www.mississippi.edu/cjc/dual_enrollment.asp

Research Abstract

In the fall of 2022, the Office of Curriculum and Instruction (OCI) met with the different industry members who made up the advisory committees the Veterinary Technology program. An industry questionnaire was used to gather feedback concerning the trends and needs, both current and future, of their field. Program faculty, administrators, and industry members were consulted regarding industry workforce needs and trends.

Industry advisory team members from the college involved with this program were asked to give input related to changes to be made to the curriculum framework. Specific comments related to soft skills needed in this program include having a positive attitude, being at work every day and on time, and having reading and writing skills. Occupation-specific skills stated include knowledge of radiocology, pharmacology, animal restraint, client communication, animal care and nursing.

Included in this revision, Internship (VAT 2183) 3-6 was decreased to three semester credit hours.

Revision History:

2010 Revised, Research and Curriculum Unit, Mississippi State University
2018 Revised, Office of Curriculum and Instruction, Mississippi Community College Board
2022 Revised, Office of Curriculum and Instruction, Mississippi Community College Board

PROGRAM DESCRIPTION

The Veterinary Technology program is a 2-yr program. Graduates may become a certified veterinary technician upon passing the certification examination offered by the Mississippi Veterinary Medical Board. Employment opportunities for veterinary technicians include small and large animal practices, medical research, pharmaceutical research, wildlife rehabilitation, humane societies, zoological parks, and government agencies.
Students successfully completing the program are prepared to enter various animal technology careers such as Veterinary Technician (Animal Health) in small animal practice, small animal emergency practice, mixed animal practice, large animal practice, equine practice, and food animal practice. Veterinary Technology programs may be accredited by the American Veterinary Medical Association. Graduates may become registered veterinary technicians through the Mississippi Board of Veterinary Medicine.

After successfully completing the program, the student will be awarded an Associate of Applied Science Degree from the community/junior college. Industry standards are based on the American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List.

SUGGESTED COURSE SEQUENCE

Required Courses

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
VAT1112	Vet Math	2	2	0	30	30	0	Veterinary Technician National Exam (VTNE)
VAT 1122	Office Procedures/ Vet Terminology	2	2	0	30	30	0	
VAT 1212	Animal Restraint and Medication	2	2	0	30	30	0	
VAT 1314	Animal Anatomy & Physiology	4	3	2	75	45	30	
VAT 1413	Surgical & Hospital Techniques	3	3	0	45	45	0	
VAT 1433	Vet Lab 1	3	1	4	75	15	60	
VAT 1443	Vet Lab 2	3	1	4	75	15	60	
VAT 2113	Animal Health Care	3	3	0	45	45	0	
VAT 2122	Board Examination Review	2	2	0	30	30	60	
VAT 2133	Vet Lab 3	3	1	4	75	15	60	
VAT 2143	Vet Lab 4	3	1	4	75	15	60	
VAT 2152	Animal Parasites & Disease	2	2	0	30	30	0	
VAT 2172	Exotic/ Lab Animal Procedures	2	1	2	45	15	30	
VAT 2183	Internship	3	0	9	135	0	135	
VAT 2192	Veterinary Pharmacology	2	2	0	30	30	0	
VAT 2223	Large Animal Procedures	3	2	2	60	30	30	
VAT 2272	Principles of Imaging	2	1	2	45	15	30	
VAT 2283	Clinical Pathology	3	2	2	60	30	30	

General Education Core Courses – Veterinary Technology

To receive the Associate of Applied Science Degree, a student must complete all of the required coursework found in the Career Certificate option, Technical Certificate option and a minimum of 15 semester hours of General Education Core. The courses in the General Education Core may be spaced out over the entire length of the program so that students complete some academic and Career Technical courses each semester or provided primarily within the last semester. Each community college will specify the actual courses that are required to meet the General Education Core Requirements for the Associate of Applied Science Degree at their college. The Southern Association of Colleges and Schools (SACS) Commission on Colleges Standard 2.7.3 from the Principles of Accreditation: Foundations for Quality Enhancement 1 describes the general education core.

Section 2.7.3 In each undergraduate degree program, the institution requires the successful completion of a general education component at the collegiate level that (1) is substantial component of each undergraduate degree, (2) ensures breadth of knowledge, and (3) is based on a coherent rationale. For degree completion in associate programs, the component constitutes a minimum of 15 semester hours or the equivalent. These credit hours are to be drawn from and include at least one course from the following areas: humanities/fine arts, social/behavioral sciences, and natural science/mathematics. The courses do not narrowly focus on those skills, techniques, and procedures specific to a particular occupation or profession.

General Education Courses

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
	Humanities/Fine Arts	3						
	Social/Behavioral Sciences	3						
	Math/Science	3						
	Academic electives	6						
	TOTAL	**15**						

[1] Southern Association of Colleges and Schools Commission on Colleges. (2012). *The principles of accreditation: Foundations for quality enhancement*. Retrieved from http://www.sacscoc.org/pdf/2012PrinciplesOfAcreditation.pdf

VETERINARY TECHNOLOGY COURSES

Course Number and Name: VAT 1112 Veterinary Mathematics

Description: Veterinary Math Calculations provides a consistent approach to computations involved in drug and solution problems.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
2	2	0	30

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Demonstrate the numeration systems, fractions, decimals, percentages, and ratio proportion problems
   a. Utilize pretest to assess level of mathematics competencies
   b. Identify the two numeration systems
   c. Utilize the basic operations of fractions, decimals, and percentages.
   d. Solve problems using ratio and proportion
2. Differentiate among the metric, apothecaries', and household systems and their units of measurement
   a. Perform calculations in the metric system of measurement
   b. Convert units of measurement within the metric, apothecaries', and household systems of measurement
   c. Demonstrate proficiency with symbols in the metric, apothecaries', and household systems of measurement
   d. Utilize the proportion method when changing units of measurement from one system to another
3. Calculate oral and parenteral dosages
   a. Use the basic operations of ratio and proportions to solve problems for oral and parenteral medications
   b. Demonstrate proficiency in correctly reading medication labels and orders
   c. Determine dosage for oral and parenteral medications
4. Calculate intravenous solution rates and the preparation of solutions
   a. Demonstrate proficiency when calculating the intravenous rates with varying drop factor sets
   b. Determine the correct length of time for intravenous infusions
   c. Calculate solutions prepared from powders, crystals, or tablets
   d. Demonstrate proficiency when computing solutions prepared from liquid solutes
   e. Exhibit proficiency calculating solutions prepared from solutes with concentrations other than 100% concentrations
5. Differentiate between different sizes of syringes and how to read them for appropriate dosaging.

CVTEA Requirements

Veterinary Technology Student Essential and Recommended Skills List

Note: On the following pages, required tasks are denoted by an **asterisk (*)**. ***Italicized*** text denotes hands-on (psychomotor) skills; all other text denotes didactic (knowledge-based) skills.

2. Pharmacy and Pharmacology Tasks

- Accurately perform appropriate calculations; use weights and measures correctly*
- Safely and effectively administer drugs by common parenteral and enteral routes; explain appropriate routes and methods and when used*

Course Number and Name: VAT 1122 Office Procedures/ Veterinary Terminology

Description: This course covers topics such as the veterinary technicians' roles in practice management; accounting basics, personnel management, leadership skills, stress management, customer relations, and practice ethics. The course will also include a study of the veterinary medical terms relating to Anatomy and Physiology, diseases, medical procedures, and clinical practice.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
2	2	0	30

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Exhibit knowledge and competency skills in the following areas of veterinary practice:
   a. Care and maintenance of a veterinary facility
   b. Administrative duties
   c. Introduce students to the veterinary software program
   d. Veterinary record keeping
   e. A knowledge of governing bodies on local, state and national levels.
   f. Interaction with clients
   g. Ethics
   h. Fee collection, procedures, and payroll
2. Demonstrate knowledge and explain important concepts of veterinary terminology including the following:
   a. Combing vowels and formulating proper medical terms
   b. Applying terminology in relation to body planes and positioning
   c. Knowledge of proper anatomical terms in relation to body anatomy
3. Demonstrate knowledge of anatomy, proper terminology, and common procedures performed of the following body systems: ,
   a. Musculoskeletal system
   b. Gastrointestinal system
   c. Urinary system
   d. Cardiovascular system
   e. Respiratory system
   f. Integumentary system
   g. Endocrine system
   h. Nervous system
   i. Sensory organs
4. Demonstrate knowledge of anatomy and proper terminology associated with the following:
   a. Dogs and cats
   b. Horses
   c. Cattle
   d. Swine

CVTEA Requirements

Veterinary Technology Student Essential and Recommended Skills List

1. OFFICE AND HOSPITAL PROCEDURES, CLIENT RELATIONS, and COMMUNICATION

Management

Skill: Participate in facility management utilizing traditional and electronic media and appropriate veterinary medical terminology and abbreviations.

Tasks:

- Schedule appointments, admit, discharge and triage according to client, patient and facility needs through phone and in-person contact*
- Recognize and respond to veterinary medical emergencies*
- Create and maintain individual client records, vaccination certificates, and other appropriate forms*:
  - develop computer skills*
  - be able to utilize veterinary practice management software*
  - be familiar with veterinary on-line services* (e.g. laboratory submissions, client financing plans, continuing education, discussion groups)
- Perform basic filing of medical records, radiographs, lab reports, etc.*
- Create and maintain all appropriate facility records and logs in compliance with regulatory guidelines (e.g., radiography, surgery, anesthesia, laboratory, controlled substance)*
- Manage inventory control*
- Recognize roles of appropriate regulatory agencies*
- Maintain appropriate disposal protocols for hazardous materials*
- Establish and maintain appropriate sanitation and infection control protocols for a veterinary facility, including patient and laboratory area*
- Handle daily client-based financial transactions*

Decision-making abilities: Taking into account the characteristics of the facility, patients and clients, the veterinary technician will effectively contribute to the professional and efficient operation of the facility in order to provide maximum benefits to clients, patients, and the facility.

Communication

Skill: Communicate in a professional manner in all formats - written, oral, non-verbal, and electronic.

Tasks:

- Demonstrate an understanding of interpersonal skills and team dynamics*
- Utilize appropriate interpersonal and public relations skills*
- Demonstrate telephone etiquette* (e.g. through role playing, educational resources, etc.)
- Recognize the legality of the veterinary-client-patient relationship*
- Develop and provide client education in a clear and accurate manner at a level the client understands (i.e., oral and written form, including educational handouts)*
- Apply crisis intervention/grief management skills with clients*

Decision-making abilities: Taking into account the patient, client, staff and circumstances, the veterinary technician will effectively and accurately acquire and convey information utilizing an appropriate communication mode.

Laws and Ethics

Skill: Follow and uphold applicable laws and the veterinary technology profession's ethical codes to provide high quality care to patients.

Tasks:

- Understand and observe legal boundaries of veterinary health care team members*
- Interact professionally with clients and fellow staff members*
- Demonstrate a commitment to high quality patient care*
- Respect and protect the confidentiality of client and patient information*

Decision-making abilities: Given knowledge of legal limitations and applicable ethical standards, the veterinary technician will carry out her/his duties within appropriate legal boundaries and maintain high ethical standards to provide high quality service to clients, patients, employers and the veterinary profession.

Course Number and Name: VAT 1212 Animal Restraint and Medication

Description: Animal restraint and medication is the study and practice of restraining small animals, utilizing both chemical and physical means of safe and humane restraint. Included in the course are basic terminology, usage, administration, and general knowledge of common drugs and vaccines. Students will become familiar with medical terminology.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
2	2	0	30

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Explain proper techniques in restraining domestic animals
    a. Explain proper restraining techniques for horses
    b. Explain proper restraining techniques for cows
    c. Explain proper restraining techniques for dogs
    d. Explain proper restraining techniques for cats
    e. Explain proper restraining techniques for other domestic and exotic animals
2. Explain techniques of collecting medical history data, performing a physical examination, and completing a medical record
    a. Take a medical history
    b. Perform a physical examination
    c. Record normal body temperature, pulse, and respiration
    d. Perform auscultation of lungs and heart
    e. Palpate normal body structures
    f. Maintain a correct medical record
3. Use a microscope to perform a fecal examination and identify common parasite ova
    a. Explain the parts of a microscope and its proper use
    b. Explain a direct smear and flotation microscopic fecal examination
    c. Explain a flotation fecal examination
    d. Explain a gross fecal examination
    e. Identify small animal and large animal common intestinal parasites and ova such as roundworms, hookworms, coccidia, tapeworms, HONs, and strongles.
4. Administer medication to both small animals and large animals
    a. Explain oral administration of liquid and solid medication
    b. Differentiate between various syringe and needle types and sizes
    c. Explain parenteral administration of medication, which includes intravenous,
    d. intramuscular, subcutaneous, intradermal, and intraperitoneal
    e. Explain passage of a stomach tube
    f. Explain other methods of administration of medication such as topical and ophthalmologic
5. Explain vaccines, biologicals, and animal immunity to diseases
    a. Differentiate biologicals such as the following:
        1. Vaccines

2. Toxoids
3. Antitoxins
4. Antiserums
5. Bacterins
6. Antigens
    a. Explain proper care and use of biologicals
    b. Explain immunization schedules for domestic animals including dog, cat, horse, cow, and others
    c. Explain active and passive immunity

6. Explain special clinical procedures and bandaging techniques
    a. Explain ophthalmic procedures
    b. Explain ear care
    c. Explain a pedicure
    d. Explain anal sac expression
    e. Explain an enema
    f. Explain intravenous catheters
    g. Explain gastric lavage
    h. Explain dental prophylaxis
    i. Explain centesis
    j. Explain semen collection and artificial insemination
    k. Explain wound management
    l. Explain bandaging and splint care

Course Number and Name: VAT 1314 Animal Anatomy and Physiology

Description: Animal Anatomy and Physiology introduces the student to basic anatomy and physiology as related to the needs of a veterinary technician. Special emphasis is given to the structure of a selected cadaver, location of specific structures, and functions of these structures.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
4	3	2	75

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Explain anatomy and physiology, cell structure, and cell physiology
    a. Define anatomy and physiology
    b. Define the following terms: dissection, gross anatomy, and microscopy
    c. Explain the importance of anatomy and physiology in veterinarian practice
    d. Explain the different systems and major structures of the dog
    e. Explain references concerning planes
    f. Differentiate between the following descriptive terms:
        (1) Cranial
        (2) Caudal
        (3) Dorsal
        (4) Ventral
        (5) Medial
        (6) Lateral
        (7) Deep
        (8) Superficial
        (9) Palmar
        (10) Plantar
        (11) Prone
        (12) Supine
    g. Differentiate between proximal and distal in relation to structures
    h. Discuss the general plane of the body including cavities and regions
    i. Explain the cavities of the body and the structures associated with each
    j. Explain each region of the body
    k. Explain paired and unpaired structures
    l. Differentiate between various parts of the cell
    m. Describe the components of the cell including cell membrane, nucleus, and cytoplasm
    n. Explain the four primary types of tissue in the body
    o. Explain homeostasis of the body
2. Explain the components and physiology of the skeletal system and its articulation and the muscles and their actions
    a. Identify the bones of the canine body
    b. Describe the composition of a long bone
    c. Describe a Haversian canal
    d. Explain the relationship of the following:

(1) Osteocytes
(2) Osteoblast
(3) Osteoclast
(4) Periosteum
(5) Endosteum

e. List different functions of bone
f. Classify bones
g. Classify the joint as to the following:
    1. Sutures
    2. Gomphosis
    3. Symphyses
    4. Diarthrodial
h. Describe the function and the structure of the synovial joints
i. Describe the movements of a synovial joint
j. Describe the three types of muscle by action, placement, anatomy, and physiology
k. Explain muscle attachments
l. Distinguish between different functional groups of muscles
m. Identify the major muscles of the canine, pectoral, cutaneous, abdominal, pelvic, and hind limbs
n. Explain the actions of muscles during respiration
o. Compare the structure of the smooth, cardiac, and skeletal muscles
p. Define the following:
    1. Motor unit
    2. Neurotransmitters
    3. Hypertrophy
    4. Synaptic cleft
q. Describe a muscle contraction.
r. Describe factors that influence muscle contractions.

