

## 2010 Mississippi Curriculum Framework

### Postsecondary Veterinary Technology

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

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Advisory Committee

Standards in this document are based on information from the following organizations:

### American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List

American Veterinary Medical Association. (2004). *Accreditation policies and procedures of the AVMA Committee on Veterinary Technician Education and Activities (CVTEA)*. Schaumburg, IL: Author.

### Related Academic Standards

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### 21st Century Skills

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## Preface

### Veterinary Assisting Technology Research Synopsis

Veterinary technologists and technicians provide many of the same services to a veterinarian that a nurse provides to a doctor. They have been educated in the care and handling of animals, the basic principles of normal and abnormal life processes, and in routine clinical and laboratory procedures (American Veterinary Medical Association, 2009). Specific job duties vary based on the needs of the employer, but they cannot perform surgery, diagnose, write prescriptions, or engage in any activity prohibited by a state's veterinary practice act (American Veterinary Medical Association, 2009). Both technicians and technologists may be hired in animal hospitals, zoo, private clinics, and aquariums. Their jobs are similar; however, veterinary technologists because of their levels of formal education have more employment options, such as the option to work in research-related positions. Most veterinary assistants and technologists will take the National Veterinary Technician (NVT) exam. In addition, those wishing to work in veterinary research occupations may seek to obtain one of three American Association for Laboratory Animal Science (AALAS) certifications. Veterinary assistants require less formal education than animal technicians and technologists. They train, feed, water, groom, bathe, and exercise animals as well as maintain their cages (US Bureau of Labor Statistics, 2009).

Articles, books, Web sites, and other materials listed at the end of each course were considered during the revision process. The *Journal of Allied Health*, the *Clinical Textbook for Veterinary Technicians*, and *The Merck Veterinary Manual* were especially useful in providing insight into trends and issues in the field. These references are suggested for use by instructors and students during the study of the topics outlined.

Industry advisory team members from colleges throughout the state were asked to give input related to changes to be made to the curriculum framework. Instructors from colleges throughout the state were also asked to give input on changes to be made to the curriculum framework.

#### Needs of the Future Workforce

There were 160,230 veterinary assistants, technologists, and technicians employed in the United States in 2009. The occupations are expected to grow much faster than average over the projection decade (2009–2019) in both the United States, 24% and in Mississippi, 26% (EMSI, 2009). Job opportunities will be good for most program completers. Competition will be greater at zoos and aquariums and in highly desirable locations. Job prospects will be best for those with formal education and certifications (US Bureau of Labor Statistics, 2010).

### Veterinary Assisting Employment Projections and Earnings

Region	2009 Jobs	2019 Jobs	Change	% Change	Current Median Hourly Earnings
Regional Total	1,364	1,725	361	26%	\$10.47
National Total	160,230	198,177	37,947	24%	\$12.10

Source: EMSI Complete Employment - 4th Quarter 2009

### Curriculum

The following national standards were referenced in each course of the curriculum:

- CTB/McGraw-Hill LLC *Tests of Adult Basic Education, forms 7 and 8 Academic Standards*
- *21st Century Skills*
- *Standards and Guidelines for American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

Industry and instructor comments, along with current research, were considered by the curriculum revision team during the revision process; and changes were made as needed and appropriate. Many of the skills and topics noted in the research were already included in the curriculum framework. Specific changes made to the curriculum at the February 26, 2010, online curriculum revision meeting included the following:

- Competencies and objectives were reviewed to ensure accuracy and appropriateness.
- A second year of courses was added to reflect the conversion of the program from a one plus one curriculum to a 2-year curriculum.
- The Recommended Tools and Equipment list was updated.

### Assessment

Students will be assessed using the certification examination offered by the Mississippi Veterinary Medical Board.

### Professional Learning

It is suggested that instructors participate in professional learning related to the following concepts:

- New topics in curriculum and new standards
- Topics where instructors need help
- How to use the program Blackboard site
- Differentiated instruction – To learn more about differentiated instruction, please go to [http://www.paec.org/teacher2teacher/additional\\_subjects.html](http://www.paec.org/teacher2teacher/additional_subjects.html), and click on Differentiated Instruction. Work through this online course, and review the additional resources.

### Articulation

No articulated credit will be offered upon implementation of this curriculum by the college.

## Foreword

As the world economy continues to evolve, businesses and industries must adopt new practices and processes in order to survive. Quality and cost control, work teams and participatory management, and an infusion of technology are transforming the way people work and do business. Employees are now expected to read, write, and communicate effectively; think creatively, solve problems, and make decisions; and interact with each other and the technologies in the workplace. Vocational–technical programs must also adopt these practices in order to provide graduates who can enter and advance in the changing work world.

The curriculum framework in this document reflects these changes in the workplace and a number of other factors that impact local vocational–technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and vocational skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U.S. Department of Education and Labor, provide vocational educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document.

Referenced throughout the courses of the curriculum are the 21st Century Skills, which were developed by the Partnership for 21st Century Skills, a group of business and education organizations concerned about the gap between the knowledge and skills learned in school and those needed in communities and the workplace. A portion of the 21st Century Skills addresses learning skills needed in the 21st century, including information and communication skills, thinking and problem-solving skills, and interpersonal and self-directional skills. The need for these types of skills has been recognized for some time, and the 21st Century Skills are adapted in part from the 1991 report from the U.S. Secretary of Labor’s Commission on Achieving Necessary Skills (SCANS). Another important aspect of learning and working in the 21st century involves technology skills, and the International Society for Technology in Education, developer of the National Educational Technology Standards (NETS), was a strategic partner in the Partnership for 21st Century Skills.

Each postsecondary program of instruction consists of a program description and a suggested sequence of courses that focus on the development of occupational competencies. Each vocational–technical course in this sequence has been written using a common format, which includes the following components:

- Course Name – A common name that will be used by all community and junior 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:
  - Vocational–technical core – A required vocational–technical course for all students

- Area of concentration (AOC) core – A course required in an area of concentration of a cluster of programs
  - Vocational–technical elective – An elective vocational–technical course
  - Related academic course – An academic course that provides academic skills and knowledge directly related to the program area
  - Academic core – An academic course that is required as part of the requirements for an associate’s degree
- Description – A short narrative that includes the major purpose(s) of the course and the recommended number of hours of lecture and laboratory activities to be conducted each week during a regular semester
  - 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
  - Competencies and Suggested Objectives – A listing of the competencies (major concepts and performances) and of the suggested student objectives 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 implement components of the Mississippi Tech Prep initiative, including integration of academic and vocational–technical skills and course work, school-to-work transition activities, and articulation of secondary and postsecondary vocational–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 district. 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 a minimum 15-semester-credit-hour academic core. Specific courses to be taken within this core are to be determined by the local district. Minimum academic core courses are as follows:
  - 3 semester credit hours                      Math/Science Elective
  - 3 semester credit hours                      Written Communications Elective
  - 3 semester credit hours                      Oral Communications Elective
  - 3 semester credit hours                      Humanities/Fine Arts Elective
  - 3 semester credit hours                      Social/Behavioral Science Elective

It is recommended that courses in the academic core be spaced out over the entire length of the program so that students complete some academic and vocational–technical courses each semester. Each community or junior college has the discretion to select the actual courses that are required to meet this academic core requirement.

- In instances in which secondary programs are directly related to community and junior college programs, competencies and suggested objectives from the high school programs are listed as Baseline Competencies. These competencies and objectives reflect skills and knowledge that are directly related to the community and junior college vocational–technical program. In adopting the curriculum framework, each community or junior college is asked to give assurances that:
  - Students who can demonstrate mastery of the baseline competencies do not receive duplicate instruction and
  - Students who cannot demonstrate mastery of this content will be given the opportunity to do so.
- The roles of the baseline competencies are to do the following:
  - Assist community and junior college personnel in developing articulation agreements with high schools.
  - Ensure that all community and junior college courses provide a higher level of instruction than their secondary counterparts.
- The baseline competencies may be taught as special introduction courses for 3 to 6 semester hours of institutional credit that will not count toward associate degree requirements. Community and junior colleges may choose to integrate the baseline competencies into ongoing courses in lieu of offering the introduction courses or may offer the competencies through special projects or individualized instruction methods.
- Technical elective courses have been included to allow community colleges and students to customize programs to meet the needs of industries and employers in their areas.

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

- Adding new competencies and suggested objectives
- Revising or extending the suggested objectives for individual competencies
- Integrating baseline competencies from associated high school programs

- Adjusting the semester credit hours of a course to be up 1 hour or down 1 hour (after informing the State Board for Community and Junior Colleges [SBCJC] of the change)

In addition, the curriculum framework as a whole may be customized by doing the following:

- Resequencing courses within the suggested course sequence
- Developing and adding a new course that meets specific needs of industries and other clients in the community or junior college district (with SBCJC approval)
- Utilizing the technical elective options in many of the curricula to customize programs



## Table of Contents

Acknowledgments.....	2
Preface.....	3
Foreword.....	5
Program Description.....	10
Suggested Course Sequence.....	11
Veterinary Technology Courses.....	13
Veterinary Mathematics.....	13
Vet Lab I.....	17
Office Procedures/Veterinary Terminology.....	21
Vet Lab II.....	24
Animal Restraint and Medication.....	28
Animal Anatomy and Physiology.....	33
Surgical and Hospital Techniques.....	39
Vet Lab Evaluation.....	44
Veterinary Pharmacology.....	47
Animal Health Care.....	52
Board Examination Review.....	56
Vet Lab III.....	59
Vet Lab IV.....	63
Animal Parasites and Diseases.....	67
Clinical Pathology.....	72
Exotic/Lab Animal Procedures.....	77
Internship.....	80
Large Animal Procedures.....	83
Principles of Imaging.....	87
Recommended Tools and Equipment.....	90
Assessment.....	92
Baseline Competencies.....	93
Appendix A: Standards and Guidelines for Veterinary Education and Activities.....	94
Appendix B: Related Academic Standards.....	95
Appendix C: 21 <sup>st</sup> Century Skills.....	96
Appendix D: National Educational Technology Standards for Students.....	98

## Program Description

Program Description: The Veterinary Technology program is a 2-yr program offered by the Agriculture Department of Hinds Community College. This program is accredited by the American Veterinary Medical Association. 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. **Applicants must have attained level 3 math standing prior to admission to the program.** 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.

Graduates would also be prepared for the following:

- (1) Taking the Technology Laboratory Animal Technician certification examination to become an assistant laboratory animal technician
- (2) Taking the Laboratory Animal Technician certification examination after attaining assistant laboratory animal technician certification
- (3) Taking the Laboratory Animal Technologist certification examination after attaining laboratory animal technician certification and completing 4 years of work experience in a laboratory animal facility

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*.

**Campus Locations:** Raymond –601.857.3456  
Internship – Approved practice or veterinary facility

## Suggested Course Sequence Veterinary Technology

### FIRST YEAR

Completed at Hinds Community College – Raymond Campus

3 sch Vet Lab 1 (VAT 1433) 2 sch Office Procedures/Vet Terminology (VAT 1122) 2 sch Animal Restraint and Medication (VAT 1212) 3 sch Surgical & Hospital Techniques (VAT 1413) 3 sch English Composition I 2 sch Orientation <hr style="width: 20%; margin-left: 0;"/> 15 sch	1 sch Vet Math (VAT 1111) 3 sch Vet Lab 2 (VAT 1443) 4 sch Animal Anatomy & Physiology (VAT 1314) 2 sch Veterinary Pharmacology (VAT 2192) 3 sch Speech or Interpersonal Communications 3 sch Principles of Chemistry <hr style="width: 20%; margin-left: 0;"/> 16 sch
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**Note:** Prerequisite for second semester: Successful completion of all previous required VAT courses with a grade of “C” or higher.

### 1st SUMMER

3-6 sch Vet Lab Evaluation - VAT 1453 (6)

This course encompasses an evaluation of students who have successfully completed the first year of the hybrid on-line veterinary technology curriculum. The evaluation of students will include the classes of VAT 1122 Office Procedures/Vet Terminology, VAT 1413 Surgical & Hospital Techniques, and VAT 1433 Vet Lab 1, Vet Animal Anatomy & Physiology, VAT 2192 Pharmacology, VAT 1111 Vet Math and VAT 1443 Vet Lab 2. Students enrolled in the hybrid on-line program will be required to meet with the Hinds Community College faculty and staff on the Raymond campus at a scheduled time during the summer. Students enrolled in the classroom program are not required to meet with the faculty during the summer.

**Prerequisite:** Students must have completed all 1<sup>st</sup> year VAT courses of the Hinds Community College Veterinary Technology Program curriculum with a grade no less than a “C” in all VAT courses.

## SECOND YEAR

Completed at Hinds Community College – Raymond Campus

2 sch	Animal Health Care (VAT 2113)	2 sch	Board Examination Review (VAT 2122)
3 sch	Vet Lab 3 (VAT 2133)	3 sch	Vet Lab 4 (VAT 2143)
3 sch	Clinical Pathology (VAT 2283)	2 sch	Animal Parasites & Disease (VAT 2152)
3 sch	Principles of Imaging (VAT 2272)	2 sch	Exotic/Lab Animal Procedures (VAT 2172)
3 sch	Microbiology	3 sch	Large Animal Procedures (VAT 2223)
1 sch	Microbiology Laboratory	3 sch	Behavioral/Social Science
3 sch	Fine Arts/Humanities		
<hr/>		<hr/>	
18 sch		15 sch	

**Note:** Prerequisite for second year first semester: Successful completion of all previous required VAT courses with a grade of “C” or higher.

Prerequisite for second year second semester: Successful completion of all previous required VAT courses with a grade of “C” or higher.

2<sup>nd</sup> SUMMER

3-6 sch Internship (VAT 2183) (6)

Successful completion all academic courses in the veterinary technology curriculum with an over-all GPA of 2.0 and no less than a “C” in all required VAT courses. Both on-line and classroom Veterinary Technician students will be required to complete 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.

The evaluation of students will include the classes of VAT 2113 Animal Health Care, VAT 2283 Clinical Pathology, VAT 2272 Principles of Imaging, VAT 2133 Lab 3, VAT 2223 Large Animal Procedures, VAT 2152 Animal Parasites & Disease, VAT 2122 Board Examination Review and VAT 2143 Vet Lab 4. Students enrolled in the hybrid on-line program will be required to meet with the Hinds Community College faculty and staff on the Raymond campus at a scheduled time during the summer.

Students enrolled in the classroom program are not required to meet with the faculty during the summer.

**Prerequisite:** Successful completion all academic courses in the veterinary technology curriculum with an over-all GPA of 2.0 and no less than a “C” in all required VAT courses.