3. Describe the anatomy and physiology of the specialized nervous system and its interrelationship with the entire body.
    a. Describe the basic origination of the nervous system including:
        (1) Neuron
        (2) Brain
        (3) Spinal cord
        (4) Nerves
    b. Identify the parts of the central and peripheral nervous system in a drawing and on the
        a. canine.
        b. Distinguish functional differences between the cerebellum, cerebrum, brain stem, and
        c. spinal cord.
    e. List the different meninges

f. Recognize the major cranial and spinal nerves
g. Distinguish between the sympathetic and the parasympathetic nervous system
h. Describe a nerve impulse
i. Explain a reflex
j. List ways the autonomic nervous system can maintain a relatively stable internal body environment

4. Explain mechanics of the circulatory and respiratory system, the pathways of transport, and physiology.
    a. Describe the heart by its shape, size, covering, structure, and function of each chamber
    b. Trace the blood through the vessels and in and out of the heart
    c. Compare the vessels of the circulatory system:
        (1) Arteries
        (2) Veins
        (3) Capillaries
        (4) Lymphic vessels
    d. Describe the aorta and its branches
    e. Describe the different circulatory systems of the body
    f. Explain how the circulatory system, lymphatic system, and respiratory system interrelate
    g. Describe a cardiac cycle
    h. Trace air from the external environment to the erythrocytes
    i. Distinguish between the different lobes of the lungs
    j. Describe the actions of the alveoli
    k. List different respiration rates of the following:
        (1) Dog
        (2) Cow
        (3) Cat
        (4) Horse
5. Explain the process, function, pathway, and accessory organs of the digestive system.
    a. Describe the anatomy of the teeth
    b. Trace food completely through the digestive system
    c. Explain the relationship between the pharynx and mouth to larynx and esophagus during normal respiration and swallowing
    d. Distinguish between different digestive processes in each area of the digestive tract
    e. Explain enzymes that act on food
    f. Describe how food is absorbed and used by the body
    g. Explain the relationship between the circulatory, lymphatic, and digestive systems
    h. List accessory glands of the digestive system
6. Explain the urinary and male reproductive system
    a. Describe the structure of the following:
        (1) Kidneys
        (2) Ureters
        (3) Bladder
        (4) Urethra
    b. Explain the process of micturition
    c. Distinguish between alkalosis and acidosis
    d. Describe testis, epididymis, scrotum, penis, and the blood supply to the male reproductive system.
    e. Explain the secondary sex characteristics of the male and female

f. Describe the accessory sex glands and their effect on the body
g. Explain the movement of the sperm and fertilization

7. Explain the female reproductive system
    a. Describe the female anatomy
    b. Explain ovulation and estrous cycle
    c. Explain the functions of the hormones of the female reproductive system
8. Describe the anatomy and physiology of pregnancy, parturition, mammary glands, lactation, and the endocrine system
    a. Explain the physiology of pregnancy and parturition in domestic animals
    b. Describe the anatomy of the mammary gland
    c. Explain the physiology of lactation
    d. Explain the hormones of the endocrine system

Course Number and Name: VAT 1413 Surgical and Hospital Techniques

Description: Surgical and Hospital Techniques is the study and practical application of sterile techniques, preparation of the surgical site, operating room conduct, assisting the surgeon, pre-anesthetic, anesthesiology, and anesthetic emergencies.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	3	0	45

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Explain anesthesia, induction and monitoring techniques, endotracheal intubation, vital signs, and reflexes.
   a. Explain the classical stages of anesthesia
   b. Explain induction techniques
   c. Explain monitoring techniques
   d. Explain endotracheal intubation
   e. Explain maintenance of anesthesia
   f. Explain vital signs
   g. Explain reflexes
2. Explain the types of anesthetic drugs
   a. Explain anesthetic barbiturates
   b. Explain anesthetic cycloheximines
   c. Explain inhalation anesthetics such as the following:
      (1) Ether
      (2) Nitrous oxide
      (3) Chlorofluorocarbons
      (a) Halothane
      (b) Isoflurane
      (c) Methoxyflurane
   d. Explain agents used in postanesthetic period
3. Explain types, care, and use of anesthetic equipment
   a. Explain equipment needed for anesthesia
   b. Identify endotracheal tubes
   c. Explain an anesthesia machine
   d. Explain anesthetic breathing systems
   e. Explain vaporizers
   f. Explain carrier gas flow rates
   g. Explain care of equipment

4. Identify safety measures, anesthetic problems, emergencies, and special techniques involving anesthesia
   a. Utilize workplace safety involving anesthetic gasses and other drugs
   b. Identify anesthetic problems and emergencies including the following:
      (1) Human error
      (2) Equipment failure
      (3) Anesthetic agents
      (4) Patient variation factors
      (5) Response to anesthetic problems and emergencies
      (6) Potential problems in recovery
      (7) Technician's role during anesthetic problems and emergencies

c. Explain special anesthetic techniques including the following:
    (1) Local analgesia
    (2) Neuromuscular blocking agents

5. Explain the effect of anesthetic drugs.
    a. Nervous system
    b. Cardiovascular system
    c. Respiratory system

Course Number and Name: VAT1433 Vet Lab I

Description: The course includes the practical application of restraining animals, utilizing both chemical and physical mean. Included in the course are medical terminology and the administration and general knowledge of common drugs and vaccines. It also includes the practical application of sterile techniques, preparation of the surgical site, operating room conduct, assisting the surgeon, pre-anesthetic, anesthesiology, and anesthetic emergencies. Other topics in this course include the practical applications of large animal, exotic, and laboratory animals.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	1	4	75

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Demonstrate proper techniques in restraining domestic animals
    a. Demonstrate proper restraining techniques for horses
    b. Demonstrate proper restraining techniques for cows
    c. Demonstrate proper restraining techniques for dogs
    d. Demonstrate proper restraining techniques for cats
    e. Demonstrate proper restraining techniques for other domestic and exotic animals
2. Demonstrate techniques of collecting medical history data, performing a physical examination, and completing a medical record
    a. Take a medical history
    b. Perform a physical examination
    c. Record normal body temperature, pulse, and respiration
    d. Perform auscultation of lungs and heart
    e. Palpate normal body structures
    f. Maintain a correct medical record
3. Use a microscope to perform a fecal examination and identify common parasite ova
    a. Explain the parts of a microscope and its proper use
    b. Perform a direct smear and flotation microscopic fecal examination
    c. Perform a flotation fecal examination
    d. Perform a gross fecal examination
    e. Identify small animal and large animal common intestinal parasites and ova such as roundworms, hookworms, coccidia, tapeworms, HONs, and strongles
4. Administer medication to both small animals and large animals
    a. Perform oral administration of liquid and solid medication
    b. Differentiate between various syringe and needle types and sizes
    c. Demonstrate parenteral administration of medication, which includes intravenous, intramuscular, subcutaneous, intradermal, and intraperitoneal
    d. Demonstrate passage of a stomach tube
    e. Demonstrate other methods of administration of medication such as topical and ophthalmologic
5. Demonstrate special clinical procedures and bandaging techniques
    a. Demonstrate ophthalmic procedures
    b. Demonstrate ear care
    c. Demonstrate a pedicure
    d. Demonstrate anal sac expression
    e. Demonstrate an enema

f. Demonstrate intravenous catheters
g. Demonstrate gastric lavage
h. Demonstrate dental prophylaxis
i. Demonstrate centesis
j. Demonstrate semen collection and artificial insemination
k. Demonstrate wound management
l. Demonstrate bandaging and splint care

6. Apply surgical procedures, aseptic techniques, and use of surgical instruments
   a. Demonstrate surgical procedures
   b. Demonstrate aseptic techniques
   c. Demonstrate use and handling of surgical instruments
7. Demonstrate surgical preparation procedures for surgical rooms, equipment, patients, and personnel
   a. Apply aseptic techniques in the following areas:
      (1) Surgical area
      (2) Surgical equipment and instruments
      (3) Patient preparation
      (4) Personnel
8. Demonstrate anesthesia administration techniques used for induction and monitoring, endotracheal intubation, vital signs, and reflexes
   a. Demonstrate the use of preanesthetics
   b. Demonstrate the classical stages of anesthesia administration
   c. Demonstrate induction techniques
   d. Demonstrate monitoring techniques
   e. Demonstrate endotracheal intubation
   f. Demonstrate maintenance of anesthesia
   g. Demonstrate anesthesia administration techniques used for vital signs
   h. Demonstrate anesthesia administration techniques used for reflexes
   i. Demonstrate surgical positioning
   j. Demonstrate techniques used during recovery period
   k. Demonstrate anesthesia administration techniques used for aspiration emergencies

9. Discuss surgical procedures, aseptic techniques, infectious organisms and their control, and surgical instruments
   a. Discuss surgical procedures and their history
   b. Describe the principles of asepsis including the following:
      i. Microbial world
      ii. Diseases and immunity
      iii. Control of microbes
      iv. Aseptic techniques
   c. Identify common surgical instruments and their use
10. Apply surgical procedures, aseptic techniques, and use of surgical instruments
   a. Demonstrate surgical procedures
   b. Demonstrate aseptic techniques
   c. Demonstrate use and handling of surgical instruments
11. Demonstrate surgical preparation procedures for surgical rooms, equipment, patients, and personnel.
   a. Apply aseptic techniques in the following areas:
      i. Surgical area
      ii. Surgical equipment and instruments
      iii. Patient preparation
      iv. Personnel
12. Identify types of sutures and needles used in surgical procedures and the introduction

into the preanesthetic period

a. Identify nonabsorbable and absorbable suture types
b. Identify suture size
c. Identify needle types by size, shape, and use
d. Identify suture patterns
e. Explain the use of preanesthetics
f. Demonstrate the use of preanesthetics
   d. Explain surgical positioning
   e. Explain recovery period
   f. Explain aspiration emergencies

CVTEA Requirements

Veterinary Technology Student Essential and Recommended Skills List

NURSING

Tasks- NURSING Patient assessment
Skill: Demonstrate and perform patient assessment techniques in a variety of animal species. Tasks:

- Recognize common domestic animal species and breeds*
- Describe and use common animal identification methods*
- Demonstrate effective and appropriate humane restraint techniques for various animal species:
    - *properly restrain dogs and cats for procedures**
    - *encage and remove small animals from cages**
    - *apply dog muzzle safely**
    - *apply Elizabethan collar**
    - *use restraint pole and other restraint aids**[GROUP]
    - *halter, tie, and lead horses**

    - *restrain pocket pets and exotics*
    - *restrain cattle and horses**
    - *apply twitch (horses)**[GROUP]
    - *apply bovine tail restraint**
    - *apply bovine halter**
    - *restrain sheep and pigs*
    - *load large animals*
    - *safely operate cattle chute**[GROUP]
- Obtain a thorough patient history*
- *Demonstrate the ability to obtain objective patient data:*
    - *temperature (dog, cat, horse, cow)**
      dog, cat, horse, cow
    - *pulse (dog, cat, horse, cow)**
      dog, cat, horse, cow
    - *respiration (dog, cat, horse, cow)**
      dog, cat, horse, cow
    - *auscultate heart/lungs* (dog, cat, horse, cow)*
      dog, cat, horse, cow
    - *assess hydration status*
- *Properly collect diagnostic specimens for analysis (ex: urine, blood, feces, specimens for cytology)**
  urine, blood, feces, cytology
- *Perform venipuncture:*
    - *cephalic (dog, cat)**
      dog, cat
    - *jugular (dog, cat, horse, ruminant)**
      dog, cat, ruminant
    - *saphenous (dog, cat)**
      dog, cat
    - *sublingual (dog)*
      dog
    - *ear (pig)*
      pig
    - *coccygeal (cow)*
      cow
    - *anterior vena cava (pig)*
      pig
- *Collect urine sample:*
    - *catheterize male dog** [GROUP]
    - *catheterize female dog*
    - *catheterize female cat*
    - *catheterize male cat*
    - *collect voided urine sample (small animal)**
    - *perform cystocentesis (small animal)**[GROUP]
    - *catheterize large animal*
    - Prepare diagnostic specimens for shipment*

Decision-making abilities: Given the characteristics of the patient, the veterinary technician will safely and efficiently obtain subjective and objective patient data that will allow accurate evaluation of the patient's physical status with minimum stress and maximum safety.

Patient care

Skill: Understand and demonstrate husbandry, nutrition, therapeutic and dentistry techniques appropriate to various animal species.

Tasks: Husbandry

- Grooming:
    - Demonstrate understanding of therapeutic bathing, basic grooming, and dipping of small animals*
    - *trim nails (dog, cat)**
      dog, cat
    - trim hooves (ruminant, horse)
    - *apply equine tail and leg wraps**
    - *express canine anal sacs**
    - *clean and medicate ears (dog, cat)**
      dog, cat
    - *clean sheath (horse)*
- *Perform microchip scanning and implantation*
- *Environmental conditions: implement sanitation procedures for animal holding and housing areas**
- Demonstrate understanding of permanent identification*
- Demonstrate understanding of breeding/reproduction techniques*
- Demonstrate understanding of care of orphan animals
- Demonstrate understanding of nursing care of newborns*

Decision-making abilities: Given the characteristics of the patient, the veterinary technician will implement appropriate husbandry techniques to enhance wellness and reduce risk of disease, injury and stress.

Tasks: Therapeutics

- *Administer parenteral medications:*
    - *subcutaneous (dog, cat, ruminant)**
      dog, cat, horse, ruminant
    - *intramuscular (dog, cat, horse)**
      dog, cat, horse,
    - *intradermal (ruminant, dog)*
      dog, ruminant
    - *intramammary (mastitis therapy only) (ruminant)*
      ruminant
    - *intravenous (dog, cat, ruminant, equine)**
      dog, cat, horse, ruminant
- *Administer enteral medications:*
    - *balling gun (ruminant)**
      ruminant
    - *dose syringe (ruminant, horse)**
      horse, ruminant
    - *gastric intubation (small animal)**[GROUP]
    - *hand pilling (dog, cat) **
      dog, cat
    - *gastric lavage (dog)*
      dog
    - *dose syringe (pig)*
    - *oral speculum and stomach tube (ruminant)*
    - *nasogastric intubation (small animal, horse)*
- *Administer topical medications (including ophthalmic)**
  dog, cat, horse
- *Perform ocular diagnostic tests (including tonometry, fluorescein staining and Schirmer tear test)**
- *Administer enemas**[GROUP]
- *Collect/evaluate skin scrapings**
- Fluid therapy:
    - *administer subcutaneous fluids**
    - *place intravenous catheters*

cephalic, saphenous*, jugular*
    - *maintain and care for catheters**
    - determine/maintain fluid infusion rate*
    - monitor patient hydration status*
    - develop familiarity with fluid delivery systems*
- *Apply and remove bandages and splints**
- *Remove casts*
- Develop understanding of wound management and abscess care*
- Perform physical therapy:
    - hydrotherapy
    - post-operative
    - orthopedic
    - neurological
    - explain care of recumbent patient*
- Perform critical care:
    - maintain chest, tracheostomy, esophagostomy tubes
    - *collect and crossmatch blood for transfusion**[GROUP]
    - *blood typing*
    - *perform blood transfusions (autotransfusions may be considered)*
- Apply established emergency protocols (simulation acceptable):
    - maintain emergency medical supplies/crash cart*
    - *perform first aid and cardiopulmonary resuscitation**
    - *use resuscitation bag**
    - *apply emergency splints and bandages**

Decision-making abilities: Given the directions of the veterinarian and the characteristics of the patient, the veterinary technician will carry out appropriate therapeutic techniques in order to achieve maximum health benefits for the patient.

Tasks: Dentistry
*Perform routine dental prophylaxis (manual and machine)**
Understand client education regarding home care*
Float teeth
Clip teeth

Decision-making abilities: Given the characteristics of the patient, the veterinary technician will recognize a patient's dental health status and perform techniques, as prescribed by a veterinarian, appropriate to the species and its condition in order to promote and maintain dental health.

ANESTHESIA

Patient management
Skill: Safely and effectively manage and maintain patients in all phases of anesthesia.
Tasks:

- Calculate dosages of appropriate anesthetic-related drugs*
- *Administer anesthetic-related drugs (injection, endotracheal tube, mask)**
- *Place endotracheal tubes in patients**
- *Utilize clinical signs and appropriate equipment to monitor patient status during anesthetic procedures* (e.g., esophageal stethoscope, blood pressure monitor, capnometer, electrocardiogram, pulse oximeter)**
- Evaluate patient and implement pain management protocols as directed*
- Recognize and respond appropriately to patients in compromised states*
- Perform appropriate resuscitation procedures as needed (e.g., calculate and administer appropriate anesthetic antagonists and emergency drugs as directed)*
- *Complete controlled substance log** (does not need to be official controlled substance log; mock logs may be utilized)

Decision-making abilities: Given the characteristics of the anesthetized patient and the procedure being performed, the veterinary technician will work with the veterinarian to:

1. Assess the patient's risk status and determine appropriate anesthetic and perianesthetic protocols to provide effective pain management and maximum anesthetic safety and effectiveness.

2. Choose and utilize appropriate techniques and equipment to accurately and effectively monitor the patient's ongoing status before, during and after anesthesia to provide for adequate anesthesia, analgesia and a safe recovery.

Equipment/facility management

Skill: Safely and effectively select, utilize and maintain anesthetic delivery and monitoring instruments and equipment.

Tasks:

- *Maintain and operate anesthetic delivery and monitoring equipment:*
    - *pulse oximeter**
    - *capnometer**
    - *esophageal stethoscope**
    - *electrocardiograph (e.g., recognize abnormal rhythms/audible sounds, properly apply leads)**
    - *anesthetic machines, including rebreathing systems, non-rebreathing systems and masks**
    - *endotracheal tubes**
    - *resuscitation bag**
    - *scavenging systems**
    - *oxygen sources**
    - *blood pressure monitoring devices**
    - *laryngoscopes**
    - *ventilator*
    - *defibrillator*
    - *temperature monitoring device* (e.g. thermometer, etc.)*

Decision-making abilities:

1. Given the characteristics of the anesthetic instruments and equipment being used, the veterinary technician will recognize and respond appropriately to equipment malfunctions or inappropriate equipment setup to ensure proper function and provide maximum benefit to ensure safety of the patient and staff.

2. Given the requirements of the anesthetic protocol, the veterinary technician will select, evaluate and adjust equipment to ensure proper function and provide maximum benefit to ensure safety of the patient and staff.

3.SURGICAL NURSING

It is essential that technicians have knowledge of routine surgical procedures and related equipment, including surgeries in these categories:

- ovariohysterectomy*
  dog, cat
- cesarean section*
  all species
- orthopedic procedures*
- orchiectomy - all common species*
- tail docking*
- onychectomy*
  dog, cat
- laparotomies - all common species*
- dystocias in common species*

- dehorning*
  cow, goat
- prolapsed organs - common types, species, and incidence*

Students must have participated in surgeries in these categories:

- *ovariohysterectomy**
  dog, cat
- *orchiectomy**
  dog, cat

Patient management

Skill: Understand and integrate all aspects of patient management for common surgical procedures in a variety of animal species.

Task:

- Properly identify patients and surgical procedures*

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will use medical records and patient identification methods to assure that the patient and scheduled procedures are correct.

Task:

- Patient assessment
  - organize medical records/consent forms*
  - review pre-operative evaluation*
  - evaluate current patient status*
  - organize and implement anesthesia*

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will obtain the patient's vital signs, note any specific physical abnormalities, ensure pre-surgical tests have been completed and report the patient assessment to the veterinarian.

Task:

- *Palpate the urinary bladder and express it if needed**
- *Prepare surgical site using appropriate aseptic techniques**

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will identify the appropriate area of hair to be removed and select appropriate methods to reduce microbial flora on the skin in the area of surgical site in order to decrease the chance of surgical wound contamination.

Task:

- *Position patient for common procedures**

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will position the patient appropriately to provide maximum convenience for the surgeon and maximum safety and benefit for the patient.

Task:

- Provide surgical assistance:
  - *demonstrate proper operating room conduct and asepsis**
  - *assist with care of exposed tissues and organs**
  - *properly handle and pass instruments and supplies**
  - operate and maintain suction and cautery machines*
  - understand the principles of operation and maintenance of fiber optic equipment*
  - *record and maintain operative/surgical records**
  - *perform basic suturing techniques*

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will understand and utilize appropriate aseptic techniques to assist operative personnel in order to provide maximum safety and benefit to the patient.

Task:

- Coordinate pain management with the anesthesia/surgical team*

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will assure that anesthetic and post-operative pain management protocols are appropriate to provide maximum safety and benefit to the patient.

Task:

- Provide post-operative care:
    - pain management*
    - fluid therapy*
    - adequate nutrition*
    - wound management*
    - bandaging*
    - discharge instructions*
    - *suture removal**

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will understand and administer the appropriate methods of post-operative care to assure maximum safety and benefit to the patient.

Procedural management

Skill: Understand and provide the appropriate instruments, supplies and environment to maintain asepsis during surgical procedures.

Tasks:

- *Prepare surgical instruments and supplies**
- *Prepare gowns, masks, gloves, and drapes**
- *Operate and maintain autoclaves**
- *Sterilize instruments and supplies using appropriate methods**
- *Perform pre-surgical set-up**
- Identify and know proper use for instruments*
- Identify common suture materials, types, and sizes*
- *Provide operating room sanitation and care**
- Maintain proper operating room conduct and asepsis*
- *Perform post-surgical clean-up (e.g., equipment, instruments, room, proper disposal of hazardous medical waste)**

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will properly select, wrap and sterilize appropriate instruments and supplies and prepare and maintain the surgical environment to ensure maximum safety and benefit to the patient.