COMPLETION AWARD: Associate of Applied Science Degree

Totals Hours 67-76

## Veterinary Technology Courses

**Course Name:** Veterinary Mathematics

**Course Abbreviation:** VAT 1111

**Classification:** Vocational–Technical Core

**Description:** Veterinary Math Calculations provides a consistent approach to computations involved in drug and solution problems. (1 sch: 1-hr lecture)

**Prerequisite:** None

### Competencies and Suggested Objectives

1. Demonstrate the numeration systems, fractions, decimals, percentages, and ratio-proportion problems. <sup>VET2</sup>
  - a. Utilize pretest to assess level of mathematics competencies. <sup>(DOK 1)</sup>
  - b. Identify the two numeration systems. <sup>(DOK 1)</sup>
  - c. Utilize the basic operations of fractions, decimals, and percentages. <sup>(DOK 1)</sup>
  - d. Solve problems using ratio and proportion. <sup>(DOK 1)</sup>
2. Differentiate among the metric, apothecaries', and household systems and their units of measurement. <sup>VET2</sup>
  - a. Perform calculations in the metric system of measurement. <sup>(DOK 1)</sup>
  - b. Convert units of measurement within the metric, apothecaries', and household systems of measurement. <sup>(DOK 1)</sup>
  - c. Demonstrate proficiency with symbols in the metric, apothecaries', and household systems of measurement. <sup>(DOK 1)</sup>
  - d. Utilize the proportion method when changing units of measurement from one system to another. <sup>(DOK 2)</sup>
3. Calculate oral and parenteral dosages. <sup>VET2</sup>
  - a. Use the basic operations of ratio and proportions to solve problems for oral and parenteral medications. <sup>(DOK 1)</sup>
  - b. Demonstrate proficiency in correctly reading medication labels and orders. <sup>(DOK 1)</sup>
  - c. Determine dosage for oral and parenteral medications. <sup>(DOK 2)</sup>
4. Calculate intravenous solution rates and the preparation of solutions. <sup>VET2</sup>
  - a. Demonstrate proficiency when calculating the intravenous rates with varying drop factor sets. <sup>(DOK 2)</sup>
  - b. Determine the correct length of time for intravenous infusions. <sup>(DOK 2)</sup>
  - c. Calculate solutions prepared from powders, crystals, or tablets. <sup>(DOK 2)</sup>
  - d. Demonstrate proficiency when computing solutions prepared from liquid solutes. <sup>(DOK 2)</sup>
  - e. Exhibit proficiency calculating solutions prepared from solutes with concentrations other than 100% concentrations. <sup>(DOK 2)</sup>

## STANDARDS

### *American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

#### VET2 Pharmacy and Pharmacology

##### *Related Academic Standards*

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- M1 Addition of Whole Numbers (no regrouping, regrouping)
- M2 Subtraction of Whole Numbers (no regrouping, regrouping)
- M3 Multiplication of Whole Numbers (no regrouping, regrouping)
- M4 Division of Whole Numbers (no remainder, remainder)
- M5 Decimals (addition, subtraction, multiplication, division)
- M6 Fractions (addition, subtraction, multiplication, division)
- M7 Integers (addition, subtraction, multiplication, division)
- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
- S1 Vowel (short, long)
- S2 Consonant (variant spelling, silent letter)
- S3 Structural Unit (root, suffix)

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## 21st Century Skills

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- CS1 Global Awareness
- CS2 Financial, Economic, Business, and Entrepreneurial Literacy
- CS3 Civic Literacy
- CS7 Critical Thinking and Problem Solving
- CS8 Communication and Collaboration
- CS9 Information Literacy
- CS13 Initiative and Self-Direction
- CS14 Social and Cross-Cultural Skills

## SUGGESTED REFERENCES

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- Tear, M. (Ed.). (2010). *Veterinary technician*. Retrieved February 26, 2010, from <http://www.vettechjournal.com>

Computer Software

Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.



**Course Name:** Vet Lab I

**Course Abbreviation:** VAT 1433

**Classification:** Vocational–Technical Core

**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. (3sch: 6-hr clinical)

**Prerequisites:** Students successfully be on level three math prior to admission to the program

### Competencies and Suggested Objectives

1. Demonstrate proper techniques in restraining domestic animals. <sup>VET3</sup>
  - a. Demonstrate proper restraining techniques for horses. <sup>(DOK 1)</sup>
  - b. Demonstrate proper restraining techniques for cows. <sup>(DOK 1)</sup>
  - c. Demonstrate proper restraining techniques for dogs. <sup>(DOK 1)</sup>
  - d. Demonstrate proper restraining techniques for cats. <sup>(DOK 1)</sup>
  - e. Demonstrate proper restraining techniques for other domestic and exotic animals. <sup>(DOK 1)</sup>
2. Demonstrate techniques of collecting medical history data, performing a physical examination, and completing a medical record. <sup>VET1, VET3</sup>
  - a. Take a medical history. <sup>(DOK 2)</sup>
  - b. Perform a physical examination. <sup>(DOK 2)</sup>
  - c. Record normal body temperature, pulse, and respiration. <sup>(DOK 1)</sup>
  - d. Perform auscultation of lungs and heart. <sup>(DOK 2)</sup>
  - e. Palpate normal body structures. <sup>(DOK 1)</sup>
  - f. Maintain a correct medical record. <sup>(DOK 1)</sup>
3. Use a microscope to perform a fecal examination and identify common parasite ova. <sup>VET6</sup>
  - a. Explain the parts of a microscope and its proper use. <sup>(DOK 1)</sup>
  - b. Perform a direct smear and flotation microscopic fecal examination. <sup>(DOK 1)</sup>
  - c. Perform a flotation fecal examination. <sup>(DOK 1)</sup>
  - d. Perform a gross fecal examination. <sup>(DOK 1)</sup>
  - e. Identify small animal and large animal common intestinal parasites and ova such as roundworms, hookworms, coccidia, tapeworms, HONs, and strongles. <sup>(DOK 1)</sup>
4. Administer medication to both small animals and large animals. <sup>VET2, VET3</sup>
  - a. Perform oral administration of liquid and solid medication. <sup>(DOK 1)</sup>
  - b. Differentiate between various syringe and needle types and sizes. <sup>(DOK 1)</sup>
  - c. Demonstrate parenteral administration of medication, which includes intravenous, intramuscular, subcutaneous, intradermal, and intraperitoneal. <sup>(DOK 2)</sup>
  - d. Demonstrate passage of a stomach tube. <sup>(DOK 1)</sup>
  - e. Demonstrate other methods of administration of medication such as topical and ophthalmologic. <sup>(DOK 1)</sup>

5. Demonstrate special clinical procedures and bandaging techniques. <sup>VET3</sup>
  - a. Demonstrate ophthalmic procedures. <sup>(DOK 2)</sup>
  - b. Demonstrate ear care. <sup>(DOK 2)</sup>
  - c. Demonstrate a pedicure. <sup>(DOK 2)</sup>
  - d. Demonstrate anal sac expression. <sup>(DOK 2)</sup>
  - e. Demonstrate an enema. <sup>(DOK 2)</sup>
  - f. Demonstrate intravenous catheters. <sup>(DOK 2)</sup>
  - g. Demonstrate gastric lavage. <sup>(DOK 2)</sup>
  - h. Demonstrate dental prophylaxis. <sup>(DOK 2)</sup>
  - i. Demonstrate centesis. <sup>(DOK 2)</sup>
  - j. Demonstrate semen collection and artificial insemination. <sup>(DOK 2)</sup>
  - k. Demonstrate wound management. <sup>(DOK 2)</sup>
  - l. Demonstrate bandaging and splint care. <sup>(DOK 2)</sup>
6. Apply surgical procedures, aseptic techniques, and use of surgical instruments. <sup>VET5</sup>
  - a. Demonstrate surgical procedures. <sup>(DOK 1)</sup>
  - b. Demonstrate aseptic techniques. <sup>(DOK 1)</sup>
  - c. Demonstrate use and handling of surgical instruments. <sup>(DOK 1)</sup>
7. Demonstrate surgical preparation procedures for surgical rooms, equipment, patients, and personnel. <sup>VET1, VET5</sup>
  - a. Apply aseptic techniques in the following areas: <sup>(DOK 1)</sup>
    - (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. <sup>VET4, VET5</sup>
  - a. Demonstrate the use of preanesthetics. <sup>(DOK 1)</sup>
  - b. Demonstrate the classical stages of anesthesia administration. <sup>(DOK 2)</sup>
  - c. Demonstrate induction techniques. <sup>(DOK 2)</sup>
  - d. Demonstrate monitoring techniques. <sup>(DOK 2)</sup>
  - e. Demonstrate endotracheal intubation. <sup>(DOK 2)</sup>
  - f. Demonstrate maintenance of anesthesia. <sup>(DOK 2)</sup>
  - g. Demonstrate anesthesia administration techniques used for vital signs. <sup>(DOK 2)</sup>
  - h. Demonstrate anesthesia administration techniques used for reflexes. <sup>(DOK 2)</sup>
  - i. Demonstrate surgical positioning. <sup>(DOK 2)</sup>
  - j. Demonstrate techniques used during recovery period. <sup>(DOK 1)</sup>
  - k. Demonstrate anesthesia administration techniques used for aspiration emergencies. <sup>(DOK 2)</sup>