LABORATORY PROCEDURES

Specimen management

Skill: Demonstrate knowledge of proper handling, packaging and storage of specimens for laboratory analysis to ensure safety of patients, clients, and staff.

Tasks:

- *Select and maintain laboratory equipment**
- *Implement quality control measures**[GROUP]
- Understand how to ensure safety of patients, clients, and staff in the collection and handling of samples*
- *Prepare, label, package, and store specimens for laboratory analysis**

Decision-making abilities:

1. Given the characteristics of the patient and the requested analysis, the veterinary technician will properly prepare, handle and submit appropriate samples for diagnostic analysis in order to ensure maximum accuracy of results.

2. Given the characteristics of laboratory instruments and equipment, the veterinary technician will determine proper maintenance and quality control procedures necessary to ensure accurate results.

Specimen analysis

Skill: Properly perform analysis of laboratory specimens.

Tasks:

- *Perform urinalysis:*
  - *determine physical properties (e.g., color, clarity, specific gravity)**
  - *test chemical properties**
  - *examine and identify sediment**
- *Perform CBC to include:*
  - hemoglobin*
  - *packed cell volume**
  - *total protein**
  - *white cell count**
  - *red cell count**
- *Perform microscopic exam of blood film:*
  - *prepare film and stain using a variety of techniques**
  - *perform leukocyte differential – normal vs abnormal**
  - *evaluate erythrocyte morphology – normal vs abnormal**
  - *estimate platelet numbers**
  - *calculate absolute values**
  - *correct white blood cell counts for nucleated cells**
- Calculate hematolgic indices*
- *Coagulation tests – perform one of the following*:*[GROUP]
  - *buccal mucosal bleeding time*
  - *activated clotting time (ACT)*
  - *prothrombin time (PT)*
  - *partial thromboplastin time (PTT)*
  - *fibrinogen assay*
- *Perform blood chemistry tests (BUN, glucose, common enzymes)**
- *Perform serologic test (ELISA, slide/card agglutinations)**
- Identify blood parasites:
  - Dirofilaria sp/Acanthocheilonema sp (formerly Dipetalonema sp)*
  - Hemotropic Mycoplasma sp (Hemoplasmas)* (formerly Haemobartonella sp and Eperythrozoon sp)
  - Anaplasma sp
  - Babesia sp
  - Trypanosoma sp
  - Eperythrozoan sp
  - Ehrlichia sp
- Perform parasitologic procedures for external parasites and identify:
  - mites*
  - lice*
  - ticks*
  - fleas*
  - flies*
- *Perform diagnostics procedures for parasites:*
  - *Antigen kit*, direct*, filter, Knotts* [GROUP]*
  - *flotation solution preparation*
  - *fecal flotations**
  - *fecal sedimentation**
  - *direct smears**

- *centrifugation with flotation**
- *adhesive tape retrieval of pinworm ova*
- *perform fecal egg count using McMaster method*

- Identify common parasitic forms:
  - nematodes*
  - trematodes*
  - cestodes*
  - protozoa*
- Perform coprologic tests
- *Perform microbiologic procedures/evaluations:*
  - *collect representative samples**
  - *culture bacteria and perform sensitivity tests**
  - *identify common animal pathogens using commercially available media and reagents**[GROUP]
  - *collect milk samples and conduct mastitis testing (e.g., CMT, bacterial culture)**[GROUP]
  - *perform common biochemical tests**[GROUP]
  - *perform staining procedures**
  - *culture and identify common dermatophytes**
- *Perform cytologic evaluation*
  - *assist in collecting, preparing and evaluating transudate, exudate and cytologic specimens (joint, cerebrospinal, airway, body cavity)*
  - *perform fine needle tissue aspirates and impression smear preparation (differentiate benign vs. malignant)*
  - *prepare and stain bone marrow specimens*
  - *collect, prepare, and evaluate ear cytology**
  - *collect, prepare, and evaluate canine vaginal smears**[GROUP]
  - *evaluate semen*
  - *understand timing and types of pregnancy testing*
  - *assist with artificial insemination*
- Perform necropsy procedures:
  - *perform a postmortem examination or dissection on non-preserved animal**[GROUP]
  - *collect samples, store and ship according to laboratory protocols**[GROUP]
  - explain how to handle rabies suspects and samples safely*
  - *handle disposal of dead animals*
  - *perform humane euthanasia procedures*

Decision-making abilities:

1. Given the characteristics of the patient, the specimen submitted and the results of the analysis, the veterinary technician will be able to recognize accurate vs. erroneous results in order to provide maximum diagnostic benefit.

2. Given the laboratory specimen collected and characteristics of the patient, the veterinary technician will determine appropriate methodology and carry out analytical procedures necessary to provide accurate and precise diagnostic information.

3. Having determined the accuracy of analytical results, the veterinary technician will work with the veterinarian to determine if a need exists for additional laboratory tests that will provide useful diagnostic information.

2.PHARMACY and PHARMACOLOGY

Administration

Skill: Safely and effectively administer prescribed drugs to patients.

Tasks:

- Read and follow veterinarian's pharmacy orders*

- Recognize groups of drugs, their mechanisms, and clinically relevant side effects*
- Recognize the safe and effective manner in which vaccines must be administered; recognize and explain common side effects*
- Accurately perform appropriate calculations; use weights and measures correctly*
- Safely and effectively administer drugs by common parenteral and enteral routes; explain appropriate routes and methods and when used*
- Monitor therapeutic responses*
- Demonstrate the ability to accurately record medical information*
- Demonstrate understanding of controlled substance regulations*
- Demonstrate compliance with all federal regulatory guidelines for drug purchase, storage, administration, withdrawal, dispensing, disposal, and inventory control (e.g., biologics and therapeutic agents, pesticides, and hazardous wastes)*

Decision-making abilities: Given the characteristics of the patient, the instructions of the veterinarian and the medication to be used, the veterinary technician will calculate the correct amount of medication in the prescribed form and administer it by the prescribed route to maximize therapeutic benefits and minimize the potential for adverse effects. The veterinary technician shall also be able to differentiate between abnormal and normal responses to medication.

Dispensing

Skill: Accurately dispense and explain prescribed drugs to clients.

Tasks:

- Given a drug order, properly prepare medications for dispensing, including performing accurate calculations*
- Demonstrate compliance with regulations governing prescription drugs versus over-the-counter drugs*
- Demonstrate understanding of regulations governing maintenance of controlled substances log book*
- Demonstrate compliance with all federal regulatory guidelines for drug purchase, storage, administration, withdrawal, dispensing, disposal, and inventory control (e.g., biologics and therapeutic agents, pesticides, and hazardous wastes)*
- Relay drug information to clients (e.g., handling, storage, administration, side-effects, drug interactions, safety, reasons for use of drug)*

Decision-making abilities: Given the characteristics of the patient, the instructions of the veterinarian and the medication to be used, the veterinary technician will (1) accurately calculate and dispense the correct form and dose of medication and (2) communicate necessary client information in order to maximize safety, compliance with prescribed therapy and successful treatment of the patient. The veterinary technician should also be proficient at performing inventory control procedures.

Course Number and Name: VAT 1443 Vet Lab II

Description: The course includes the practical application of restraining animals, utilizing both chemical and physical mean. Included in the course are medical terminology and the administration and general knowledge of common drugs and vaccines. It also includes the practical application of sterile techniques, preparation of the surgical site, operating room conduct, assisting the surgeon, pre-anesthetic, anesthesiology, and anesthetic emergencies. In this clinical course, other topics include the practical application of large animal, exotic, and laboratory animals.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	1	4	75

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Demonstrate proper techniques in restraining domestic animals
    a. Demonstrate proper restraining techniques for horses
    b. Demonstrate proper restraining techniques for cows
    c. Demonstrate proper restraining techniques for dogs
    d. Demonstrate proper restraining techniques for cats
    e. Demonstrate proper restraining techniques for other domestic and exotic animals
2. Demonstrate techniques of collecting medical history data, performing a physical examination, and completing a medical record
    a. Take a medical history
    b. Perform a physical examination
    c. Record normal body temperature, pulse, and respiration
    d. Perform auscultation of lungs and heart
    e. Palpate normal body structures
    f. Maintain a correct medical record
3. Use a microscope to perform a fecal examination and identify common parasite ova
    a. Explain the parts of a microscope and its proper use
    b. Perform a direct smear and flotation microscopic fecal examination
    c. Perform a flotation fecal examination
    d. Perform a gross fecal examination
    e. Identify small animal and large animal common intestinal parasites and ova such as roundworms, hookworms, coccidia, tapeworms, HONs, and strongles
4. Administer medication to both small animals and large animals
    a. Perform oral administration of liquid and solid medication
    b. Differentiate between various syringe and needle types and sizes
    c. Demonstrate parenteral administration of medication, which includes intravenous,intramuscular, subcutaneous, intradermal, and intraperitoneal
    d. Demonstrate passage of a stomach tube
    e. Demonstrate other methods of administration of medication such as topical and ophthalmologic
5. Demonstrate special clinical procedures and bandaging techniques
    a. Demonstrate ophthalmic procedures
    b. Demonstrate ear care

c. Demonstrate a pedicure
d. Demonstrate anal sac expression
e. Demonstrate an enema
f. Demonstrate intravenous catheters
g. Demonstrate gastric lavage
h. Demonstrate dental prophylaxis
i. Demonstrate centesis
j. Demonstrate semen collection and artificial insemination
k. Demonstrate wound management
l. Demonstrate bandaging and splint care

6. Apply surgical procedures, aseptic techniques, and use of surgical instruments
   a. Demonstrate surgical procedures
   b. Demonstrate aseptic techniques
   c. Demonstrate use and handling of surgical instruments
7. Demonstrate surgical preparation procedures for surgical rooms, equipment, patients, and personnel.
   a. Apply aseptic techniques in the following areas:
      (1) Surgical area
      (2) Surgical equipment and instruments
      (3) Patient preparation
      (4) Personnel
8. Demonstrate anesthesia administration techniques used for induction and monitoring, endotracheal intubation, vital signs, and reflexes
   a. Demonstrate the use of preanesthetics
   b. Demonstrate the classical stages of anesthesia administration
   c. Demonstrate induction techniques
   d. Demonstrate monitoring techniques
   e. Demonstrate endotracheal intubation
   f. Demonstrate maintenance of anesthesia
   g. Demonstrate anesthesia administration techniques used for vital signs
   h. Demonstrate anesthesia administration techniques used for reflexes
   i. Demonstrate surgical positioning
   j. Demonstrate techniques used during recovery period
   k. Demonstrate anesthesia administration techniques used for aspiration emergencies

9. Discuss surgical procedures, aseptic techniques, infectious organisms and their control, and surgical instruments
   a. Discuss surgical procedures and their history
   b. Describe the principles of asepsis including the following:
      i. Microbial world
      ii. Diseases and immunity
      iii. Control of microbes
      iv. Aseptic techniques
   c. Identify common surgical instruments and their use
10. Apply surgical procedures, aseptic techniques, and use of surgical instruments
   a. Demonstrate surgical procedures
   b. Demonstrate aseptic techniques
   c. Demonstrate use and handling of surgical instruments
11. Demonstrate surgical preparation procedures for surgical rooms, equipment, patients,

and personnel.

a. Apply aseptic techniques in the following areas:
    i. Surgical area
    ii. Surgical equipment and instruments
    iii. Patient preparation
    iv. Personnel

12. Identify types of sutures and needles used in surgical procedures and the introduction into the preanesthetic period

a. Identify nonabsorbable and absorbable suture types
b. Identify suture size
c. Identify needle types by size, shape, and use
d. Identify suture patterns
e. Explain the use of preanesthetics
f. Demonstrate the use of preanesthetics
g. Explain surgical positioning
h. Explain recovery period
i. Explain aspiration emergencies

CVTEA Requirements

Veterinary Technology Student Essential and Recommended Skills List

3. Nursing

Tasks- NURSING

Patient assessment

Skill: Demonstrate and perform patient assessment techniques in a variety of animal species.

Tasks:

- Recognize common domestic animal species and breeds*
- Describe and use common animal identification methods*
- Demonstrate effective and appropriate humane restraint techniques for various animal species:

- *properly restrain dogs and cats for procedures**
- *encage and remove small animals from cages**
- *apply dog muzzle safely**
- *apply Elizabethan collar**
- *use restraint pole and other restraint aids**[GROUP]
- *halter, tie, and lead horses**
- *restrain pocket pets and exotics*
- *restrain cattle and horses**
- *apply twitch (horses)**[GROUP]
- *apply bovine tail restraint**
- *apply bovine halter**
- *restrain sheep and pigs*
- *load large animals*
- *safely operate cattle chute**[GROUP]

- Obtain a thorough patient history*
- *Demonstrate the ability to obtain objective patient data:*
  - *temperature (dog, cat, horse, cow)**
    dog, cat, horse, cow
  - *pulse (dog, cat, horse, cow)**
    dog, cat, horse, cow
  - *respiration (dog, cat, horse, cow)**
    dog, cat, horse, cow
  - *auscultate heart/lungs* (dog, cat, horse, cow)*
    dog, cat, horse, cow
  - *assess hydration status*
- *Properly collect diagnostic specimens for analysis (ex: urine, blood, feces, specimens for cytology)**
  urine, blood, feces, cytology
- *Perform venipuncture:*
  - *cephalic (dog, cat)**
    dog, cat
  - *jugular (dog, cat, horse, ruminant)**
    dog, cat, ruminant
  - *saphenous (dog, cat)**
    dog, cat
  - *sublingual (dog)*
    dog
  - *ear (pig)*
    pig
  - *coccygeal (cow)*
    cow
  - *anterior vena cava (pig)*
    pig
- *Collect urine sample:*
  - *catheterize male dog** [GROUP]
  - *catheterize female dog*
  - *catheterize female cat*
  - *catheterize male cat*
  - *collect voided urine sample (small animal)**
  - *perform cystocentesis (small animal)**[GROUP]
  - *catheterize large animal*
  - Prepare diagnostic specimens for shipment*

Decision-making abilities: Given the characteristics of the patient, the veterinary technician will safely and efficiently obtain subjective and objective patient data that will allow accurate evaluation of the patient's physical status with minimum stress and maximum safety.

Patient care
Skill: Understand and demonstrate husbandry, nutrition, therapeutic and dentistry techniques appropriate to various animal species.
Tasks: Husbandry

- Grooming:
  - Demonstrate understanding of therapeutic bathing, basic grooming, and dipping of small animals*
  - *trim nails (dog, cat)**
    dog, cat
  - trim hooves (ruminant, horse)
  - *apply equine tail and leg wraps**
  - *express canine anal sacs**
  - *clean and medicate ears (dog, cat)**
    dog, cat
  - *clean sheath (horse)*
- *Perform microchip scanning and implantation*
- *Environmental conditions: implement sanitation procedures for animal holding and housing areas**
- Demonstrate understanding of permanent identification*
- Demonstrate understanding of breeding/reproduction techniques*
- Demonstrate understanding of care of orphan animals
- Demonstrate understanding of nursing care of newborns*

Decision-making abilities: Given the characteristics of the patient, the veterinary technician will implement appropriate husbandry techniques to enhance wellness and reduce risk of disease, injury and stress.

Tasks: Therapeutics

- *Administer parenteral medications:*
  - *subcutaneous (dog, cat, ruminant)**
    dog, cat, horse, ruminant
  - *intramuscular (dog, cat, horse)**
    dog, cat, horse,
  - *intradermal (ruminant, dog)*
    dog, ruminant
  - *intramammary (mastitis therapy only) (ruminant)*
    ruminant
  - *intravenous (dog, cat, ruminant, equine)**
    dog, cat, horse, ruminant

- *Administer enteral medications:*
  - *balling gun (ruminant)**
    ruminant
  - *dose syringe (ruminant, horse)**
    horse, ruminant
  - *gastric intubation (small animal)**[GROUP]
  - *hand pilling (dog, cat) **
    dog, cat
  - *gastric lavage (dog)*
    dog
  - *dose syringe (pig)*
  - *oral speculum and stomach tube (ruminant)*

- *nasogastric intubation (small animal, horse)*
- *Administer topical medications (including ophthalmic)**
  dog, cat, horse
- *Perform ocular diagnostic tests (including tonometry, fluorescein staining and Schirmer tear test)**
- *Administer enemas**[GROUP]
- *Collect/evaluate skin scrapings**
- Fluid therapy:
  - *administer subcutaneous fluids**
  - *place intravenous catheters*
    cephalic, saphenous*, jugular*
  - *maintain and care for catheters**
  - determine/maintain fluid infusion rate*
  - monitor patient hydration status*
  - develop familiarity with fluid delivery systems*
- *Apply and remove bandages and splints**
- *Remove casts*
- Develop understanding of wound management and abscess care*
- Perform physical therapy:
  - hydrotherapy
  - post-operative
  - orthopedic
  - neurological
  - explain care of recumbent patient*
- Perform critical care:
  - maintain chest, tracheostomy, esophagostomy tubes
  - *collect and crossmatch blood for transfusion**[GROUP]
  - *blood typing*
  - *perform blood transfusions (autotransfusions may be considered)*
- Apply established emergency protocols (simulation acceptable):
  - maintain emergency medical supplies/crash cart*
  - *perform first aid and cardiopulmonary resuscitation**
  - *use resuscitation bag**
  - *apply emergency splints and bandages**

Decision-making abilities: Given the directions of the veterinarian and the characteristics of the patient, the veterinary technician will carry out appropriate therapeutic techniques in order to achieve maximum health benefits for the patient.

Tasks: Dentistry

- *Perform routine dental prophylaxis (manual and machine)**
- Understand client education regarding home care*
- Float teeth
- Clip teeth

Decision-making abilities: Given the characteristics of the patient, the veterinary technician will recognize a patient's dental health status and perform techniques, as prescribed by a veterinarian, appropriate to the species and its condition in order to promote and maintain dental health.

ANESTHESIA

Patient management
Skill: Safely and effectively manage and maintain patients in all phases of anesthesia.
Tasks:
Calculate dosages of appropriate anesthetic-related drugs*
*Administer anesthetic-related drugs (injection, endotracheal tube, mask)**

*Place endotracheal tubes in patients**

Utilize clinical signs and appropriate equipment to monitor patient status during anesthetic procedures (e.g., esophageal stethoscope, blood pressure monitor, capnometer, electrocardiogram, pulse oximeter)**

Evaluate patient and implement pain management protocols as directed*

Recognize and respond appropriately to patients in compromised states*

Perform appropriate resuscitation procedures as needed (e.g., calculate and administer appropriate anesthetic antagonists and emergency drugs as directed)*

*Complete controlled substance log** (does not need to be official controlled substance log; mock logs may be utilized)

Decision-making abilities: Given the characteristics of the anesthetized patient and the procedure being performed, the veterinary technician will work with the veterinarian to:

Assess the patient's risk status and determine appropriate anesthetic and perianesthetic protocols to provide effective pain management and maximum anesthetic safety and effectiveness.

Choose and utilize appropriate techniques and equipment to accurately and effectively monitor the patient's ongoing status before, during and after anesthesia to provide for adequate anesthesia, analgesia and a safe recovery.

Equipment/facility management

Skill: Safely and effectively select, utilize and maintain anesthetic delivery and monitoring instruments and equipment.

Tasks:

Maintain and operate anesthetic delivery and monitoring equipment:

*pulse oximeter**

*capnometer**

*esophageal stethoscope**

*electrocardiograph (e.g., recognize abnormal rhythms/audible sounds, properly apply leads)**

*anesthetic machines, including rebreathing systems, non-rebreathing systems and masks**

*endotracheal tubes**

*resuscitation bag**

*scavenging systems**

*oxygen sources**

*blood pressure monitoring devices**

*laryngoscopes**

ventilator

defibrillator

temperature monitoring device (e.g. thermometer, etc.)*

Decision-making abilities:

Given the characteristics of the anesthetic instruments and equipment being used, the veterinary technician will recognize and respond appropriately to equipment malfunctions or inappropriate equipment setup to ensure proper function and provide maximum benefit to ensure safety of the patient and staff.

Given the requirements of the anesthetic protocol, the veterinary technician will select, evaluate and adjust equipment to ensure proper function and provide maximum benefit to ensure safety of the patient and staff.

SURGICAL NURSING

It is essential that technicians have knowledge of routine surgical procedures and related equipment, including surgeries in these categories:

ovariohysterectomy* dog, cat

cesarean section* all species
orthopedic procedures*
orchiectomy - all common species*
tail docking*
onychectomy* dog, cat
laparotomies - all common species*
dystocias in common species*
dehorning* cow, goat
prolapsed organs - common types, species, and incidence* Students must have participated in surgeries in these categories:
*ovariohysterectomy**
dog, cat
*orchiectomy**
dog, cat

Patient management
Skill: Understand and integrate all aspects of patient management for common surgical procedures in a variety of animal species.
Task:
Properly identify patients and surgical procedures*
Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will use medical records and patient identification methods to assure that the patient and scheduled procedures are correct.
Task:
Patient assessment
organize medical records/consent forms*
review pre-operative evaluation*
evaluate current patient status*
organize and implement anesthesia*
Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will obtain the patient's vital signs, note any specific physical abnormalities, ensure pre-surgical tests have been completed and report the patient assessment to the veterinarian.
Task:
*Palpate the urinary bladder and express it if needed**
*Prepare surgical site using appropriate aseptic techniques**
Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will identify the appropriate area of hair to be removed and select appropriate methods to reduce microbial flora on the skin in the area of surgical site in order to decrease the chance of surgical wound contamination.
Task:
*Position patient for common procedures**
Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will position the patient appropriately to provide maximum convenience for the surgeon and maximum safety and benefit for the patient.
Task:
Provide surgical assistance:
*demonstrate proper operating room conduct and asepsis**

*assist with care of exposed tissues and organs**
*properly handle and pass instruments and supplies**
operate and maintain suction and cautery machines*
understand the principles of operation and maintenance of fiber optic equipment*
*record and maintain operative/surgical records**
perform basic suturing techniques
Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will understand and utilize appropriate aseptic techniques to assist operative personnel in order to provide maximum safety and benefit to the patient.
Task:
Coordinate pain management with the anesthesia/surgical team*
Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will assure that anesthetic and post-operative pain management protocols are appropriate to provide maximum safety and benefit to the patient.
Task:
Provide post-operative care:
pain management*
fluid therapy*
adequate nutrition*
wound management*
bandaging*
discharge instructions*
*suture removal**
Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will understand and administer the appropriate methods of post-operative care to assure maximum safety and benefit to the patient.
Procedural management
Skill: Understand and provide the appropriate instruments, supplies and environment to maintain asepsis during surgical procedures.
Tasks:
*Prepare surgical instruments and supplies**
*Prepare gowns, masks, gloves, and drapes**
*Operate and maintain autoclaves**
*Sterilize instruments and supplies using appropriate methods**
*Perform pre-surgical set-up**
Identify and know proper use for instruments*
Identify common suture materials, types, and sizes*
*Provide operating room sanitation and care**
Maintain proper operating room conduct and asepsis*
*Perform post-surgical clean-up (e.g., equipment, instruments, room, proper disposal of hazardous medical waste)**
Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will properly select, wrap and sterilize appropriate instruments and supplies and prepare and maintain the surgical environment to ensure maximum safety and benefit to the patient.

LABORATORY PROCEDURES

Specimen management
Skill: Demonstrate knowledge of proper handling, packaging and storage of specimens for laboratory analysis to ensure safety of patients, clients, and staff.
Tasks:
*Select and maintain laboratory equipment**

*Implement quality control measures**[GROUP]
Understand how to ensure safety of patients, clients, and staff in the collection and handling of samples*
*Prepare, label, package, and store specimens for laboratory analysis**
Decision-making abilities:
Given the characteristics of the patient and the requested analysis, the veterinary technician will properly prepare, handle and submit appropriate samples for diagnostic analysis in order to ensure maximum accuracy of results.
Given the characteristics of laboratory instruments and equipment, the veterinary technician will determine proper maintenance and quality control procedures necessary to ensure accurate results.
Specimen analysis
Skill: Properly perform analysis of laboratory specimens.
Tasks:
Perform urinalysis:
*determine physical properties (e.g., color, clarity, specific gravity)**
*test chemical properties**
*examine and identify sediment**
Perform CBC to include:
hemoglobin*
*packed cell volume**
*total protein**
*white cell count**
*red cell count**
Perform microscopic exam of blood film:
*prepare film and stain using a variety of techniques**
*perform leukocyte differential – normal vs abnormal**
*evaluate erythrocyte morphology – normal vs abnormal**
*estimate platelet numbers**
*calculate absolute values**
*correct white blood cell counts for nucleated cells**
Calculate hematolgic indices*
Coagulation tests – perform one of the following:*[GROUP]
buccal mucosal bleeding time
activated clotting time (ACT)
prothrombin time (PT)
partial thromboplastin time (PTT)
fibrinogen assay
*Perform blood chemistry tests (BUN, glucose, common enzymes)**
*Perform serologic test (ELISA, slide/card agglutinations)**
Identify blood parasites:
Dirofilaria sp/Acanthocheilonema sp (formerly Dipetalonema sp)*
Hemotropic Mycoplasma sp (Hemoplasmas)* (formerly Haemobartonella sp and Eperythrozoon sp)
Anaplasma sp
Babesia sp
Trypanosoma sp
Eperythrozoan sp
Ehrlichia sp
Perform parasitologic procedures for external parasites and identify:
mites*
lice*
ticks*

fleas*
flies*
Perform diagnostics procedures for parasites:
Antigen kit, direct*, filter, Knotts* [GROUP]*
flotation solution preparation
*fecal flotations**
*fecal sedimentation**
*direct smears**
*centrifugation with flotation**
adhesive tape retrieval of pinworm ova
perform fecal egg count using McMaster method
Identify common parasitic forms:
nematodes*
trematodes*
cestodes*
protozoa*
Perform coprologic tests
Perform microbiologic procedures/evaluations:
*collect representative samples**
*culture bacteria and perform sensitivity tests**
*identify common animal pathogens using commercially available media and reagents**[GROUP]
*collect milk samples and conduct mastitis testing (e.g., CMT, bacterial culture)**[GROUP]
*perform common biochemical tests**[GROUP]
*perform staining procedures**
*culture and identify common dermatophytes**
Perform cytologic evaluation
assist in collecting, preparing and evaluating transudate, exudate and cytologic specimens (joint, cerebrospinal, airway, body cavity)
perform fine needle tissue aspirates and impression smear preparation (differentiate benign vs. malignant)
prepare and stain bone marrow specimens
*collect, prepare, and evaluate ear cytology**
*collect, prepare, and evaluate canine vaginal smears**[GROUP]
evaluate semen
understand timing and types of pregnancy testing
assist with artificial insemination
Perform necropsy procedures:
*perform a postmortem examination or dissection on non-preserved animal**[GROUP]
*collect samples, store and ship according to laboratory protocols**[GROUP]
explain how to handle rabies suspects and samples safely*
handle disposal of dead animals
perform humane euthanasia procedures
Decision-making abilities:
Given the characteristics of the patient, the specimen submitted and the results of the analysis, the veterinary technician will be able to recognize accurate vs. erroneous results in order to provide maximum diagnostic benefit.
Given the laboratory specimen collected and characteristics of the patient, the veterinary technician will determine appropriate methodology and carry out analytical procedures necessary to provide accurate and precise diagnostic information.
Having determined the accuracy of analytical results, the veterinary technician will work with the veterinarian to determine if a need exists for additional laboratory tests that will provide useful diagnostic information.

PHARMACY and PHARMACOLOGY

Administration

Skill: Safely and effectively administer prescribed drugs to patients.

Tasks:

Read and follow veterinarian's pharmacy orders*

Recognize groups of drugs, their mechanisms, and clinically relevant side effects*

Recognize the safe and effective manner in which vaccines must be administered; recognize and explain common side effects*

Accurately perform appropriate calculations; use weights and measures correctly*

Safely and effectively administer drugs by common parenteral and enteral routes; explain appropriate routes and methods and when used*

Monitor therapeutic responses*

Demonstrate the ability to accurately record medical information*

Demonstrate understanding of controlled substance regulations*

Demonstrate compliance with all federal regulatory guidelines for drug purchase, storage, administration, withdrawal, dispensing, disposal, and inventory control (e.g., biologics and therapeutic agents, pesticides, and hazardous wastes)*

Decision-making abilities: Given the characteristics of the patient, the instructions of the veterinarian and the medication to be used, the veterinary technician will calculate the correct amount of medication in the prescribed form and administer it by the prescribed route to maximize therapeutic benefits and minimize the potential for adverse effects. The veterinary technician shall also be able to differentiate between abnormal and normal responses to medication.

Dispensing

Skill: Accurately dispense and explain prescribed drugs to clients.

Tasks:

Given a drug order, properly prepare medications for dispensing, including performing accurate calculations*

Demonstrate compliance with regulations governing prescription drugs versus over-the-counter drugs*

Demonstrate understanding of regulations governing maintenance of controlled substances log book*

Demonstrate compliance with all federal regulatory guidelines for drug purchase, storage, administration, withdrawal, dispensing, disposal, and inventory control (e.g., biologics and therapeutic agents, pesticides, and hazardous wastes)*

Relay drug information to clients (e.g., handling, storage, administration, side-effects, drug interactions, safety, reasons for use of drug)*

Decision-making abilities: Given the characteristics of the patient, the instructions of the veterinarian and the medication to be used, the veterinary technician will (1) accurately calculate and dispense the correct form and dose of medication and (2) communicate necessary client information in order to maximize safety, compliance with prescribed therapy and successful treatment of the patient. The veterinary technician should also be proficient at performing inventory control procedures.

Course Number and Name: VAT 2113 Animal Health Care

Description: General health care of small animals including nutrition, emergency care, first aid, animal hygiene, disease detection, and small animal sanitation

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	3	0	45

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Explain procedures, anatomy, physiology, and concepts of small animal procedures.
    a. Explain knowledge of procedures, anatomy, physiology, and concepts of small animal procedures in dentistry including the following:
        (1) Embryology and formation of teeth
        (2) Clinical situations and disease of gums, oral cavity, and teeth
        (3) Performing dental prophy
        (4) Dental charting
        (5) Anesthesia, analgesia, and postsurgical support
    b. Explain knowledge of procedures, anatomy, physiology, and concepts of small animal procedures in small animal nutrition including the following:
        (1) Basic nutrition
        (2) Energy producing nutrients
        (3) Non-energy producing nutrients
        (4) Daily energy requirements
        (5) Feline urinary tract disease
        (6) Nutrition requirements for each age, species, and exercise need
        (7) Obesity and critical care nutrition
    c. Explain procedures, anatomy, physiology, and concepts of small animal procedures in emergency and first aid situations including the following:
        (1) Systemic approach to triage
        (2) Monitoring status of emergency patients
        (3) Respiratory emergencies
        (4) Cardiovascular emergencies
        (5) Endocrine emergencies
        (6) Gastrointestinal emergencies
        (7) Central nervous system emergencies
        (8) Renal system emergencies
        (9) Toxic substance emergencies
        (10) Cardiopulmonary resuscitation
        (11) Fluid therapy and emergency drugs
    d. Explain the concepts of wound healing and treatment.
    e. Explain and demonstrate the different types of bandages.

CVTEA Requirements

Veterinary Technology Student Essential and Recommended Skills List

Tasks: Nutrition

- Understand life stage energy and nutrient requirements of well animals (dog, cat, horse, cow)* dog, cat, horse, cow
- Identify common grains and forages
    - Understand key nutritional factors in disease conditions*
    - be familiar with therapeutic foods*
    - Understand current developments in nutritional supplements and additives including benefits and potential toxicities*
- Understand and identify substances that when ingested result in toxicity:
    - identify common poisonous plants*
    - be familiar with substances (organic and inorganic) that cause toxicity*
    - Develop and communicate hospital nutrition protocols*

Decision-making abilities:

3. Given the characteristics of the anesthetic instruments and equipment being used, the veterinary technician will recognize and respond appropriately to equipment malfunctions or inappropriate equipment setup to ensure proper function and provide maximum benefit to ensure safety of the patient and staff.

4. Given the requirements of the anesthetic protocol, the veterinary technician will select, evaluate and adjust equipment to ensure proper function and provide maximum benefit to ensure safety of the patient and staff.

Course Number and Name: VAT 2122 Board Examination Review

Description: Comprehensive review to assist the student in preparation for state and national certifying examinations for the veterinary technicians. The course will review basic science, clinical practices, diagnostics, and ethical concerns.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
2	2	0	30

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Complete sample board examinations.
2. Review the competencies and objectives from the following:
    a. Pharmacology
    b. Surgical Nursing
    c. Dentistry
    d. Laboratory Procedures
    e. Animal Nursing
    f. Diagnostic Imaging
    g. Anesthesia
    h. Emergency and Critical Care
    i. Pain Management and Analgesia
    j. Exotic Animals
3. Review effective techniques for taking objective type examinations.

Course Number and Name: VAT 2133 Vet Lab III

Description: The course includes the practical application of restraining animals, utilizing both chemical and physical mean. Included in the course are medical terminology and the administration and general knowledge of common drugs and vaccines. It also includes the practical application of sterile techniques, preparation of the surgical site, operating room conduct, assisting the surgeon, pre-anesthetic, anesthesiology, and anesthetic emergencies. In this clinical course, other topics include the practical application of large animal, exotic, and laboratory animals.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	1	4	75

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Demonstrate proper techniques in restraining domestic animals
   a. Demonstrate proper restraining techniques for horses
   b. Demonstrate proper restraining techniques for cows
   c. Demonstrate proper restraining techniques for dogs
   d. Demonstrate proper restraining techniques for cats
   e. Demonstrate proper restraining techniques for other domestic and exotic animals
2. Demonstrate techniques of collecting medical history data, performing a physical examination, and completing a medical record
   a. Take a medical history
   b. Perform a physical examination
   c. Record normal body temperature, pulse, and respiration
   d. Perform auscultation of lungs and heart
   e. Palpate normal body structures
   f. Maintain a correct medical record
3. Use a microscope to perform a fecal examination and identify common parasite ova
   a. Explain the parts of a microscope and its proper use
   b. Perform a direct smear and flotation microscopic fecal examination
   c. Perform a flotation fecal examination
   d. Perform a gross fecal examination
   e. Identify small animal and large animal common intestinal parasites and ova such as roundworms, hookworms, coccidia, tapeworms, HONs, and strongles
4. Administer medication to both small animals and large animals
   a. Perform oral administration of liquid and solid medication
   b. Differentiate between various syringe and needle types and sizes
   c. Demonstrate parenteral administration of medication, which includes intravenous, intramuscular, subcutaneous, intradermal, and intraperitoneal

d. Demonstrate passage of a stomach tube

e. Demonstrate other methods of administration of medication such as topical and ophthalmologic

5. Demonstrate special clinical procedures and bandaging techniques

a. Demonstrate ophthalmic procedures

b. Demonstrate ear care

c. Demonstrate a pedicure

d. Demonstrate anal sac expression

e. Demonstrate an enema

f. Demonstrate intravenous catheters

g. Demonstrate gastric lavage

h. Demonstrate dental prophylaxis

i. Demonstrate centesis

j. Demonstrate semen collection and artificial insemination

k. Demonstrate wound management

l. Demonstrate bandaging and splint care

6. Apply surgical procedures, aseptic techniques, and use of surgical instruments

a. Demonstrate surgical procedures

b. Demonstrate aseptic techniques

c. Demonstrate use and handling of surgical instruments

7. Demonstrate surgical preparation procedures for surgical rooms, equipment, patients, and personnel

a. Apply aseptic techniques in the following areas:

(1) Surgical area

(2) Surgical equipment and instruments

(3) Patient preparation

(4) Personnel

8. Demonstrate anesthesia administration techniques used for induction and monitoring, endotracheal intubation, vital signs, and reflexes.

a. Demonstrate the use of preanesthetics

b. Demonstrate the classical stages of anesthesia administration

c. Demonstrate induction techniques

d. Demonstrate monitoring techniques

e. Demonstrate endotracheal intubation

f. Demonstrate maintenance of anesthesia

g. Demonstrate anesthesia administration techniques used for vital signs

h. Demonstrate anesthesia administration techniques used for reflexes

i. Demonstrate surgical positioning

j. Demonstrate techniques used during recovery period

k. Demonstrate anesthesia administration techniques used for aspiration emergencies

CVTEA Requirements
Veterinary Technology Student Essential and Recommended Skills List

TASK- NURSING
Patient assessment
Skill: Demonstrate and perform patient assessment techniques in a variety of animal species.
Tasks:

- Recognize common domestic animal species and breeds*
- Describe and use common animal identification methods*
- Demonstrate effective and appropriate humane restraint techniques for various animal species:
    - *properly restrain dogs and cats for procedures**
    - *encage and remove small animals from cages**
    - *apply dog muzzle safely**
    - *apply Elizabethan collar**
    - *use restraint pole and other restraint aids**[GROUP]
    - *halter, tie, and lead horses**
    - *restrain pocket pets and exotics*
    - *restrain cattle and horses**
    - *apply twitch (horses)**[GROUP]
    - *apply bovine tail restraint**
    - *apply bovine halter**
    - *restrain sheep and pigs*
    - *load large animals*
    - *safely operate cattle chute**[GROUP]
- Obtain a thorough patient history*
- *Demonstrate the ability to obtain objective patient data:*
    - *temperature (dog, cat, horse, cow)**
      dog, cat, horse, cow
    - *pulse (dog, cat, horse, cow)**
      dog, cat, horse, cow
    - *respiration (dog, cat, horse, cow)**
      dog, cat, horse, cow
    - *auscultate heart/lungs* (dog, cat, horse, cow)*
      dog, cat, horse, cow
    - *assess hydration status*
- *Properly collect diagnostic specimens for analysis (ex: urine, blood, feces, specimens for cytology)**
  urine, blood, feces, cytology
- *Perform venipuncture:*
    - *cephalic (dog, cat)**
      dog, cat
    - *jugular (dog, cat, horse, ruminant)**
      dog, cat, ruminant
    - *saphenous (dog, cat)**
      dog, cat
    - *sublingual (dog)*
      dog
    - *ear (pig)*
      pig
    - *coccygeal (cow)*
      cow
    - *anterior vena cava (pig)*

pig

- *Collect urine sample:*
  - *catheterize male dog** [GROUP]
  - *catheterize female dog*
  - *catheterize female cat*
  - *catheterize male cat*
  - *collect voided urine sample (small animal)**
  - *perform cystocentesis (small animal)**[GROUP]
  - *catheterize large animal*
  - Prepare diagnostic specimens for shipment*

Decision-making abilities: Given the characteristics of the patient, the veterinary technician will safely and efficiently obtain subjective and objective patient data that will allow accurate evaluation of the patient's physical status with minimum stress and maximum safety.