## STANDARDS

*American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

- VET1 Office and Hospital Procedures, Client Relations, and Communication  
 VET2 Pharmacy and Pharmacology  
 VET3 Nursing

- VET4 Anesthesia  
 VET5 Surgical Nursing  
 VET6 Laboratory Procedures

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*Related Academic Standards*

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- R1 Interpret Graphic Information (forms, maps, reference sources)  
 R2 Words in Context (same and opposite meaning)  
 R3 Recall Information (details, sequence)  
 R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)  
 R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)  
 M1 Addition of Whole Numbers (no regrouping, regrouping)  
 M2 Subtraction of Whole Numbers (no regrouping, regrouping)  
 M3 Multiplication of Whole Numbers (no regrouping, regrouping)  
 M4 Division of Whole Numbers (no remainder, remainder)  
 M5 Decimals (addition, subtraction, multiplication, division)  
 M6 Fractions (addition, subtraction, multiplication, division)  
 M7 Integers (addition, subtraction, multiplication, division)  
 M8 Percents  
 M9 Algebraic Operations  
 A1 Numeration (ordering, place value, scientific notation)  
 A2 Number Theory (ratio, proportion)  
 A3 Data Interpretation (graph, table, chart, diagram)  
 A4 Pre-Algebra and Algebra (equations, inequality)  
 A5 Measurement (money, time, temperature, length, area, volume)  
 A6 Geometry (angles, Pythagorean theory)  
 A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)  
 A8 Estimation (rounding, estimation)  
 S1 Vowel (short, long)  
 S2 Consonant (variant spelling, silent letter)  
 S3 Structural Unit (root, suffix)

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*21st Century Skills*

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- CS1 Global Awareness  
 CS2 Financial, Economic, Business, and Entrepreneurial Literacy  
 CS3 Civic Literacy  
 CS4 Health Literacy  
 CS7 Critical Thinking and Problem Solving  
 CS8 Communication and Collaboration  
 CS9 Information Literacy  
 CS12 Flexibility and Adaptability  
 CS13 Initiative and Self-Direction  
 CS14 Social and Cross-Cultural Skills

CS15 Productivity and Accountability  
CS16 Leadership and Responsibility

## SUGGESTED REFERENCES

### Books

Hendrix, C., & Sirois, M. (2007). *Laboratory procedures for veterinary technicians* (5th ed.). St. Louis, MO: Elsevier.

Lavin, L. M. (2009). *Radiography in veterinary technology* (4th ed.). St. Louis, MO: Elsevier.

Warren, D. M. (2009). *Small animal care and management* (3rd ed.). New York, NY: Delmar Cengage Learning.

### Web Sites

*American veterinary medical association*. (n.d.). Retrieved February 26, 2010, from <http://www.avma.org/>

*Vet med team: Your online education resource*. (n.d.). Retrieved February 26, 2010, from <http://www.vetmedteam.com>

### Journals and Magazines

Tear, M. (Ed.). (2010). *Veterinary technician*. Retrieved February 26, 2010, from <http://www.vettechjournal.com>

### Computer Software

Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.

**Course Name:** Office Procedures/Veterinary Terminology

**Course Abbreviation:** VAT 1122

**Classification:** Vocational–Technical Core

**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. (2 sch: 2-hr lecture)

**Prerequisites:** Students successfully be on level three math prior to admission to the program

### Competencies and Suggested Objectives

1. Exhibit knowledge and competency skills in the following areas of veterinary practice: VET1, VET3
  - a. Care and maintenance of a veterinary facility (DOK 1)
  - b. Administrative duties (DOK 1)
  - c. Use of computers (DOK 1)
  - d. Interpersonal communication (DOK 1)
  - e. Management of stress (DOK 1)
  - f. Interaction with clients (DOK 1)
  - g. Ethics (DOK 1)
  - h. Fee collection, procedures, and payroll (DOK 1)
2. Demonstrate knowledge and explain important concepts of veterinary terminology including the following: VET1, VET3
  - a. Combining vowels and formulating proper medical terms (DOK 1)
  - b. Applying terminology in relation to body planes and positioning (DOK 1)
  - c. Knowledge of proper anatomical terms in relation to body anatomy (DOK 1)
3. Demonstrate knowledge of anatomy, proper terminology, and common procedures performed of the following body systems: VET1, VET3
  - a. Musculoskeletal system (DOK 1)
  - b. Gastrointestinal system (DOK 1)
  - c. Urinary system (DOK 1)
  - d. Cardiovascular system (DOK 1)
  - e. Respiratory system (DOK 1)
  - f. Integumentary system (DOK 1)
  - g. Endocrine system (DOK 1)
  - h. Nervous system (DOK 1)
  - i. Sensory organs (DOK 1)
4. Demonstrate knowledge of anatomy and proper terminology associated with the following: VET1, VET3
  - a. Dogs and cats (DOK 1)
  - b. Horses (DOK 1)
  - c. Cattle (DOK 1)

d. Swine <sup>(BOK 1)</sup>

## STANDARDS

*American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

VET1 Office and Hospital Procedures, Client Relations, and Communication  
 VET3 Nursing

### *Related Academic Standards*

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- M1 Addition of Whole Numbers (no regrouping, regrouping)
- M2 Subtraction of Whole Numbers (no regrouping, regrouping)
- M3 Multiplication of Whole Numbers (no regrouping, regrouping)
- M4 Division of Whole Numbers (no remainder, remainder)
- M5 Decimals (addition, subtraction, multiplication, division)
- M6 Fractions (addition, subtraction, multiplication, division)
- M7 Integers (addition, subtraction, multiplication, division)
- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
- S1 Vowel (short, long)
- S2 Consonant (variant spelling, silent letter)
- S3 Structural Unit (root, suffix)

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## 21st Century Skills

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- CS1 Global Awareness
- CS2 Financial, Economic, Business, and Entrepreneurial Literacy
- CS3 Civic Literacy
- CS4 Health Literacy
- CS7 Critical Thinking and Problem Solving
- CS8 Communication and Collaboration
- CS9 Information Literacy
- CS11 ICT Literacy
- CS12 Flexibility and Adaptability
- CS13 Initiative and Self-Direction
- CS14 Social and Cross-Cultural Skills
- CS15 Productivity and Accountability
- CS16 Leadership and Responsibility

## SUGGESTED REFERENCES

### Books

- Kehn, R. (2004). *Veterinary office practices*. New York, NY: Delmar Cengage Learning.
- Romich, J. (2009). *An illustrated guide to veterinary medical terminology*. New York, NY: Delmar Cengage Learning.

### Web Sites

- American veterinary medical association*. (n.d.). Retrieved February 26, 2010, from <http://www.avma.org/>
- Association of veterinary technician educators*. (n.d.). Retrieved February 26, 2010, from <http://www.avte.net/>

### Journals and Magazines

- Tear, M. (Ed.). (2010). *Veterinary technician*. Retrieved February 26, 2010, from <http://www.vettechjournal.com>

### Computer Software

- Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.

**Course Name:** Vet Lab II

**Course Abbreviation:** VAT 1443

**Classification:** Vocational–Technical Core

**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, preanesthetic, anesthesiology, and anesthetic emergencies. In this clinical course, other topics include the practical application of large animal, exotic, and laboratory animals. (3sch: 6-hr clinical)

**Prerequisites:** Successful completion of first semester’s VAT courses with a grade of “C” or higher

#### Competencies and Suggested Objectives

1. Demonstrate proper techniques in restraining domestic animals. <sup>VET3</sup>
  - a. Demonstrate proper restraining techniques for horses. <sup>(DOK 1)</sup>
  - b. Demonstrate proper restraining techniques for cows. <sup>(DOK 1)</sup>
  - c. Demonstrate proper restraining techniques for dogs. <sup>(DOK 1)</sup>
  - d. Demonstrate proper restraining techniques for cats. <sup>(DOK 1)</sup>
  - e. Demonstrate proper restraining techniques for other domestic and exotic animals. <sup>(DOK 1)</sup>
2. Demonstrate techniques of collecting medical history data, performing a physical examination, and completing a medical record. <sup>VET1, VET3</sup>
  - a. Take a medical history. <sup>(DOK 2)</sup>
  - b. Perform a physical examination. <sup>(DOK 2)</sup>
  - c. Record normal body temperature, pulse, and respiration. <sup>(DOK 1)</sup>
  - d. Perform auscultation of lungs and heart. <sup>(DOK 2)</sup>
  - e. Palpate normal body structures. <sup>(DOK 1)</sup>
  - f. Maintain a correct medical record. <sup>(DOK 1)</sup>
3. Use a microscope to perform a fecal examination and identify common parasite ova. <sup>VET6</sup>
  - a. Explain the parts of a microscope and its proper use. <sup>(DOK 1)</sup>
  - b. Perform a direct smear and flotation microscopic fecal examination. <sup>(DOK 1)</sup>
  - c. Perform a flotation fecal examination. <sup>(DOK 1)</sup>
  - d. Perform a gross fecal examination. <sup>(DOK 1)</sup>
  - e. Identify small animal and large animal common intestinal parasites and ova such as roundworms, hookworms, coccidia, tapeworms, HONs, and strongles. <sup>(DOK 1)</sup>
4. Administer medication to both small animals and large animals. <sup>VET2, VET3</sup>
  - a. Perform oral administration of liquid and solid medication. <sup>(DOK 1)</sup>
  - b. Differentiate between various syringe and needle types and sizes. <sup>(DOK 1)</sup>
  - c. Demonstrate parenteral administration of medication, which includes intravenous, intramuscular, subcutaneous, intradermal, and intraperitoneal. <sup>(DOK 2)</sup>
  - d. Demonstrate passage of a stomach tube. <sup>(DOK 1)</sup>
  - e. Demonstrate other methods of administration of medication such as topical and ophthalmologic. <sup>(DOK 1)</sup>



5. Demonstrate special clinical procedures and bandaging techniques. <sup>VET3</sup>
  - a. Demonstrate ophthalmic procedures. <sup>(DOK 2)</sup>
  - b. Demonstrate ear care. <sup>(DOK 2)</sup>
  - c. Demonstrate a pedicure. <sup>(DOK 2)</sup>
  - d. Demonstrate anal sac expression. <sup>(DOK 2)</sup>
  - e. Demonstrate an enema. <sup>(DOK 2)</sup>
  - f. Demonstrate intravenous catheters. <sup>(DOK 2)</sup>
  - g. Demonstrate gastric lavage. <sup>(DOK 2)</sup>
  - h. Demonstrate dental prophylaxis. <sup>(DOK 2)</sup>
  - i. Demonstrate centesis. <sup>(DOK 2)</sup>
  - j. Demonstrate semen collection and artificial insemination. <sup>(DOK 2)</sup>
  - k. Demonstrate wound management. <sup>(DOK 2)</sup>
  - l. Demonstrate bandaging and splint care. <sup>(DOK 2)</sup>
6. Apply surgical procedures, aseptic techniques, and use of surgical instruments. <sup>VET5</sup>
  - a. Demonstrate surgical procedures. <sup>(DOK 1)</sup>
  - b. Demonstrate aseptic techniques. <sup>(DOK 1)</sup>
  - c. Demonstrate use and handling of surgical instruments. <sup>(DOK 1)</sup>
7. Demonstrate surgical preparation procedures for surgical rooms, equipment, patients, and personnel. <sup>VET1, VET5</sup>
  - a. Apply aseptic techniques in the following areas: <sup>(DOK 1)</sup>
    - (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. <sup>VET4, VET5</sup>
  - a. Demonstrate the use of preanesthetics. <sup>(DOK 1)</sup>
  - b. Demonstrate the classical stages of anesthesia administration. <sup>(DOK 2)</sup>
  - c. Demonstrate induction techniques. <sup>(DOK 2)</sup>
  - d. Demonstrate monitoring techniques. <sup>(DOK 2)</sup>
  - e. Demonstrate endotracheal intubation. <sup>(DOK 2)</sup>
  - f. Demonstrate maintenance of anesthesia. <sup>(DOK 2)</sup>
  - g. Demonstrate anesthesia administration techniques used for vital signs. <sup>(DOK 2)</sup>
  - h. Demonstrate anesthesia administration techniques used for reflexes. <sup>(DOK 2)</sup>
  - i. Demonstrate surgical positioning. <sup>(DOK 2)</sup>
  - j. Demonstrate techniques used during recovery period. <sup>(DOK 1)</sup>
  - k. Demonstrate anesthesia administration techniques used for aspiration emergencies. <sup>(DOK 2)</sup>

## STANDARDS

*American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

- VET1 Office and Hospital Procedures, Client Relations, and Communication  
 VET2 Pharmacy and Pharmacology  
 VET3 Nursing

- VET4 Anesthesia  
 VET5 Surgical Nursing  
 VET6 Laboratory Procedures

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*Related Academic Standards*

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- R1 Interpret Graphic Information (forms, maps, reference sources)  
 R2 Words in Context (same and opposite meaning)  
 R3 Recall Information (details, sequence)  
 R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)  
 R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)  
 M1 Addition of Whole Numbers (no regrouping, regrouping)  
 M2 Subtraction of Whole Numbers (no regrouping, regrouping)  
 M3 Multiplication of Whole Numbers (no regrouping, regrouping)  
 M4 Division of Whole Numbers (no remainder, remainder)  
 M5 Decimals (addition, subtraction, multiplication, division)  
 M6 Fractions (addition, subtraction, multiplication, division)  
 M7 Integers (addition, subtraction, multiplication, division)  
 M8 Percents  
 M9 Algebraic Operations  
 A1 Numeration (ordering, place value, scientific notation)  
 A2 Number Theory (ratio, proportion)  
 A3 Data Interpretation (graph, table, chart, diagram)  
 A4 Pre-Algebra and Algebra (equations, inequality)  
 A5 Measurement (money, time, temperature, length, area, volume)  
 A6 Geometry (angles, Pythagorean theory)  
 A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)  
 A8 Estimation (rounding, estimation)  
 L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)  
 L2 Sentence Formation (fragments, run-on, clarity)  
 L3 Paragraph Development (topic sentence, supporting sentence, sequence)  
 L4 Capitalization (proper noun, titles)  
 L5 Punctuation (comma, semicolon)  
 L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)  
 S1 Vowel (short, long)  
 S2 Consonant (variant spelling, silent letter)  
 S3 Structural Unit (root, suffix)

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*21st Century Skills*

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- CS1 Global Awareness  
 CS2 Financial, Economic, Business, and Entrepreneurial Literacy  
 CS3 Civic Literacy  
 CS4 Health Literacy

- CS7 Critical Thinking and Problem Solving
- CS8 Communication and Collaboration
- CS9 Information Literacy
- CS12 Flexibility and Adaptability
- CS13 Initiative and Self-Direction
- CS14 Social and Cross-Cultural Skills
- CS15 Productivity and Accountability
- CS16 Leadership and Responsibility

## SUGGESTED REFERENCES

### Books

- Hendrix, C., & Sirois, M. (2007). *Laboratory procedures for veterinary technicians* (5th ed.). St. Louis, MO: Elsevier.
- Lavin, L. M. (2009). *Radiography in veterinary technology* (4th ed.). St. Louis, MO: Elsevier.
- Warren, D. M. (2009). *Small animal care and management* (3rd ed.). NY: Delmar Cengage Learning.