Patient care

Skill: Understand and demonstrate husbandry, nutrition, therapeutic and dentistry techniques appropriate to various animal species.

Tasks: Husbandry

- Grooming:
  - Demonstrate understanding of therapeutic bathing, basic grooming, and dipping of small animals*
  - *trim nails (dog, cat)**
    dog, cat
  - trim hooves (ruminant, horse)
  - *apply equine tail and leg wraps**
  - *express canine anal sacs**
  - *clean and medicate ears (dog, cat)**
    dog, cat
  - *clean sheath (horse)*
- *Perform microchip scanning and implantation*
- *Environmental conditions: implement sanitation procedures for animal holding and housing areas**
- Demonstrate understanding of permanent identification*
- Demonstrate understanding of breeding/reproduction techniques*
- Demonstrate understanding of care of orphan animals
- Demonstrate understanding of nursing care of newborns*

Decision-making abilities: Given the characteristics of the patient, the veterinary technician will implement appropriate husbandry techniques to enhance wellness and reduce risk of disease, injury and stress.

Tasks: Therapeutics

- *Administer parenteral medications:*
  - *subcutaneous (dog, cat, ruminant)**
    dog, cat, horse, ruminant
  - *intramuscular (dog, cat, horse)**
    dog, cat, horse,
  - *intradermal (ruminant, dog)*
    dog, ruminant
  - *intramammary (mastitis therapy only) (ruminant)*
    ruminant
  - *intravenous (dog, cat, ruminant, equine)**
    dog, cat, horse, ruminant

- *Administer enteral medications:*
  - *balling gun (ruminant)**

ruminant
    - *dose syringe (ruminant, horse)**
      horse, ruminant
    - *gastric intubation (small animal)**[GROUP]
    - *hand pilling (dog, cat) **
      dog, cat
    - *gastric lavage (dog)*
      dog
    - *dose syringe (pig)*
    - *oral speculum and stomach tube (ruminant)*
    - *nasogastric intubation (small animal, horse)*
- *Administer topical medications (including ophthalmic)**
  dog, cat, horse
- *Perform ocular diagnostic tests (including tonometry, fluorescein staining and Schirmer tear test)**
- *Administer enemas**[GROUP]
- *Collect/evaluate skin scrapings**
- Fluid therapy:
    - *administer subcutaneous fluids**
    - *place intravenous catheters*
      cephalic, saphenous*, jugular*
    - *maintain and care for catheters**
    - determine/maintain fluid infusion rate*
    - monitor patient hydration status*
    - develop familiarity with fluid delivery systems*
- *Apply and remove bandages and splints**
- *Remove casts*
- Develop understanding of wound management and abscess care*
- Perform physical therapy:
    - hydrotherapy
    - post-operative
    - orthopedic
    - neurological
    - explain care of recumbent patient*
- Perform critical care:
    - maintain chest, tracheostomy, esophagostomy tubes
    - *collect and crossmatch blood for transfusion**[GROUP]
    - *blood typing*
    - *perform blood transfusions (autotransfusions may be considered)*
- Apply established emergency protocols (simulation acceptable):
    - maintain emergency medical supplies/crash cart*
    - *perform first aid and cardiopulmonary resuscitation**
    - *use resuscitation bag**
    - *apply emergency splints and bandages**

Decision-making abilities: Given the directions of the veterinarian and the characteristics of the patient, the veterinary technician will carry out appropriate therapeutic techniques in order to achieve maximum health benefits for the patient.

Tasks: Dentistry

- *Perform routine dental prophylaxis (manual and machine)**
- Understand client education regarding home care*
- Float teeth
- Clip teeth

Decision-making abilities: Given the characteristics of the patient, the veterinary technician will recognize a patient's dental health status and perform techniques, as prescribed by a veterinarian, appropriate to the species and its condition in order to promote and maintain dental health.

ANESTHESIA

Patient management

Skill: Safely and effectively manage and maintain patients in all phases of anesthesia.

Tasks:

- Calculate dosages of appropriate anesthetic-related drugs*
- *Administer anesthetic-related drugs (injection, endotracheal tube, mask)**
- *Place endotracheal tubes in patients**
- *Utilize clinical signs and appropriate equipment to monitor patient status during anesthetic procedures* (e.g., esophageal stethoscope, blood pressure monitor, capnometer, electrocardiogram, pulse oximeter)**
- Evaluate patient and implement pain management protocols as directed*
- Recognize and respond appropriately to patients in compromised states*
- Perform appropriate resuscitation procedures as needed (e.g., calculate and administer appropriate anesthetic antagonists and emergency drugs as directed)*
- *Complete controlled substance log** (does not need to be official controlled substance log; mock logs may be utilized)

Decision-making abilities: Given the characteristics of the anesthetized patient and the procedure being performed, the veterinary technician will work with the veterinarian to:

4. Assess the patient's risk status and determine appropriate anesthetic and perianesthetic protocols to provide effective pain management and maximum anesthetic safety and effectiveness.

5. Choose and utilize appropriate techniques and equipment to accurately and effectively monitor the patient's ongoing status before, during and after anesthesia to provide for adequate anesthesia, analgesia and a safe recovery.

Equipment/facility management

Skill: Safely and effectively select, utilize and maintain anesthetic delivery and monitoring instruments and equipment.

Tasks:

- *Maintain and operate anesthetic delivery and monitoring equipment:*
    - *pulse oximeter**
    - *capnometer**
    - *esophageal stethoscope**
    - *electrocardiograph (e.g., recognize abnormal rhythms/audible sounds, properly apply leads)**
    - *anesthetic machines, including rebreathing systems, non-rebreathing systems and masks**
    - *endotracheal tubes**
    - *resuscitation bag**
    - *scavenging systems**
    - *oxygen sources**
    - *blood pressure monitoring devices**
    - *laryngoscopes**
    - *ventilator*
    - *defibrillator*
    - *temperature monitoring device* (e.g. thermometer, etc.)*

Decision-making abilities:

6. Given the characteristics of the anesthetic instruments and equipment being used, the veterinary technician will recognize and respond appropriately to equipment malfunctions or inappropriate equipment setup to ensure proper function and provide maximum benefit to ensure safety of the patient and staff.

7. Given the requirements of the anesthetic protocol, the veterinary technician will select, evaluate and adjust equipment to ensure proper function and provide maximum benefit to ensure safety of the patient and staff.

SURGICAL NURSING

It is essential that technicians have knowledge of routine surgical procedures and related equipment, including surgeries in these categories:

- ovariohysterectomy*
  dog, cat
- cesarean section*
  all species
- orthopedic procedures*
- orchiectomy - all common species*
- tail docking*
- onychectomy*
  dog, cat
- laparotomies - all common species*
- dystocias in common species*
- dehorning*
  cow, goat
- prolapsed organs - common types, species, and incidence*

Students must have participated in surgeries in these categories:

- *ovariohysterectomy**
  dog, cat
- *orchiectomy**
  dog, cat

Patient management

Skill: Understand and integrate all aspects of patient management for common surgical procedures in a variety of animal species.

Task:

- Properly identify patients and surgical procedures*

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will use medical records and patient identification methods to assure that the patient and scheduled procedures are correct.

Task:

- Patient assessment
  - organize medical records/consent forms*
  - review pre-operative evaluation*
  - evaluate current patient status*
  - organize and implement anesthesia*

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will obtain the patient's vital signs, note any specific physical abnormalities, ensure pre-surgical tests have been completed and report the patient assessment to the veterinarian.

Task:

- *Palpate the urinary bladder and express it if needed**
- *Prepare surgical site using appropriate aseptic techniques**

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will identify the appropriate area of hair to be removed and select appropriate methods to reduce microbial flora on the skin in the area of surgical site in order to decrease the chance of surgical wound contamination.

Task:

- *Position patient for common procedures**

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will position the patient appropriately to provide maximum convenience for the surgeon and maximum safety and benefit for the patient.

Task:

- Provide surgical assistance:
    - *demonstrate proper operating room conduct and asepsis**
    - *assist with care of exposed tissues and organs**
    - *properly handle and pass instruments and supplies**
    - operate and maintain suction and cautery machines*
    - understand the principles of operation and maintenance of fiber optic equipment*
    - *record and maintain operative/surgical records**
    - *perform basic suturing techniques*

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will understand and utilize appropriate aseptic techniques to assist operative personnel in order to provide maximum safety and benefit to the patient.

Task:

- Coordinate pain management with the anesthesia/surgical team*

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will assure that anesthetic and post-operative pain management protocols are appropriate to provide maximum safety and benefit to the patient.

Task:

- Provide post-operative care:
    - pain management*
    - fluid therapy*
    - adequate nutrition*
    - wound management*
    - bandaging*
    - discharge instructions*
    - *suture removal**

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will understand and administer the appropriate methods of post-operative care to assure maximum safety and benefit to the patient.

Procedural management

Skill: Understand and provide the appropriate instruments, supplies and environment to maintain asepsis during surgical procedures.

Tasks:

- *Prepare surgical instruments and supplies**
- *Prepare gowns, masks, gloves, and drapes**
- *Operate and maintain autoclaves**
- *Sterilize instruments and supplies using appropriate methods**
- *Perform pre-surgical set-up**
- Identify and know proper use for instruments*
- Identify common suture materials, types, and sizes*
- *Provide operating room sanitation and care**
- Maintain proper operating room conduct and asepsis*
- *Perform post-surgical clean-up (e.g., equipment, instruments, room, proper disposal of hazardous medical waste)**

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will properly select, wrap and sterilize appropriate instruments and supplies and prepare and maintain the surgical environment to ensure maximum safety and benefit to the patient.

LABORATORY PROCEDURES

Specimen management

Skill: Demonstrate knowledge of proper handling, packaging and storage of specimens for laboratory analysis to ensure safety of patients, clients, and staff.

Tasks:

- *Select and maintain laboratory equipment**
- *Implement quality control measures**[GROUP]
- Understand how to ensure safety of patients, clients, and staff in the collection and handling of samples*
- *Prepare, label, package, and store specimens for laboratory analysis**

Decision-making abilities:

2. Given the characteristics of the patient and the requested analysis, the veterinary technician will properly prepare, handle and submit appropriate samples for diagnostic analysis in order to ensure maximum accuracy of results.

3. Given the characteristics of laboratory instruments and equipment, the veterinary technician will determine proper maintenance and quality control procedures necessary to ensure accurate results.

Specimen analysis

Skill: Properly perform analysis of laboratory specimens.

Tasks:

- *Perform urinalysis:*
  - *determine physical properties (e.g., color, clarity, specific gravity)**
  - *test chemical properties**
  - *examine and identify sediment**
- *Perform CBC to include:*
  - hemoglobin*
  - *packed cell volume**
  - *total protein**
  - *white cell count**
  - *red cell count**
- *Perform microscopic exam of blood film:*
  - *prepare film and stain using a variety of techniques**
  - *perform leukocyte differential – normal vs abnormal**
  - *evaluate erythrocyte morphology – normal vs abnormal**
  - *estimate platelet numbers**
  - *calculate absolute values**
  - *correct white blood cell counts for nucleated cells**
- Calculate hematolgic indices*
- *Coagulation tests – perform one of the following*:*[GROUP]
  - *buccal mucosal bleeding time*
  - *activated clotting time (ACT)*
  - *prothrombin time (PT)*
  - *partial thromboplastin time (PTT)*
  - *fibrinogen assay*
- *Perform blood chemistry tests (BUN, glucose, common enzymes)**
- *Perform serologic test (ELISA, slide/card agglutinations)**
- Identify blood parasites:
  - Dirofilaria sp/Acanthocheilonema sp (formerly Dipetalonema sp)*
  - Hemotropic Mycoplasma sp (Hemoplasmas)* (formerly Haemobartonella sp and Eperythrozoon sp)
  - Anaplasma sp
  - Babesia sp
  - Trypanosoma sp

- Eperythrozoan sp
- Ehrlichia sp

- Perform parasitologic procedures for external parasites and identify:
  - mites*
  - lice*
  - ticks*
  - fleas*
  - flies*
- *Perform diagnostics procedures for parasites:*
  - *Antigen kit*, direct*, filter, Knotts* [GROUP]*
  - *flotation solution preparation*
  - *fecal flotations**
  - *fecal sedimentation**
  - *direct smears**
  - *centrifugation with flotation**
  - *adhesive tape retrieval of pinworm ova*
  - *perform fecal egg count using McMaster method*
- Identify common parasitic forms:
  - nematodes*
  - trematodes*
  - cestodes*
  - protozoa*
- Perform coprologic tests
- *Perform microbiologic procedures/evaluations:*
  - *collect representative samples**
  - *culture bacteria and perform sensitivity tests**
  - *identify common animal pathogens using commercially available media and reagents**[GROUP]
  - *collect milk samples and conduct mastitis testing (e.g., CMT, bacterial culture)**[GROUP]
  - *perform common biochemical tests**[GROUP]
  - *perform staining procedures**
  - *culture and identify common dermatophytes**
- *Perform cytologic evaluation*
  - *assist in collecting, preparing and evaluating transudate, exudate and cytologic specimens (joint, cerebrospinal, airway, body cavity)*
  - *perform fine needle tissue aspirates and impression smear preparation (differentiate benign vs. malignant)*
  - *prepare and stain bone marrow specimens*
  - *collect, prepare, and evaluate ear cytology**
  - *collect, prepare, and evaluate canine vaginal smears**[GROUP]
  - *evaluate semen*
  - *understand timing and types of pregnancy testing*
  - *assist with artificial insemination*
- Perform necropsy procedures:
  - *perform a postmortem examination or dissection on non-preserved animal**[GROUP]
  - *collect samples, store and ship according to laboratory protocols**[GROUP]
  - explain how to handle rabies suspects and samples safely*
  - *handle disposal of dead animals*
  - *perform humane euthanasia procedures*

Decision-making abilities:

4. Given the characteristics of the patient, the specimen submitted and the results of the analysis, the veterinary technician will be able to recognize accurate vs. erroneous results in order to provide maximum diagnostic benefit.

5. Given the laboratory specimen collected and characteristics of the patient, the veterinary technician will determine appropriate methodology and carry out analytical procedures necessary to provide accurate and precise diagnostic information.
6. Having determined the accuracy of analytical results, the veterinary technician will work with the veterinarian to determine if a need exists for additional laboratory tests that will provide useful diagnostic information.

Course Number and Name: VAT 2143 Vet Lab IV

Description: The course includes the practical application of restraining animals, utilizing both chemical and physical mean. Included in the course are medical terminology and the administration and general knowledge of common drugs and vaccines. It also includes the practical application of sterile techniques, preparation of the surgical site, operating room conduct, assisting the surgeon, pre-anesthetic, anesthesiology, and anesthetic emergencies. In this clinical course, other topics include the practical application of large animal, exotic, and laboratory animals.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	1	4	75

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Demonstrate proper techniques in restraining domestic animals
   a. Demonstrate proper restraining techniques for horses
   b. Demonstrate proper restraining techniques for cows
   c. Demonstrate proper restraining techniques for dogs
   d. Demonstrate proper restraining techniques for cats
   e. Demonstrate proper restraining techniques for other domestic and exotic animals
2. Demonstrate techniques of collecting medical history data, performing a physical examination, and completing a medical record
   a. Take a medical history
   b. Perform a physical examination
   c. Record normal body temperature, pulse, and respiration
   d. Perform auscultation of lungs and heart
   e. Palpate normal body structures
   f. Maintain a correct medical record
3. Use a microscope to perform a fecal examination and identify common parasite ova
   a. Explain the parts of a microscope and its proper use
   b. Perform a direct smear and flotation microscopic fecal examination
   c. Perform a flotation fecal examination
   d. Perform a gross fecal examination
   e. Identify small animal and large animal common intestinal parasites and ova such as roundworms, hookworms, coccidia, tapeworms, HONs, and strongles
4. Administer medication to both small animals and large animals
   a. Perform oral administration of liquid and solid medication
   b. Differentiate between various syringe and needle types and sizes
   c. Demonstrate parenteral administration of medication, which includes intravenous, intramuscular, subcutaneous, intradermal, and intraperitoneal
   d. Demonstrate passage of a stomach tube ophthalmologic
5. Demonstrate special clinical procedures and bandaging techniques
   a. Demonstrate ophthalmic procedures
   b. Demonstrate ear care
   c. Demonstrate a pedicure

d. Demonstrate anal sac expression
e. Demonstrate an enema
f. Demonstrate intravenous catheters
g. Demonstrate gastric lavage
h. Demonstrate dental prophylaxis
i. Demonstrate centesis
j. Demonstrate semen collection and artificial insemination
k. Demonstrate wound management
l. Demonstrate bandaging and splint care

6. Apply surgical procedures, aseptic techniques, and use of surgical instruments
   a. Demonstrate surgical procedures
   b. Demonstrate aseptic techniques
   c. Demonstrate use and handling of surgical instruments
7. Demonstrate surgical preparation procedures for surgical rooms, equipment, patients, and personnel
   a. Apply aseptic techniques in the following areas:
      (1) Surgical area
      (2) Surgical equipment and instruments
      (3) Patient preparation
      (4) Personnel
8. Demonstrate anesthesia administration techniques used for induction and monitoring, endotracheal intubation, vital signs, and reflexes
   a. Demonstrate the use of preanesthetics
   b. Demonstrate the classical stages of anesthesia administration
   c. Demonstrate induction techniques
   d. Demonstrate monitoring techniques
   e. Demonstrate endotracheal intubation
   f. Demonstrate maintenance of anesthesia
   g. Demonstrate anesthesia administration techniques used for vital signs
   h. Demonstrate anesthesia administration techniques used for reflexes
   i. Demonstrate surgical positioning
   j. Demonstrate techniques used during recovery period
   k. Demonstrate anesthesia administration techniques used for aspiration emergencies

CVTEA Requirements

Veterinary Technology Student Essential and Recommended Skills List

Tasks- NURSING

Patient assessment

Skill: Demonstrate and perform patient assessment techniques in a variety of animal species.

Tasks:

- Recognize common domestic animal species and breeds*
- Describe and use common animal identification methods*
- Demonstrate effective and appropriate humane restraint techniques for various animal species:
  - *properly restrain dogs and cats for procedures**
  - *encage and remove small animals from cages**
  - *apply dog muzzle safely**
  - *apply Elizabethan collar**

- *use restraint pole and other restraint aids**[GROUP]
- *halter, tie, and lead horses**
- *restrain pocket pets and exotics*
- *restrain cattle and horses**
- *apply twitch (horses)**[GROUP]
- *apply bovine tail restraint**
- *apply bovine halter**
- *restrain sheep and pigs*
- *load large animals*
- *safely operate cattle chute**[GROUP]

- Obtain a thorough patient history*
- *Demonstrate the ability to obtain objective patient data:*
  - *temperature (dog, cat, horse, cow)**
    dog, cat, horse, cow
  - *pulse (dog, cat, horse, cow)**
    dog, cat, horse, cow
  - *respiration (dog, cat, horse, cow)**
    dog, cat, horse, cow
  - *auscultate heart/lungs* (dog, cat, horse, cow)*
    dog, cat, horse, cow
  - *assess hydration status*
- *Properly collect diagnostic specimens for analysis (ex: urine, blood, feces, specimens for cytology)**
  urine, blood, feces, cytology
- *Perform venipuncture:*
  - *cephalic (dog, cat)**
    dog, cat
  - *jugular (dog, cat, horse, ruminant)**
    dog, cat, ruminant
  - *saphenous (dog, cat)**
    dog, cat
  - *sublingual (dog)*
    dog
  - *ear (pig)*
    pig
  - *coccygeal (cow)*
    cow
  - *anterior vena cava (pig)*
    pig

- *Collect urine sample:*
  - *catheterize male dog** [GROUP]
  - *catheterize female dog*
  - *catheterize female cat*
  - *catheterize male cat*
  - *collect voided urine sample (small animal)**
  - *perform cystocentesis (small animal)**[GROUP]
  - *catheterize large animal*
  - Prepare diagnostic specimens for shipment*

Decision-making abilities: Given the characteristics of the patient, the veterinary technician will safely and efficiently obtain subjective and objective patient data that will allow accurate evaluation of the patient's physical status with minimum stress and maximum safety.

Patient care

Skill: Understand and demonstrate husbandry, nutrition, therapeutic and dentistry techniques appropriate to various animal species.

Tasks: Husbandry

- Grooming:
  - Demonstrate understanding of therapeutic bathing, basic grooming, and dipping of small animals*
  - *trim nails (dog, cat)**
    dog, cat
  - trim hooves (ruminant, horse)
  - *apply equine tail and leg wraps**
  - *express canine anal sacs**
  - *clean and medicate ears (dog, cat)**
    dog, cat
  - *clean sheath (horse)*
- *Perform microchip scanning and implantation*
- *Environmental conditions: implement sanitation procedures for animal holding and housing areas**
- Demonstrate understanding of permanent identification*
- Demonstrate understanding of breeding/reproduction techniques*
- Demonstrate understanding of care of orphan animals
- Demonstrate understanding of nursing care of newborns*

Decision-making abilities: Given the characteristics of the patient, the veterinary technician will implement appropriate husbandry techniques to enhance wellness and reduce risk of disease, injury and stress.

Tasks: Therapeutics

- *Administer parenteral medications:*
  - *subcutaneous (dog, cat, ruminant)**
    dog, cat, horse, ruminant
  - *intramuscular (dog, cat, horse)**
    dog, cat, horse,
  - *intradermal (ruminant, dog)*
    dog, ruminant
  - *intramammary (mastitis therapy only) (ruminant)*
    ruminant
  - *intravenous (dog, cat, ruminant, equine)**
    dog, cat, horse, ruminant

- *Administer enteral medications:*
  - *balling gun (ruminant)**
    ruminant
  - *dose syringe (ruminant, horse)**
    horse, ruminant
  - *gastric intubation (small animal)**[GROUP]
  - *hand pilling (dog, cat) **
    dog, cat
  - *gastric lavage (dog)*
    dog
  - *dose syringe (pig)*
  - *oral speculum and stomach tube (ruminant)*
  - *nasogastric intubation (small animal, horse)*
- *Administer topical medications (including ophthalmic)**
  dog, cat, horse
- *Perform ocular diagnostic tests (including tonometry, fluorescein staining and Schirmer tear test)**
- *Administer enemas**[GROUP]

- *Collect/evaluate skin scrapings**
- Fluid therapy:
  - *administer subcutaneous fluids**
  - *place intravenous catheters cephalic*, saphenous*, jugular*
  - *maintain and care for catheters**
  - determine/maintain fluid infusion rate*
  - monitor patient hydration status*
  - develop familiarity with fluid delivery systems*
- *Apply and remove bandages and splints**
- *Remove casts*
- Develop understanding of wound management and abscess care*
- Perform physical therapy:
  - hydrotherapy
  - post-operative
  - orthopedic
  - neurological
  - explain care of recumbent patient*
- Perform critical care:
  - maintain chest, tracheostomy, esophagostomy tubes
  - *collect and crossmatch blood for transfusion**[GROUP]
  - *blood typing*
  - *perform blood transfusions (autotransfusions may be considered)*
- Apply established emergency protocols (simulation acceptable):
  - maintain emergency medical supplies/crash cart*
  - *perform first aid and cardiopulmonary resuscitation**
  - *use resuscitation bag**
  - *apply emergency splints and bandages**

Decision-making abilities: Given the directions of the veterinarian and the characteristics of the patient, the veterinary technician will carry out appropriate therapeutic techniques in order to achieve maximum health benefits for the patient.

Tasks: Dentistry

- *Perform routine dental prophylaxis (manual and machine)**
- Understand client education regarding home care*
- Float teeth
- Clip teeth

Decision-making abilities: Given the characteristics of the patient, the veterinary technician will recognize a patient's dental health status and perform techniques, as prescribed by a veterinarian, appropriate to the species and its condition in order to promote and maintain dental health.

4.ANESTHESIA

Patient management

Skill: Safely and effectively manage and maintain patients in all phases of anesthesia.

Tasks:

- Calculate dosages of appropriate anesthetic-related drugs*
- *Administer anesthetic-related drugs (injection, endotracheal tube, mask)**
- *Place endotracheal tubes in patients**
- *Utilize clinical signs and appropriate equipment to monitor patient status during anesthetic procedures* (e.g., esophageal stethoscope, blood pressure monitor, capnometer, electrocardiogram, pulse oximeter)**
- Evaluate patient and implement pain management protocols as directed*
- Recognize and respond appropriately to patients in compromised states*
- Perform appropriate resuscitation procedures as needed (e.g., calculate and administer appropriate anesthetic antagonists and emergency drugs as directed)*

- *Complete controlled substance log** (does not need to be official controlled substance log; mock logs may be utilized)

Decision-making abilities: Given the characteristics of the anesthetized patient and the procedure being performed, the veterinary technician will work with the veterinarian to:

4. Assess the patient's risk status and determine appropriate anesthetic and perianesthetic protocols to provide effective pain management and maximum anesthetic safety and effectiveness.

5. Choose and utilize appropriate techniques and equipment to accurately and effectively monitor the patient's ongoing status before, during and after anesthesia to provide for adequate anesthesia, analgesia and a safe recovery.

Equipment/facility management

Skill: Safely and effectively select, utilize and maintain anesthetic delivery and monitoring instruments and equipment.

Tasks:

- *Maintain and operate anesthetic delivery and monitoring equipment:*
  - *pulse oximeter**
  - *capnometer**
  - *esophageal stethoscope**
  - *electrocardiograph (e.g., recognize abnormal rhythms/audible sounds, properly apply leads)**
  - *anesthetic machines, including rebreathing systems, non-rebreathing systems and masks**
  - *endotracheal tubes**
  - *resuscitation bag**
  - *scavenging systems**
  - *oxygen sources**
  - *blood pressure monitoring devices**
  - *laryngoscopes**
  - *ventilator*
  - *defibrillator*
  - *temperature monitoring device* (e.g. thermometer, etc.)*

Decision-making abilities:

6. Given the characteristics of the anesthetic instruments and equipment being used, the veterinary technician will recognize and respond appropriately to equipment malfunctions or inappropriate equipment setup to ensure proper function and provide maximum benefit to ensure safety of the patient and staff.

7. Given the requirements of the anesthetic protocol, the veterinary technician will select, evaluate and adjust equipment to ensure proper function and provide maximum benefit to ensure safety of the patient and staff.

SURGICAL NURSING

It is essential that technicians have knowledge of routine surgical procedures and related equipment, including surgeries in these categories:

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  dog, cat
- cesarean section*
  all species
- orthopedic procedures*
- orchiectomy - all common species*
- tail docking*
- onychectomy*
  dog, cat

- laparotomies - all common species*
- dystocias in common species*
- dehorning*
  cow, goat
- prolapsed organs - common types, species, and incidence*

Students must have participated in surgeries in these categories:

- *ovariohysterectomy**
  dog, cat
- *orchiectomy**
  dog, cat

Patient management

Skill: Understand and integrate all aspects of patient management for common surgical procedures in a variety of animal species.

Task:

- Properly identify patients and surgical procedures*

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will use medical records and patient identification methods to assure that the patient and scheduled procedures are correct.

Task:

- Patient assessment
  - organize medical records/consent forms*
  - review pre-operative evaluation*
  - evaluate current patient status*
  - organize and implement anesthesia*

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will obtain the patient's vital signs, note any specific physical abnormalities, ensure pre-surgical tests have been completed and report the patient assessment to the veterinarian.

Task:

- *Palpate the urinary bladder and express it if needed**
- *Prepare surgical site using appropriate aseptic techniques**

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will identify the appropriate area of hair to be removed and select appropriate methods to reduce microbial flora on the skin in the area of surgical site in order to decrease the chance of surgical wound contamination.

Task:

- *Position patient for common procedures**

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will position the patient appropriately to provide maximum convenience for the surgeon and maximum safety and benefit for the patient.

Task:

- Provide surgical assistance:
  - *demonstrate proper operating room conduct and asepsis**
  - *assist with care of exposed tissues and organs**
  - *properly handle and pass instruments and supplies**
  - operate and maintain suction and cautery machines*
  - understand the principles of operation and maintenance of fiber optic equipment*
  - *record and maintain operative/surgical records**
  - *perform basic suturing techniques*

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will understand and utilize appropriate aseptic techniques to assist operative personnel in order to provide maximum safety and benefit to the patient.

Task:

- Coordinate pain management with the anesthesia/surgical team*

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will assure that anesthetic and post-operative pain management protocols are appropriate to provide maximum safety and benefit to the patient.

Task:

- Provide post-operative care:
    - pain management*
    - fluid therapy*
    - adequate nutrition*
    - wound management*
    - bandaging*
    - discharge instructions*
    - *suture removal**

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will understand and administer the appropriate methods of post-operative care to assure maximum safety and benefit to the patient.

Procedural management

Skill: Understand and provide the appropriate instruments, supplies and environment to maintain asepsis during surgical procedures.

Tasks:

- *Prepare surgical instruments and supplies**
- *Prepare gowns, masks, gloves, and drapes**
- *Operate and maintain autoclaves**
- *Sterilize instruments and supplies using appropriate methods**
- *Perform pre-surgical set-up**
- Identify and know proper use for instruments*
- Identify common suture materials, types, and sizes*
- *Provide operating room sanitation and care**
- Maintain proper operating room conduct and asepsis*
- *Perform post-surgical clean-up (e.g., equipment, instruments, room, proper disposal of hazardous medical waste)**

Decision-making abilities: Given the characteristics of the patient and the surgical procedure to be performed, the veterinary technician will properly select, wrap and sterilize appropriate instruments and supplies and prepare and maintain the surgical environment to ensure maximum safety and benefit to the patient.

LABORATORY PROCEDURES

Specimen management

Skill: Demonstrate knowledge of proper handling, packaging and storage of specimens for laboratory analysis to ensure safety of patients, clients, and staff.

Tasks:

- *Select and maintain laboratory equipment**
- *Implement quality control measures**[GROUP]
- Understand how to ensure safety of patients, clients, and staff in the collection and handling of samples*
- *Prepare, label, package, and store specimens for laboratory analysis**

Decision-making abilities:

5. Given the characteristics of the patient and the requested analysis, the veterinary technician will properly prepare, handle and submit appropriate samples for diagnostic analysis in order to ensure maximum accuracy of results.

6. Given the characteristics of laboratory instruments and equipment, the veterinary technician will determine proper maintenance and quality control procedures necessary to ensure accurate results.

Specimen analysis

Skill: Properly perform analysis of laboratory specimens.

Tasks:

- *Perform urinalysis:*
  - *determine physical properties (e.g., color, clarity, specific gravity)**
  - *test chemical properties**
  - *examine and identify sediment**
- *Perform CBC to include:*
  - hemoglobin*
  - *packed cell volume**
  - *total protein**
  - *white cell count**
  - *red cell count**
- *Perform microscopic exam of blood film:*
  - *prepare film and stain using a variety of techniques**
  - *perform leukocyte differential – normal vs abnormal**
  - *evaluate erythrocyte morphology – normal vs abnormal**
  - *estimate platelet numbers**
  - *calculate absolute values**
  - *correct white blood cell counts for nucleated cells**
- Calculate hematolgic indices*
- *Coagulation tests – perform one of the following*:*[GROUP]
  - *buccal mucosal bleeding time*
  - *activated clotting time (ACT)*
  - *prothrombin time (PT)*
  - *partial thromboplastin time (PTT)*
  - *fibrinogen assay*
- *Perform blood chemistry tests (BUN, glucose, common enzymes)**
- *Perform serologic test (ELISA, slide/card agglutinations)**
- Identify blood parasites:
  - Dirofilaria sp/Acanthocheilonema sp (formerly Dipetalonema sp)*
  - Hemotropic Mycoplasma sp (Hemoplasmas)* (formerly Haemobartonella sp and Eperythrozoon sp)
  - Anaplasma sp
  - Babesia sp
  - Trypanosoma sp
  - Eperythrozoan sp
  - Ehrlichia sp
- Perform parasitologic procedures for external parasites and identify:
  - mites*
  - lice*
  - ticks*
  - fleas*
  - flies*
- *Perform diagnostics procedures for parasites:*
  - *Antigen kit*, direct*, filter, Knotts* [GROUP]*
  - *flotation solution preparation*
  - *fecal flotations**
  - *fecal sedimentation**
  - *direct smears**
  - *centrifugation with flotation**
  - *adhesive tape retrieval of pinworm ova*

- *perform fecal egg count using McMaster method*

- Identify common parasitic forms:
  - nematodes*
  - trematodes*
  - cestodes*
  - protozoa*
- Perform coprologic tests
- *Perform microbiologic procedures/evaluations:*
  - *collect representative samples**
  - *culture bacteria and perform sensitivity tests**
  - *identify common animal pathogens using commercially available media and reagents**[GROUP]
  - *collect milk samples and conduct mastitis testing (e.g., CMT, bacterial culture)**[GROUP]
  - *perform common biochemical tests**[GROUP]
  - *perform staining procedures**
  - *culture and identify common dermatophytes**
- *Perform cytologic evaluation*
  - *assist in collecting, preparing and evaluating transudate, exudate and cytologic specimens (joint, cerebrospinal, airway, body cavity)*
  - *perform fine needle tissue aspirates and impression smear preparation (differentiate benign vs. malignant)*
  - *prepare and stain bone marrow specimens*
  - *collect, prepare, and evaluate ear cytology**
  - *collect, prepare, and evaluate canine vaginal smears**[GROUP]
  - *evaluate semen*
  - *understand timing and types of pregnancy testing*
  - *assist with artificial insemination*
- Perform necropsy procedures:
  - *perform a postmortem examination or dissection on non-preserved animal**[GROUP]
  - *collect samples, store and ship according to laboratory protocols**[GROUP]
  - explain how to handle rabies suspects and samples safely*
  - *handle disposal of dead animals*
  - *perform humane euthanasia procedures*

Decision-making abilities:

10. Given the characteristics of the patient, the specimen submitted and the results of the analysis, the veterinary technician will be able to recognize accurate vs. erroneous results in order to provide maximum diagnostic benefit.

11. Given the laboratory specimen collected and characteristics of the patient, the veterinary technician will determine appropriate methodology and carry out analytical procedures necessary to provide accurate and precise diagnostic information.

12. Having determined the accuracy of analytical results, the veterinary technician will work with the veterinarian to determine if a need exists for additional laboratory tests that will provide useful diagnostic information.