### Web Sites

- American veterinary medical association*. (n.d.). Retrieved February 26, 2010, from <http://www.avma.org/>
- Association of veterinary technician educators*. (n.d.). Retrieved February 26, 2010, from <http://www.avte.net/>
- Vet med team: Your online education resource*. (n.d.). Retrieved February 26, 2010, from <http://www.vetmedteam.com>

### Journals and Magazines

- Tear, M. (Ed.). (2010). *Veterinary technician*. Retrieved February 26, 2010, from <http://www.vettechjournal.com>

### Computer Software

- Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.

**Course Name:** Animal Restraint and Medication

**Course Abbreviation:** VAT 1212

**Classification:** Vocational–Technical Core

**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. (3 sch: 2-hr lecture, 3-hr clinical)

**Prerequisite:** None

### Competencies and Suggested Objectives

1. Demonstrate proper techniques in restraining domestic animals. <sup>VET3</sup>
  - a. Demonstrate proper restraining techniques for horses. <sup>(DOK 1)</sup>
  - b. Demonstrate proper restraining techniques for cows. <sup>(DOK 1)</sup>
  - c. Demonstrate proper restraining techniques for dogs. <sup>(DOK 1)</sup>
  - d. Demonstrate proper restraining techniques for cats. <sup>(DOK 1)</sup>
  - e. Demonstrate proper restraining techniques for other domestic and exotic animals. <sup>(DOK 1)</sup>
2. Demonstrate techniques of collecting medical history data, performing a physical examination, and completing a medical record. <sup>VET3</sup>
  - a. Take a medical history. <sup>(DOK 2)</sup>
  - b. Perform a physical examination. <sup>(DOK 2)</sup>
  - c. Record normal body temperature, pulse, and respiration. <sup>(DOK 1)</sup>
  - d. Perform auscultation of lungs and heart. <sup>(DOK 2)</sup>
  - e. Palpate normal body structures. <sup>(DOK 1)</sup>
  - f. Maintain a correct medical record. <sup>(DOK 1)</sup>
3. Use a microscope to perform a fecal examination and identify common parasite ova. <sup>VET6</sup>
  - a. Explain the parts of a microscope and its proper use. <sup>(DOK 1)</sup>
  - b. Perform a direct smear and flotation microscopic fecal examination. <sup>(DOK 1)</sup>
  - c. Perform a flotation fecal examination. <sup>(DOK 1)</sup>
  - d. Perform a gross fecal examination. <sup>(DOK 1)</sup>
  - e. Identify small animal and large animal common intestinal parasites and ova such as roundworms, hookworms, coccidia, tapeworms, HONs, and strongles. <sup>(DOK 1)</sup>
4. Administer medication to both small animals and large animals. <sup>VET2, VET3</sup>
  - a. Perform oral administration of liquid and solid medication. <sup>(DOK 1)</sup>
  - b. Differentiate between various syringe and needle types and sizes. <sup>(DOK 1)</sup>
  - c. Demonstrate parenteral administration of medication, which includes intravenous, intramuscular, subcutaneous, intradermal, and intraperitoneal. <sup>(DOK 2)</sup>
  - d. Demonstrate passage of a stomach tube. <sup>(DOK 1)</sup>
  - e. Demonstrate other methods of administration of medication such as topical and ophthalmologic. <sup>(DOK 1)</sup>

5. Explain vaccines, biologicals, and animal immunity to diseases. <sup>VET2, VET3, VET8</sup>
- Differentiate biologicals such as the following: <sup>(DOK 1)</sup>
    - Vaccines
    - Toxoids
    - Antitoxins
    - Antiserums
    - Bacterins
    - Antigens
  - Explain proper care and use of biologicals. <sup>(DOK 1)</sup>
  - Explain immunization schedules for domestic animals including dog, cat, horse, cow, and others. <sup>(DOK 1)</sup>
  - Explain active and passive immunity. <sup>(DOK 1)</sup>
6. Explain special clinical procedures and bandaging techniques. <sup>VET3, VET8, VET9</sup>
- Explain ophthalmic procedures. <sup>(DOK 1)</sup>
  - Explain ear care. <sup>(DOK 1)</sup>
  - Explain a pedicure. <sup>(DOK 1)</sup>
  - Explain anal sac expression. <sup>(DOK 1)</sup>
  - Explain an enema. <sup>(DOK 1)</sup>
  - Explain intravenous catheters. <sup>(DOK 1)</sup>
  - Explain gastric lavage. <sup>(DOK 1)</sup>
  - Explain dental prophylaxis. <sup>(DOK 1)</sup>
  - Explain centesis. <sup>(DOK 1)</sup>
  - Explain semen collection and artificial insemination. <sup>(DOK 1)</sup>
  - Explain wound management. <sup>(DOK 1)</sup>
  - Explain bandaging and splint care. <sup>(DOK 1)</sup>
7. Demonstrate special clinical procedures and bandaging techniques. <sup>VET3</sup>
- Demonstrate ophthalmic procedures. <sup>(DOK 2)</sup>
  - Demonstrate ear care. <sup>(DOK 2)</sup>
  - Demonstrate a pedicure. <sup>(DOK 2)</sup>
  - Demonstrate anal sac expression. <sup>(DOK 2)</sup>
  - Demonstrate an enema. <sup>(DOK 2)</sup>
  - Demonstrate intravenous catheters. <sup>(DOK 2)</sup>
  - Demonstrate gastric lavage. <sup>(DOK 2)</sup>
  - Demonstrate dental prophylaxis. <sup>(DOK 2)</sup>
  - Demonstrate centesis. <sup>(DOK 2)</sup>
  - Demonstrate semen collection and artificial insemination. <sup>(DOK 2)</sup>
  - Demonstrate wound management. <sup>(DOK 2)</sup>
  - Demonstrate bandaging and splint care. <sup>(DOK 2)</sup>
8. Explain the fundamentals of chemistry as it relates to clinical veterinary technology. <sup>VET2</sup>
- Discuss chemical elements. <sup>(DOK 1)</sup>
  - Explain basic chemical reactions. <sup>(DOK 1)</sup>
  - Discuss chemistry as it relates to veterinary clinical pathology. <sup>(DOK 2)</sup>

## STANDARDS

### *American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

VET2	Pharmacy and Pharmacology
VET3	Nursing
VET6	Laboratory Procedures
VET8	Laboratory Animal Procedures
VET9	Avian, Exotic, and Fish Procedures

### *Related Academic Standards*

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- M1 Addition of Whole Numbers (no regrouping, regrouping)
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- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
- S1 Vowel (short, long)
- S2 Consonant (variant spelling, silent letter)
- S3 Structural Unit (root, suffix)

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## 21st Century Skills

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- CS1 Global Awareness
- CS2 Financial, Economic, Business, and Entrepreneurial Literacy
- CS3 Civic Literacy
- CS4 Health Literacy
- CS7 Critical Thinking and Problem Solving
- CS8 Communication and Collaboration
- CS9 Information Literacy
- CS12 Flexibility and Adaptability
- CS13 Initiative and Self-Direction
- CS14 Social and Cross-Cultural Skills
- CS15 Productivity and Accountability
- CS16 Leadership and Responsibility

## SUGGESTED REFERENCES

### Books

- Crow, S. E. (1997). *Manual of clinical procedures in the dog, cat, and rabbit* (2nd ed.). New York, NY: Lippincott-Raven.
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- Association of veterinary technician educators*. (n.d.). Retrieved February 26, 2010, from <http://www.avte.net/>

### Journals and Magazines

- Tear, M. (Ed.). (2010). *Veterinary technician*. Retrieved February 26, 2010, from <http://www.vettechjournal.com>

### Computer Software

Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.