Course Number and Name: VAT 2152 Animal Parasites and Diseases

Description: Animal Parasites and Diseases will include the study of etiology, symptoms, pathology, transmission, duration, prognosis, prevention, and general knowledge of common parasites and diseases of farm animals and pets.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
2	2	0	30

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Explain disease terminology, cause, spread, effects, bodily defenses, and prevention
   a. Define disease terminology
   b. Discuss the history of disease
   c. Describe classifications of diseases
   d. Identify duration of diseases
   e. Identify systems that disease affects
   f. Discuss infectious and noninfectious causes of diseases
   g. Identify classifications of microorganisms that cause disease conditions
   h. Discuss transmission of diseases
   i. Explain how diseases enter the body
   j. Explain how the body protects itself from diseases
   k. Discuss prevention of diseases
   l. Discuss common disinfectants
2. Explain small animal internal parasites
   a. Describe life cycle, disease production, prevention, and control of the following small animal internal parasites:
      (1) Ascarids (Roundworms)
      (2) Hookworms (Ancylostoma)
      (3) Whipworms (Tricharis)
      (4) Tapeworms (Dipylidium and Taenia)
      (5) Coccidia (Isospora and Taenia)
      (6) Heartworms (Dirofilaria immitis)
      (7) Giardia
      (8) Esophageal worm
      (9) Strongyloides
3. Explain external parasites of small animals, their life cycles, diseases they may cause, and control of such parasites
   a. Describe life cycle, disease production, prevention, and control of the following small animal external parasites:
      (1) Fleas
      (2) Lice
      (3) Blowflies, screwworm flies, and flesh flies
      (4) Mites such as demodectic, otodectic, and sarcoptic mites
      (5) Ticks
4. Explain external and internal parasites of the equine, bovine, porcine, and avian species
   a. Describe life cycle, disease production, prevention, and control of the following large

animal external and internal parasites:
(1) Equine internal parasites such as strongyles, ascarids, pinworms, bots, and stomach worms
(2) Equine external parasites such as house flies, horse flies, stable flies, lice, ticks, and mange mites
(3) Bovine internal parasites such as stomach worms, tapeworms, nodular worms, hookworms, lungworms, strongyloides, liver flukes, and coccidia
(4) Bovine external parasites such as the face fly and cattle grubs
(5) Porcine internal parasites such as stomach worms, ascarids, and lungworms
(6) Avian parasites

b. Describe common anthelminics

5. Explain common small animal viral, bacterial, fungal, and other diseases.
a. Describe the etiology, method of spread, pathology, tests to aid in diagnosing, symptoms, prevention, and control of the following small animal diseases:
(1) Canine viral diseases such as distemper, hepatitis, bronchitis, herpes virus, rabies, and parvo
(2) Canine bacterial diseases such as tetanus, brucellosis, and leptospirosis
(3) Canine mycotic diseases
(4) Canine protozoal diseases
(5) Canine metabolic diseases
(6) Feline viral diseases such as distemper, rabies, rhinotracheitis, peritonitis, and leukemia
(7) Feline bacterial diseases
(8) Feline mycotic diseases
(9) Feline protozoal diseases

Course Number and Name: VAT 2172 Exotic/Lab Animal Procedures

Description: The student will be instructed in the care and handling of laboratory animals and wild, exotic, and zoo animals. Maintenance of health laboratory animals to include proper nutrition, husbandry, and handling will be emphasized.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
2	1	2	45

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Explain knowledge of zoonotic diseases
   a. Identify the types of zoonotic diseases
   b. Identify the effects of zoonotic diseaseslar
   c. Discuss treatment of zoonotic diseases
   d. Explain prevention of zoonotic diseases
2. Demonstrate knowledge of life span, diseases, therapeutics, behaviors, clinical procedures, and history of the following:
   a. Ferrets
   b. Rabbits
   c. Guinea pigs
   d. Chinchillas
   e. Hedgehogs
   f. Degus
   g. Hamsters and gerbils
   h. Rats and mice
3. Explain knowledge of life span, diseases, therapeutics, behaviors, clinical procedures, and history of the following:
   a. All species and types of avian
   b. Different types of reptiles
   c. All species of amphibians
4. Explain knowledge of life span, diseases, therapeutics, behaviors, clinical procedures, and history of the following:
   a. Alpacas and llamas

CVTEA Requirements

Veterinary Technology Student Essential and Recommended Skills List

LABORATORY ANIMAL PROCEDURES

Skill: Safely and effectively handle common laboratory animals used in animal research.

Tasks: Mice, rats, and rabbits

- *Recognize and restrain**
  mouse, rat, rabbit
- *Determine sex* and understand reproduction*
  mouse, rat, rabbit
- Perform and/or supervise basic care procedures:
- *handling (mouse, rat, rabbit)**
  mouse, rat, rabbit
- nutritional needs/diet*
- *provide food, water, and enrichment in a species-appropriate manner (mouse, rat, rabbit)**
  mouse, rat, rabbit
- *trim nails*
- identification*
-
- *Perform methods of injection:*
  - *subcutaneous (mouse, rat, rabbit)**
    mouse, rat, rabbit
  - *intramuscular (rabbit)*
    mouse, rat, rabbit
  - *intradermal (rabbit)*
    mouse, rat, rabbit
  - *intraperitoneal (mouse*) [GROUP]*
    mouse, rat, rabbit
  - *intravenous*
    mouse, rat, rabbit
- *Collect blood samples*
  - *Retro-orbital (mice, rats) [GROUP]*
    mouse, rat, rabbit
  - *Intravenous (rat, rabbit)** [GROUP]
    mouse, rat, rabbit
  - *Perform oral dosing (mouse, rat)** [GROUP]
    mouse, rat, rabbit
- Have working knowledge of anesthetic and recovery procedures*
- Identify and describe clinical signs of common diseases*
- *Perform necropsy and collect specimens*
- *Clean and medicate ears (rabbit)*
- *Anesthetize mouse, rat, and rabbit*

Tasks: Non-human primates

- Understand restraint of non-human primates
- Demonstrate knowledge of zoonotic diseases and modes of transmission

Decision-making abilities: The veterinary technician will be familiar with the basic principles of animal research and understand the utilization of laboratory animals in animal research. The veterinary technician will also have knowledge of federal, state, and local animal welfare regulations.

AVIAN, EXOTIC & SMALL MAMMALS PROCEDURES

Skill: Understand the approach to providing safe and effective care for birds, reptiles, amphibians, guinea pigs, hamsters, gerbils, and ferrets.

Tasks:

- *Recognize, understand, and perform restraint techniques of*
- *birds*, reptiles, amphibians, and ferrets*
- Understand unique husbandry issues for each species and provide client education*
    - birds, reptiles, amphibians, guinea pigs, hamsters, gerbils, and ferrets
    - nutritional needs/diet
    - watering
    - caging (temperature, humidity, light)
    - aquarium care
    - understand reproduction
    - basic grooming (beak, wing, and nail clipping)
    - appropriate transportation methods
- *Demonstrate the ability to obtain objective data: birds*, reptiles, amphibians, and ferrets*
- *Perform nail trim (bird*, exotic, small mammal)*
- *Perform injections using appropriate sites*
    - *subcutaneous*
    - *intramuscular*
    - *intradermal*
    - *intraperitoneal*
    - *intravenous*
- *Perform oral dosing*
- Administer drugs or medicaments using appropriate sites and routes
- Understand appropriate sites for intravenous catheter placement
- Understand tube feeding in birds
- Perform laboratory procedures
- *Anesthetize birds and exotic animals*
- Recognize normal and abnormal behavior patterns
- Explain inadvisability of keeping wildlife as pets
- *Collect blood samples*

Decision-making abilities: Given the unique requirements of these species, the veterinary technician will safely obtain subjective and objective data that will allow evaluation of the patient. The veterinary technician will be able to: 1) identify husbandry issues, 2) discern appropriate from inappropriate nutritional support, and 3) recognize normal from abnormal behavior patterns.

- *Demonstrate the ability to obtain objective data: birds*, reptiles, amphibians, and ferrets*
- *Perform nail trim (bird*, exotic, small mammal)*
- *Perform injections using appropriate sites*
    - *subcutaneous*
    - *intramuscular*
    - *intradermal*
    - *intraperitoneal*
    - *intravenous*
- *Perform oral dosing*
- Administer drugs or medicaments using appropriate sites and routes
- Understand appropriate sites for intravenous catheter placement
- Understand tube feeding in birds
- Perform laboratory procedures
- *Anesthetize birds and exotic animals*
- Recognize normal and abnormal behavior patterns
- Explain inadvisability of keeping wildlife as pets
- *Collect blood samples*

Decision-making abilities: Given the unique requirements of these species, the veterinary technician will safely obtain subjective and objective data that will allow evaluation of the patient. The veterinary technician will be able to: 1) identify husbandry issues, 2) discern appropriate from inappropriate nutritional support, and 3) recognize normal from abnormal behavior patterns.

Course Number and Name: VAT 2183 Internship

Description: A veterinary technician student will be required to complete a one 6-week internship with an **approved** veterinary practice and /or a laboratory animal facility. The internship provides hands-on experience in a small animal, mixed animal, large animal, or laboratory animal facility.

Hour Breakdown:

Semester Credit Hours	Lecture	Clinical	Contact Hours
3	0	9	135

Prerequisite: Successful completion of all academic courses in the veterinary technology curriculum with an overall GPA of 2.0 and no less that a C in all required VAT courses. Both on-line and classroom Veterinary Technician students will be required to complete an 8 week internship with an "APPROVED" veterinary practice and/or laboratory animal facility. The internship provides hands-on experience in small animal, mixed animal, large animal or laboratory animal facility.

Student Learning Outcomes:

1. Apply practical skills and technical information while in a supervised professional work setting
    a. Apply the scholastic knowledge acquired to practical applications in a veterinary practice
    b. Perform duties as assigned by the veterinarian
    c. Cooperate with the supervising veterinarian
    d. Arrive at work on time, and willingly work the assigned days and hours
    e. Appear for work appropriately dressed
    f. Perform duties in a timely manner
    g. Cooperate with other employees
    h. Perform new duties and new techniques as they arise
    i. Demonstrate initiative
    j. Notify the veterinarian of unexpected absences or tardiness as soon as possible
    k. Use knowledge base to the best of ability when required to do so
    l. Treat all clients in a courteous manner
    m. Ask for assistance and guidance if unsure about duties, laboratory tests, or other activities
    n. Treat the veterinarian with respect at all times
    o. Keep all client information confidential
    p. Give the veterinarian honest, accurate information at all times

Course Number and Name: VAT 2192 Veterinary Pharmacology

Description: The student will be instructed in basic knowledge of various aspects of pharmacology. This will include the area pharmacokinetics, proper handling of controlled substances, dosage calculation, and fluid therapy.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
2	2	0	30

Prerequisite: Instructor approved

Student Learning Outcomes:

1. Explain the brief history of veterinary pharmacology
    a. Explain the evolution of pharmacology in veterinary medicine
    b. Explain knowledge of common terminology in veterinary pharmacology
    c. Explain the various agencies and their involvement pharmacology
2. Explain veterinary drug development, procurement, and control
    a. Explain the stages of veterinary drug development:
        (1) Overview of drug development
        (2) Safety and effectiveness evaluation
        (3) Toxicity evaluation
    b. Demonstrate an understanding of procedures of acquiring veterinary drugs
    c. Explain the difference of lethal and effective dose and how therapeutic index is determined
    d. Explain the systems oriented screening of drugs and evaluation of long-term effects
    e. Explain the various aspects of drug marketing
3. Explain the therapeutic range and routes of administration of drugs
    a. Explain the safety of therapeutic range
    b. Explain the various routes of administration and dose forms of the following:
        (1) Injectable drugs
        (2) Inhalation drugs
        (3) Topical medications
        (4) Oral drugs
    c. Explain the concepts of drug doses, dosage intervals, and safety zones
4. Explain knowledge of pharmacokinetics
    a. Explain the different forms of drug movement such as the following:
        (1) Passive diffusion
        (2) Facilitated diffusion
        (3) Active transport
        (4) Pinocytosis and phagocytosis
5. Explain the following pharmacology chemical concepts:
    a. pH related to ionization of drugs
    b. Ion trapping
    c. Oral versus parenteral drug forms
    d. Patient factors
    e. Membrane permeability
    f. Tissue perfusion
    g. Protein binding
    h. Volume of distribution
    i. Explain how drugs change in the body, how they work, and how they leave the body
6. Explain knowledge of the concepts of veterinary drug use and prescribing drugs

a. Identify differences between drug standards, package inserts, and drug reference books
b. Explain dispensing drugs versus prescribing drugs

7. Explain knowledge of systems of measurement in veterinary pharmacology
   a. Explain difference between household system and metric system
   b. Demonstrate ability to convert the following:
      (1) Dose in mg
      (2) Dose in tablets
      (3) Dose in ml
      (4) Dose in units
   c. Perform the following:
      (1) Calculating total dose
      (2) Calculate number of doses
      (3) Percent concentration calculations
8. Explanation of knowledge of pharmaceuticals and their relationship to animal physiology
   a. Identify the generic names of drugs used in the following body systems:
      (1) Nervous system
      (2) Cardiovascular system
      (3) Respiratory system
      (4) Gastrointestinal system
      (5) Musculoskeletal system
      (6) Integumentary system
   b. Identify the physiological effects of the following classes of drugs:
      (1) Antimicrobials
      (2) Antiparasitics
      (3) Anti-inflammatory and pain reducing drugs
   c. Recognize indications for the use of the following:
      (1) Fluid therapy and emergency drugs
      (2) Antineoplastic and immunosuppressive drugs
      (3) Behavior modification drugs
9. Explain the following characteristics of vaccines used in veterinary medicine:
   a. Types
   b. Usage
   c. Effects
10. Explain the following characteristics of herbal therapeutics used in veterinary medicine:
   a. Types
   b. Usage
   c. Effects

CVTEA Requirements

Veterinary Technology Student Essential and Recommended Skills List

2. PHARMACY AND PHARMACOLOGY

Administration

Skill: Safely and effectively administer prescribed drugs to patients.

Tasks:

- Read and follow veterinarian's pharmacy orders*
- Recognize groups of drugs, their mechanisms, and clinically relevant side effects*
- Recognize the safe and effective manner in which vaccines must be administered; recognize and explain common side effects*

- Accurately perform appropriate calculations; use weights and measures correctly*
- Explain appropriate drug administration route methods, and when used*
- Demonstrate the ability to monitor therapeutic responses*
- Demonstrate the ability to accurately record medical information*
- Demonstrate understanding of controlled substance regulations*
- Demonstrate compliance with all federal and state regulatory guidelines for drug purchase, storage, administration, withdrawal, dispensing, disposal, and inventory control (e.g., biologics and therapeutic agents, pesticides, and hazardous wastes)*

Decision-making abilities: Given the characteristics of the patient, the instructions of the veterinarian and the medication to be used, the veterinary technician will calculate the correct amount of medication in the prescribed form and administer it by the prescribed route to maximize therapeutic benefits and minimize the potential for adverse effects. The veterinary technician shall also be able to differentiate between abnormal and normal responses to medication.

Dispensing

Skill: Accurately dispense and explain prescribed drugs to clients.

Tasks:

- Given a drug order, properly prepare medications for dispensing, including performing accurate calculations*
- Demonstrate compliance with regulations governing prescription drugs versus over-the-counter drugs*
- Demonstrate understanding of regulations governing maintenance of controlled substances log book*
- Demonstrate compliance with all federal and state regulatory guidelines for drug purchase, storage, administration, withdrawal, dispensing, disposal, and inventory control (e.g., biologics and therapeutic agents, pesticides, and hazardous wastes)*
- Relay drug information to clients (e.g., handling, storage, administration, side-effects, drug interactions, safety, reasons for use of drug)*

Decision-making abilities: Given the characteristics of the patient, the instructions of the veterinarian and the medication to be used, the veterinary technician will (1) accurately calculate and dispense the correct form and dose of medication and (2) communicate necessary client information in order to maximize safety, compliance with prescribed therapy and successful treatment of the patient. The veterinary technician should also be proficient at performing inventory control procedures.

Course Number and Name: VAT 2223 Large Animal Procedures

Description: The student will be instructed in the care and handling of equine and food animals. Maintenance of health care to include proper nutrition, husbandry and handling will be emphasized.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Demonstrate knowledge and uses of the following types of ropes used in veterinary medicine:
    a. Bowline knot
    b. Tomfool knot
    c. Double half hitch knot
    d. Tail tie
2. Explain key terms, objectives, and complications of restraint of the horse including the following:
    a. Rules of tying
    b. Use of stocks
    c. Haltering and leading
    d. Applying chains and twitches
    e. Loading horses in trailers
    f. Special handling scenarios
3. Explain key terms, objectives, and complications of restraint of cattle including the following:
    a. Processing facilities
    b. Operating chutes
    c. Haltering and tailing up
    d. Casting and flanking cattle
    e. Securing cattle feet for examination
    f. Miscellaneous equipment used in cattle restraint
4. Explain key terms, objectives, and complications of restraint of goats including the following:
    a. Collaring and leading
    b. Use of stanchions
5. Explain key terms, objectives, and complications of restraint of swine including the following:
    a. Use of pig boards
    b. Castration restraint
    c. Use of snout snare
6. Explanation of key terms, objectives, and procedures of the following:
    a. Basic grooming
    b. Use of blankets and face masks
7. Explain common viral, bacterial, mycotic, and lameness diseases of the equine species.
    a. Describe the etiology, method of spread, pathology, and tests to aid in diagnosing, symptoms, prevention, and control of the following common equine diseases:
        i. Viral diseases such as encephalomyelitis, equine infectious anemia (EIA), influenza, and viral rhinopneumonitis
        ii. Bacterial diseases such as anthrax, glanders, strangles, leptospirosis, tetanus, and

navel ill
iii. Fungal infections
iv. Lameness
v. Colic

8. Explain common viral, bacterial, protozoal, and metabolic diseases of cattle and swine.
   a. Describe the etiology, method of spread, pathology, tests to aid in diagnosing, symptoms, prevention, and control of the following cattle and swine diseases:
      i. Viral diseases such as foot and mouth diseases, vesicular stomatitis, infectious bovine rhinotracheitis (IBR), bovine viral diarrhea (BVD), bluetongue, pinkeye, and shipping fever
      ii. Bacterial diseases such as anthrax, clostridial diseases, brucellosis, lepto, tuberculosis, and mastitis
      iii. Protozoal diseases such as anaplasmosis
      iv. Metabolic diseases such as milk fever, grass tetany, bloat, and acetonemia
      v. Common viral swine diseases such as hog cholera, transmissible gastroenteritis (TGE), pseudorabies, swine influenza, and viral pig pneumonia (VPP)
      vi. Common bacterial swine diseases such as erysipelas, leptospirosis, and pneumonia
      vii. Protozoal disease such as eperythrozoonosis

9. Explain the source, symptoms, prevention, and control of common poisons that affect farm animals
   a. Describe the source of, pathology symptoms, prevention, and control of the most common poisons of farm animals and pets to include the following:
      i. Arsenic
      ii. Lead
      iii. Strychnine
      iv. Cyanide
      v. Salt
      vi. Nitrate
      vii. Organophosphorus
      viii. Chlorinated hydrocarbons
      ix. Warfarin
      x. Common poisonous plants

Course Number and Name: VAT 2272 Principles of Imaging

Description: Radiology includes general concept of radiology, exposure, positioning, developing techniques, and solving common problems of radiology. Safety is emphasized throughout the course. The course also includes exposure to ultrasound diagnostic.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
2	1	2	45

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Explain the characteristics of radiation, the production of X-rays, and the formation of radiographs
    a. Describe radiation formation
    b. Discuss characteristics of radiation
    c. Discuss an X-ray tube
2. Demonstrate and Explain an understanding of X-ray production, charting, patient positioning, and radiation safety
    a. Explain exposure factors
    b. Identify the characteristics of radiographic quality
    c. Perform film processing
    d. Develop, interpret, and apply a technique chart
    e. Demonstrate an understanding of proper patient positioning
    f. Perform radiation safety measures
3. Explain the steps followed for radiography in certain types of animals
    a. Identify the radiography procedures followed for large animals
    b. Identify the radiography procedures followed for avian and exotic animals
4. Explain key concepts in alternative applications of animal radiography
    a. Identify common practices in digital radiography
    b. Discuss special procedures that can be used in animal radiography when normal operations do not apply to the patient
    c. Discuss the types of alternative imaging technologies available in veterinary medicine
5. Explanation of ultra-sonography.
6. Explanation of contrast radiology procedures.