**Course Name:** Animal Anatomy and Physiology

**Course Abbreviation:** VAT 1314

**Classification:** Vocational–Technical Core

**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. (3 sch: 2-hr lecture, 2-hr lab)

**Prerequisite:** Successful completion of first semester’s VAT courses with a grade of “C” or higher

### Competencies and Suggested Objectives

1. Explain anatomy and physiology, cell structure, and cell physiology. <sup>VET3</sup>
  - a. Define anatomy and physiology. <sup>(DOK 1)</sup>
  - b. Define the following terms: dissection, gross anatomy, and microscopy. <sup>(DOK 1)</sup>
  - c. Explain the importance of anatomy and physiology in veterinarian practice. <sup>(DOK 1)</sup>
  - d. Differentiate between the various branches of anatomy and physiology using web resources. <sup>(DOK 1)</sup>
  - e. Explain the different systems and major structures of the dog. <sup>(DOK 1)</sup>
  - f. Explain references concerning planes. <sup>(DOK 1)</sup>
  - g. Differentiate between the following descriptive terms: <sup>(DOK 1)</sup>
    - (1) Cranial
    - (2) Caudal
    - (3) Dorsal
    - (4) Ventral
    - (5) Medial
    - (6) Lateral
    - (7) Deep
    - (8) Superficial
    - (9) Palmar
    - (10) Plantar
    - (11) Prone
    - (12) Supine
  - h. Differentiate between proximal and distal in relation to structures. <sup>(DOK 1)</sup>
  - i. Discuss the general plane of the body including cavities and regions. <sup>(DOK 1)</sup>
  - j. Explain the cavities of the body and the structures associated with each. <sup>(DOK 1)</sup>
  - k. Explain each region of the body. <sup>(DOK 1)</sup>
  - l. Explain paired and unpaired structures. <sup>(DOK 1)</sup>
  - m. Differentiate between various parts of the cell. <sup>(DOK 1)</sup>
  - n. Describe the components of the cell including cell membrane, nucleus, and cytoplasm. <sup>(DOK 1)</sup>
  - o. Explain the four primary types of tissue in the body. <sup>(DOK 1)</sup>
  - p. Explain homeostasis of the body. <sup>(DOK 1)</sup>

2. Explain the components and physiology of the skeletal system and its articulation and the muscles and their actions. <sup>VET3</sup>
- a. Identify the bones of the canine body. <sup>(DOK 1)</sup>
  - b. Describe the composition of a long bone. <sup>(DOK 1)</sup>
  - c. Describe a Haversian canal. <sup>(DOK 1)</sup>
  - d. Explain the relationship of the following: <sup>(DOK 2)</sup>
    - (1) Osteocytes
    - (2) Osteoblast
    - (3) Osteoclast
    - (4) Periosteum
    - (5) Endosteum
  - e. Distinguish between different types of fractures. <sup>(DOK 1)</sup>
  - f. Describe the healing forces of bones. <sup>(DOK 1)</sup>
  - g. List different functions of bone. <sup>(DOK 1)</sup>
  - h. Classify bones. <sup>(DOK 1)</sup>
  - i. Explain the following pathological conditions: <sup>(DOK 1)</sup>
    - (1) Tuberculosis
    - (2) Osteomyelitis
    - (3) Osteoma
    - (4) Chondroma
    - (5) Rickets
    - (6) Osteomalacia
    - (7) Achondroplasia
  - j. Classify the joint as to the following: <sup>(DOK 2)</sup>
    - (1) Sutures
    - (2) Gomphosis
    - (3) Symphyses
    - (4) Diarthrodial
  - k. Describe the function and the structure of the synovial joints. <sup>(DOK 1)</sup>
  - l. Describe the movements of a synovial joint. <sup>(DOK 1)</sup>
  - m. Explain the pathological disorder of joints. <sup>(DOK 1)</sup>
  - n. Describe the three types of muscle by action, placement, anatomy, and physiology. <sup>(DOK 1)</sup>
  - o. Explain muscle attachments. <sup>(DOK 1)</sup>
  - p. Distinguish between different functional groups of muscles. <sup>(DOK 1)</sup>
  - q. Identify the major muscles of the canine, pectoral, cutaneous, abdominal, pelvic, and hind limbs. <sup>(DOK 1)</sup>
  - r. Explain the actions of muscles during respiration. <sup>(DOK 1)</sup>
  - s. Compare the structure of the smooth, cardiac, and skeletal muscles. <sup>(DOK 1)</sup>
  - t. Define the following: <sup>(DOK 1)</sup>
    - (1) Motor unit
    - (2) Neurotransmitters
    - (3) Hypertrophy
    - (4) Synaptic cleft
  - u. Describe a muscle contraction. <sup>(DOK 1)</sup>
  - v. Describe factors that influence muscle contractions. <sup>(DOK 1)</sup>

- w. Describe the effects of medications as related to muscles. <sup>(DOK 2)</sup>
3. Describe the anatomy and physiology of the specialized nervous system and its interrelationship with the entire body. <sup>VET3</sup>
- a. Describe the basic origination of the nervous system including: <sup>(DOK 1)</sup>
    - (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 canine. <sup>(DOK 1)</sup>
  - c. Distinguish functional differences between the cerebellum, cerebrum, brain stem, and spinal cord. <sup>(DOK 1)</sup>
  - d. List the different meninges. <sup>(DOK 1)</sup>
  - e. Recognize the major cranial and spinal nerves. <sup>(DOK 1)</sup>
  - f. Distinguish between the sympathetic and the parasympathetic nervous system. <sup>(DOK 1)</sup>
  - g. Describe a nerve impulse. <sup>(DOK 1)</sup>
  - h. Explain a reflex. <sup>(DOK 1)</sup>
  - i. List ways the autonomic nervous system can maintain a relatively stable internal body environment. <sup>(DOK 1)</sup>
  - j. Describe effects of anesthetics as related to the nervous system. <sup>(DOK 1)</sup>
4. Explain mechanics of the circulatory and respiratory system, the pathways of transport, and physiology. <sup>VET3</sup>
- a. Describe the heart by its shape, size, covering, structure, and function of each chamber. <sup>(DOK 1)</sup>
  - b. Trace the blood through the vessels and in and out of the heart. <sup>(DOK 1)</sup>
  - c. Compare the vessels of the circulatory system: <sup>(DOK 1)</sup>
    - (1) Arteries
    - (2) Veins
    - (3) Capillaries
    - (4) Lymphic vessels
  - d. Describe the aorta and its branches. <sup>(DOK 1)</sup>
  - e. Describe the different circulatory systems of the body. <sup>(DOK 1)</sup>
  - f. Explain how the circulatory system, lymphatic system, and respiratory system interrelate. <sup>(DOK 2)</sup>
  - g. Describe a cardiac cycle. <sup>(DOK 1)</sup>
  - h. Explain where and how a pacemaker works. <sup>(DOK 1)</sup>
  - i. Explain the condition of shock. <sup>(DOK 1)</sup>
  - j. Trace air from the external environment to the erythrocytes. <sup>(DOK 1)</sup>
  - k. Distinguish between the different lobes of the lungs. <sup>(DOK 1)</sup>
  - l. Describe the actions of the alveoli. <sup>(DOK 1)</sup>
  - m. List different respiration rates of the following: <sup>(DOK 1)</sup>
    - (1) Dog
    - (2) Cow
    - (3) Cat
    - (4) Horse
5. Explain the process, function, pathway, and accessory organs of the digestive system. <sup>VET3</sup>