CVTEA Requirements
Veterinary Technology Student Essential and Recommended Skills List

IMAGING

Skill: Safely and effectively produce diagnostic radiographic and non-radiographic images.

Tasks:

- *Implement and observe recommended radiation safety measures**
- Implement radiographic quality control measures*
- Develop and properly utilize radiographic technique charts*[GROUP]
- *Position to create diagnostic radiographic images**
  dogs, cats, horse, birds
- Demonstrate an understanding of the modifications of diagnostic imaging techniques as they apply to mice, rats, guinea pigs, lizards, and amphibians*
- *Utilize radiographic equipment to properly radiograph live animals (fixed and portable)**

- *Create diagnostic dental radiographic images**
- *Appropriately label, file, and store images**

- *Complete radiographic logs, reports, files and records**
- *Perform radiographic contrast studies — perform one of the following*:*[GROUP]
    - *GI Series*
    - *Pneumocystogram*
    - *Intravenous pyelogram*
    - *Other*
- *Perform on a sedated canine radiographic techniques utilized in screening for canine hip dysplasia**[GROUP]
- Demonstrate proper maintenance of radiographic equipment, including recognition of faulty equipment operation*
- *Use and care of ultrasonography equipment*
- *Use and care of endoscopic equipment*

Decision-making abilities:

1. Given the characteristic of the patient and the radiographic study that has been requested, the veterinary technician will properly (1) prepare radiographic and darkroom equipment, (2) measure and position animals using topographic landmarks, (3) choose an appropriate radiographic technique to minimize the need for repeat exposures (4) produce the latent image, (5) process the exposed film, (6) analyze the final radiograph for quality in order to provide maximum diagnostic benefit.

2. Given a radiograph, the veterinary technician will be able to determine if the image is of diagnostic quality. If the image is not diagnostic, the veterinary technician will be able to offer options to correct deficiencies in order to provide maximum diagnostic benefit and minimize personnel radiation exposure from unnecessary repeat exposures.

3. Given knowledge of the health risks associated with radiographic procedures and effective safety procedures, the veterinary technician will exercise professional judgment to minimize risks to personnel and patients during radiographic procedures to ensure safety.

4. Given the characteristics of the patient and the non-radiographic imaging study that has been requested, the veterinary technician will properly (1) prepare the imaging site and equipment and (2) position patients appropriately for the study being conducted.

Course Number and Name: VAT 2283 Clinical Pathology

Description: Clinical Pathology is the study and practical application of veterinary diagnostic aids. The course includes hematology, blood chemistries, serology, urinalysis, fecal analysis, and organ function test.

Hour Breakdown:

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor Approved

Student Learning Outcomes:

1. Explain basic microscopy
    a. Identify the types of microscopes
    b. Discuss the function of microscopes
    c. Identify the parts of a microscope
    d. Discuss how to use a microscope
    e. Discuss how to care for and maintain a microscope
2. Explain how to perform a fecal analysis, identify common parasite ova, identify common external parasites, and perform skin tests
    a. Perform a fecal analysis
    b. Identify common parasite ova
    c. Identify common external parasites
    d. Discuss the diagnostic aids to help identify common external parasites
    e. Perform a skin scraping
    f. Discuss other skin diagnostic tests
3. Explain a complete urinalysis
    a. Take a correct history regarding urinary problems in animals
    b. Discuss the normal function of the urinary system
    c. Perform a physical exam of urine
    d. Perform a chemical exam of urine
    e. Perform a microscopic exam of urine
4. Explain blood chemistry exams to evaluate the function of the liver, kidney, pancreas, thyroid, and other body organs, and serology tests
    a. Collect blood samples for specific tests
    b. Perform blood or body fluid chemistry tests to evaluate the following:
        (1) Kidney function
        (2) Liver function
        (3) Pancreatic function
        (4) Thyroid function
        (5) Cardiovascular function
        (6) Cerebrospinal fluid exam
        (7) Serology
            (a) Occult heart test
            (b) Feline leukemia test
            (c) Parvo test
            (d) Others
        (8) Exudate vs. transudate
5. Explain blood formation, blood composition, and the physiology of blood
    a. Explain the formation of blood, blood composition, and blood physiology that includes the following:

(1) Body tissues that produce blood
(2) How blood is produced
(3) Composition of blood
(4) Function of blood
(5) Normal destruction of blood

6. Explain the clotting process of blood and tests to evaluate blood clotting in animals
   a. Explain how blood clots and diagnostic tests are used to evaluate the blood clotting procedure
      (1) Factors required for blood clotting
      (2) Blood cells required for blood clotting
      (3) The physiology of blood clotting
      (4) The common causes of blood not clotting
      (5) Bleeding time test
      (6) Coagulation time test
      (7) Platelet count
      (8) Anticoagulants for specimen collection:
         (a) EDTA
         (b) Oxalates
         (c) Heparin
         (d) Others
7. Explain a CBC (complete blood count) and how to perform each test
   a. Explain a CBC, the normal CBC values for common domestic animals, and how to perform each test including:
      (1) Hemoglobin concentration
      (2) Pack cell volume (hematocrit)
      (3) Red blood cell count
      (4) White blood cell count
      (5) Red blood cell indices
      (6) Differential blood count
8. Discuss pathological or abnormal blood conditions
   a. Recognize pathological blood conditions including the following:
      (1) Red blood cell abnormalities
      (2) White blood cell abnormalities
      (3) Blood parasites such as heartworms, haemobartonella, and anaplasmosis

9. Given the characteristics of the patient and the requested analysis, the veterinary technician will properly prepare, handle and submit appropriate samples for diagnostic analysis in order to ensure maximum accuracy of results.

10. Given the characteristics of laboratory instruments and equipment, the veterinary technician will determine proper maintenance and quality control procedures necessary to ensure accurate results.

11. Given the characteristics of the patient, the specimen submitted and the results of the analysis, the veterinary technician will be able to recognize accurate vs. erroneous results in order to provide maximum diagnostic benefit.

12. Given the laboratory specimen collected and characteristics of the patient, the veterinary technician will determine appropriate methodology and carry out analytical procedures necessary to provide accurate and precise diagnostic information.

13. Having determined the accuracy of analytical results, the veterinary technician will work with the veterinarian to determine if a need exists for additional laboratory tests that will provide useful diagnostic information.

CVTEA Requirements

Veterinary Technology Student Essential and Recommended Skills List

6. LABORATORY PROCEDURES

Specimen management

Skill: Demonstrate knowledge of proper handling, packaging and storage of specimens for laboratory analysis to ensure safety of patients, clients, and staff.

Tasks:

- *Select and maintain laboratory equipment**
- *Implement quality control measures**[GROUP]
- Understand how to ensure safety of patients, clients, and staff in the collection and handling of samples*
- *Prepare, label, package, and store specimens for laboratory analysis**

Decision-making abilities:

Specimen analysis

Skill: Properly perform analysis of laboratory specimens.

Tasks:

- *Perform urinalysis:*
  - *determine physical properties (e.g., color, clarity, specific gravity)**
  - *test chemical properties**
  - *examine and identify sediment**
- *Perform CBC to include:*
  - hemoglobin*
  - *packed cell volume**
  - *total protein**
  - *white cell count**
  - *red cell count**
- *Perform microscopic exam of blood film:*
  - *prepare film and stain using a variety of techniques**
  - *perform leukocyte differential – normal vs abnormal**
  - *evaluate erythrocyte morphology – normal vs abnormal**
  - *estimate platelet numbers**
  - *calculate absolute values**
  - *correct white blood cell counts for nucleated cells**
- Calculate hematolgic indices*
- *Coagulation tests – perform one of the following*:*[GROUP]
  - *buccal mucosal bleeding time*
  - *activated clotting time (ACT)*
  - *prothrombin time (PT)*
  - *partial thromboplastin time (PTT)*
  - *fibrinogen assay*
- *Perform blood chemistry tests (BUN, glucose, common enzymes)**
- *Perform serologic test (ELISA, slide/card agglutinations)**
- Identify blood parasites:
  - Dirofilaria sp/Acanthocheilonema sp (formerly Dipetalonema sp)*
  - Hemotropic Mycoplasma sp (Hemoplasmas)* (formerly Haemobartonella sp and Eperythrozoon sp)
  - Anaplasma sp
  - Babesia sp
  - Trypanosoma sp
  - Eperythrozoan sp
  - Ehrlichia sp
- Perform parasitologic procedures for external parasites and identify:
  - mites*
  - lice*
  - ticks*
  - fleas*
  - flies*
- *Perform diagnostics procedures for parasites:*
  - *Antigen kit*, direct*, filter, Knotts* [GROUP]*

- *flotation solution preparation*
- *fecal flotations**
- *fecal sedimentation**
- *direct smears**
- *centrifugation with flotation**
- *adhesive tape retrieval of pinworm ova*
- *perform fecal egg count using McMaster method*

- Identify common parasitic forms:
  - nematodes*
  - trematodes*
  - cestodes*
  - protozoa*
- Perform coprologic tests
- *Perform microbiologic procedures/evaluations:*
  - *collect representative samples**
  - *culture bacteria and perform sensitivity tests**
  - *identify common animal pathogens using commercially available media and reagents**[GROUP]
  - *collect milk samples and conduct mastitis testing (e.g., CMT, bacterial culture)**[GROUP]
  - *perform common biochemical tests**[GROUP]
  - *perform staining procedures**
  - *culture and identify common dermatophytes**
- *Perform cytologic evaluation*
  - *assist in collecting, preparing and evaluating transudate, exudate and cytologic specimens (joint, cerebrospinal, airway, body cavity)*
  - *perform fine needle tissue aspirates and impression smear preparation (differentiate benign vs. malignant)*
  - *prepare and stain bone marrow specimens*
  - *collect, prepare, and evaluate ear cytology**
  - *collect, prepare, and evaluate canine vaginal smears**[GROUP]
  - *evaluate semen*
  - *understand timing and types of pregnancy testing*
  - *assist with artificial insemination*
- Perform necropsy procedures:
  - *perform a postmortem examination or dissection on non-preserved animal**[GROUP]
  - *collect samples, store and ship according to laboratory protocols**[GROUP]
  - explain how to handle rabies suspects and samples safely*
  - *handle disposal of dead animals*
  - *perform humane euthanasia procedures*

Decision-making abilities:

Appendix A: Recommended Tools And Equipment

CAPITALIZED ITEMS

1. X-ray machine (animal), with attachments (1 per program)
2. Dental unit with accessories (1 per program)
3. Anesthesia machine, Drager (4 per program)
4. Anesthesia machine, Scavinger (4 per program)
5. Operating table, V-top (2 per program)
6. Autoclave, large (2 per program)
7. Microscope with dual head (1 per program)
8. Microscope, binocular (1 per 2 students)
9. Cage unit S/S assembly 8 ft (3 per program)
10. Electrosurgical unit (1 per program)
11. CO2 laser
12. Cardiac respiratory monitor (2 per program)
13. Chemistry analyzer (1 per program)
14. Hematology (CBC) analyzer (1 per program)
15. Vaporizer, isoflurane (3 per program)
16. Vaporizer, halothane (1 per program)
17. Blood pressure monitor (3 per program)

NON-CAPITALIZED ITEMS

1. Sink, stainless steel (minimum 1 per program)
2. Centrifuge, table-top (1 per program)
3. Exam and weigh table (1 per program)
4. Mobile cages with feed pans (2 per program)
5. Ophthalmo/otoscope (1 per program)
6. Skeleton, horse fore limb (4 per program)
7. Skeleton, horse hind limb (4 per program)
8. Skeleton, dog (5 per program)
9. Scales, baby (1 per program)
10. Scales, table (1 per program)
11. Differential counters (5 per program)
12. Hemacytometer (1 per student)
13. Oxygen (2 tanks per program)
14. X-ray processing equipment (1 per program)
15. X-ray cassette container (6 per program)
16. X-ray film viewer (2 per program)
17. Surgical instruments, assorted set (4 set per operating room)
18. Surgical lights (6 per program)
19. Mayo stand (6 per program)
20. Tub table/scrub table (3 per program)
21. Anatomical models, various organs (6 of each model per program)

RECOMMENDED INSTRUCTIONAL AIDS

1. Instructor desk (4 per program)
2. Instructor chair (4 per program)
3. TV monitor, color, 27 in. or larger (2 per program)
4. LCD Projector (2 per program)
5. AV screen (2 per program)
6. DVD player (2 per program)

Appendix B: Curriculum Definitions and Terms

- Course Name – A common name that will be used by all community colleges in reporting students

- Course Abbreviation – A common abbreviation that will be used by all community and junior colleges in reporting students

- Classification – Courses may be classified as the following:
    - Career Certificate Required Course – A required course for all students completing a career certificate.
    - Technical Certificate Required Course – A required course for all students completing a technical certificate.
    - Technical Elective – Elective courses that are available for colleges to offer to students.

- Description – A short narrative that includes the major purpose(s) of the course

- Prerequisites – A listing of any courses that must be taken prior to or on enrollment in the course

- Corequisites – A listing of courses that may be taken while enrolled in the course

- Student Learning Outcomes – A listing of the student outcomes (major concepts and performances) that will enable students to demonstrate mastery of these competencies

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75% of the time allocated to each course. The remaining 25% of each course should be developed at the local district level and may reflect the following:
    - Additional competencies and objectives within the course related to topics not found in the state framework, including activities related to specific needs of industries in the community college district
    - Activities that develop a higher level of mastery on the existing competencies and suggested objectives
    - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed or revised
    - Activities that include integration of academic and career–technical skills and course work, school-to-work transition activities, and articulation of secondary and postsecondary career–technical programs
    - Individualized learning activities, including work-site learning activities, to better prepare individuals in the courses for their chosen occupational areas

- Sequencing of the course within a program is left to the discretion of the local college. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors. Programs that offer an Associate of Applied Science Degree must include all of the required Career Certificate courses, Technical Certificate courses **AND** a minimum of 15 semester hours of General Education Core Courses. The courses in the General Education Core may be spaced out over the entire length of the program so that students complete some academic and Career Technical courses each semester. Each community college specifies the actual courses that are required to meet the General Education Core Requirements for the Associate of Applied Science Degree at their college.

- In order to provide flexibility within the districts, individual courses within a framework may be customized by doing the following:

    - Adding new student learning outcomes to complement the existing competencies and suggested objectives in the program framework
    - Revising or extending the student learning outcomes
    - Adjusting the semester credit hours of a course to be up 1 hour or down 1 hour (after informing the Mississippi Community College Board [MCCB] of the change)

Appendix C: Course Crosswalk

Course Crosswalk Veterinary Technology CIP 51.0808 – Veterinary/ Animal Health Technology/ Technician and Veterinary					
Note: Courses that have been added or changed in the 2017 curriculum are highlighted.					
Existing			**Revised**		
2010 MS Curriculum Framework			**2017 MS Curriculum Framework**		
Course Number	**Course Title**	**Hours**	**Course Number**	**Course Title**	**Hours**
VAT1111	Vet Math	1	VAT1111	Vet Math	1
VAT 1122	Office Procedures/ Vet Terminology	2	VAT 1122	Office Procedures/ Vet Terminology	2
VAT 1212	Animal Restraint and Medication	2	VAT 1212	Animal Restraint and Medication	2
VAT 1314	Animal Anatomy & Physiology	4	VAT 1314	Animal Anatomy & Physiology	4
VAT 1413	Surgical & Hospital Techniques	3	VAT 1413	Surgical & Hospital Techniques	3
VAT 1433	Vet Lab 1	3	VAT 1433	Vet Lab 1	3
VAT 1443	Vet Lab 2	3	VAT 1443	Vet Lab 2	3
VAT 2113	Animal Health Care	3	VAT 2113	Animal Health Care	3
VAT 2122	Board Examination Review	2	VAT 2122	Board Examination Review	2
VAT 2133	Vet Lab 3	3	VAT 2133	Vet Lab 3	3
VAT 2143	Vet Lab 4	3	VAT 2143	Vet Lab 4	3
VAT 2152	Animal Parasites & Disease	2	VAT 2152	Animal Parasites & Disease	2
VAT 2172	Exotic/ Lab Animal Procedures	2	VAT 2172	Exotic/ Lab Animal Procedures	2
VAT 2183	Internship	3-6	VAT 2183	Internship	3
VAT 2192	Veterinary Pharmacology	2	VAT 2192	Veterinary Pharmacology	2
VAT 2223	Large Animal Procedures	3	VAT 2223	Large Animal Procedures	3
VAT 2272	Principles of Imaging	2	VAT 2272	Principles of Imaging	2
VAT 2283	Clinical Pathology	3	VAT 2283	Clinical Pathology	3

Course Crosswalk
Veterinary Technology
CIP 51.0808 – Veterinary/ Animal Health Technology/ Technician and Veterinary

Note: Courses that have been added or changed in the 2017 curriculum are highlighted.

Existing			Revised		
2017 MS Curriculum Framework			**2022 MS Curriculum Framework**		
Course Number	**Course Title**	**Hours**	**Course Number**	**Course Title**	**Hours**
VAT1111	Vet Math	1	VAT1111	Vet Math	1
VAT 1122	Office Procedures/ Vet Terminology	2	VAT 1122	Office Procedures/ Vet Terminology	2
VAT 1212	Animal Restraint and Medication	2	VAT 1212	Animal Restraint and Medication	2
VAT 1314	Animal Anatomy & Physiology	4	VAT 1314	Animal Anatomy & Physiology	4
VAT 1413	Surgical & Hospital Techniques	3	VAT 1413	Surgical & Hospital Techniques	3
VAT 1433	Vet Lab 1	3	VAT 1433	Vet Lab 1	3
VAT 1443	Vet Lab 2	3	VAT 1443	Vet Lab 2	3
VAT 2113	Animal Health Care	3	VAT 2113	Animal Health Care	3
VAT 2122	Board Examination Review	2	VAT 2122	Board Examination Review	2
VAT 2133	Vet Lab 3	3	VAT 2133	Vet Lab 3	3
VAT 2143	Vet Lab 4	3	VAT 2143	Vet Lab 4	3
VAT 2152	Animal Parasites & Disease	2	VAT 2152	Animal Parasites & Disease	2
VAT 2172	Exotic/ Lab Animal Procedures	2	VAT 2172	Exotic/ Lab Animal Procedures	2
VAT 2183	Internship	3	VAT 2183	Internship	3
VAT 2192	Veterinary Pharmacology	2	VAT 2192	Veterinary Pharmacology	2
VAT 2223	Large Animal Procedures	3	VAT 2223	Large Animal Procedures	3
VAT 2272	Principles of Imaging	2	VAT 2272	Principles of Imaging	2
VAT 2283	Clinical Pathology	3	VAT 2283	Clinical Pathology	3