- a. Describe the anatomy of the teeth. <sup>(DOK 1)</sup>
- b. Trace food completely through the digestive system. <sup>(DOK 1)</sup>
- c. Explain the relationship between the pharynx and mouth to larynx and esophagus during normal respiration and swallowing. <sup>(DOK 1)</sup>
- d. Distinguish between different digestive processes in each area of the digestive tract.
- e. Explain enzymes that act on food. <sup>(DOK 1)</sup>
- f. Describe how food is absorbed and used by the body. <sup>(DOK 1)</sup>
- g. Explain the relationship between the circulatory, lymphatic, and digestive systems. <sup>(DOK 2)</sup>
- h. List accessory glands of the digestive system. <sup>(DOK 1)</sup>
6. Explain the urinary and male reproductive system. <sup>VET3</sup>
  - a. Describe the structure of the following: <sup>(DOK 1)</sup>
    - (1) Kidneys
    - (2) Ureters
    - (3) Bladder
    - (4) Urethra
  - b. Explain the process of micturition. <sup>(DOK 1)</sup>
  - c. Distinguish between alkalosis and acidosis. <sup>(DOK 1)</sup>
  - d. Describe testis, epididymis, scrotum, penis, and the blood supply to the male reproductive system. <sup>(DOK 1)</sup>
  - e. Explain the secondary sex characteristics of the male and female. <sup>(DOK 1)</sup>
  - f. Describe the accessory sex glands and their effect on the body. <sup>(DOK 1)</sup>
  - g. Explain the movement of the sperm and fertilization. <sup>(DOK 1)</sup>
7. Explain the female reproductive system. <sup>VET3</sup>
  - a. Describe the female anatomy. <sup>(DOK 1)</sup>
  - b. Explain ovulation and estrous cycle. <sup>(DOK 1)</sup>
  - c. Explain the functions of the hormones of the female reproductive system. <sup>(DOK 1)</sup>
8. Describe the anatomy and physiology of pregnancy, parturition, mammary glands, lactation, and the endocrine system. <sup>VET3</sup>
  - a. Explain the physiology of pregnancy and parturition in domestic animals. <sup>(DOK 1)</sup>
  - b. Describe the anatomy of the mammary gland. <sup>(DOK 1)</sup>
  - c. Explain the physiology of lactation. <sup>(DOK 1)</sup>
  - d. Explain the hormones of the endocrine system. <sup>(DOK 1)</sup>

## STANDARDS

*American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

VET3 Nursing

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*Related Academic Standards*


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- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- M1 Addition of Whole Numbers (no regrouping, regrouping)
- M2 Subtraction of Whole Numbers (no regrouping, regrouping)
- M3 Multiplication of Whole Numbers (no regrouping, regrouping)
- M4 Division of Whole Numbers (no remainder, remainder)
- M5 Decimals (addition, subtraction, multiplication, division)
- M6 Fractions (addition, subtraction, multiplication, division)
- M7 Integers (addition, subtraction, multiplication, division)
- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
- S1 Vowel (short, long)
- S2 Consonant (variant spelling, silent letter)
- S3 Structural Unit (root, suffix)

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*21st Century Skills*


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- CS1 Global Awareness
- CS2 Financial, Economic, Business, and Entrepreneurial Literacy
- CS3 Civic Literacy
- CS4 Health Literacy
- CS7 Critical Thinking and Problem Solving
- CS8 Communication and Collaboration
- CS9 Information Literacy
- CS12 Flexibility and Adaptability

- CS13 Initiative and Self-Direction  
 CS14 Social and Cross-Cultural Skills  
 CS15 Productivity and Accountability  
 CS16 Leadership and Responsibility

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### Journals and Magazines

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### Computer Software

Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.

**Course Name:** Surgical and Hospital Techniques

**Course Abbreviation:** VAT 1413

**Classification:** Vocational–Technical Core

**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. (3 sch: 3-hr lecture)

**Prerequisite:** Successful completion of first semester’s VAT courses with a grade of “C” or higher

### Competencies and Suggested Objectives

1. Discuss surgical procedures, aseptic techniques, infectious organisms and their control, and surgical instruments. <sup>VET5</sup>
  - a. Discuss surgical procedures and their history. <sup>(DOK 1)</sup>
  - b. Describe the principles of asepsis including the following: <sup>(DOK 1)</sup>
    - (1) Microbial world
    - (2) Diseases and immunity
    - (3) Control of microbes
    - (4) Aseptic techniques
  - c. Identify common surgical instruments and their use. <sup>(DOK 1)</sup>
2. Apply surgical procedures, aseptic techniques, and use of surgical instruments. <sup>VET5</sup>
  - a. Demonstrate surgical procedures. <sup>(DOK 1)</sup>
  - b. Demonstrate aseptic techniques. <sup>(DOK 1)</sup>
  - c. Demonstrate use and handling of surgical instruments. <sup>(DOK 1)</sup>
3. Demonstrate surgical preparation procedures for surgical rooms, equipment, patients, and personnel. <sup>VET1, VET5</sup>
  - a. Apply aseptic techniques in the following areas: <sup>(DOK 1)</sup>
    - (1) Surgical area
    - (2) Surgical equipment and instruments
    - (3) Patient preparation
    - (4) Personnel
4. Identify types of sutures and needles used in surgical procedures and the introduction into the preanesthetic period. <sup>VET4, VET5</sup>
  - a. Identify nonabsorbable and absorbable suture types. <sup>(DOK 1)</sup>
  - b. Identify suture size. <sup>(DOK 1)</sup>
  - c. Identify needle types by size, shape, and use. <sup>(DOK 1)</sup>
  - d. Identify suture patterns. <sup>(DOK 1)</sup>
  - e. Explain the use of preanesthetics. <sup>(DOK 1)</sup>
  - f. Demonstrate the use of preanesthetics. <sup>(DOK 1)</sup>
5. Explain anesthesia, induction and monitoring techniques, endotracheal intubation, vital signs, and reflexes. <sup>VET4, VET5</sup>
  - a. Explain the classical stages of anesthesia. <sup>(DOK 1)</sup>
  - b. Explain induction techniques. <sup>(DOK 1)</sup>

- c. Explain monitoring techniques. <sup>(DOK 1)</sup>
  - d. Explain endotracheal intubation. <sup>(DOK 1)</sup>
  - e. Explain maintenance of anesthesia. <sup>(DOK 1)</sup>
  - f. Explain vital signs. <sup>(DOK 1)</sup>
  - g. Explain reflexes. <sup>(DOK 1)</sup>
  - h. Explain surgical positioning. <sup>(DOK 1)</sup>
  - i. Explain recovery period. <sup>(DOK 1)</sup>
  - j. Explain aspiration emergencies. <sup>(DOK 1)</sup>
6. Demonstrate anesthesia administration techniques used for induction and monitoring, endotracheal intubation, vital signs, and reflexes. <sup>VET4, VET5</sup>
- a. Demonstrate the classical stages of anesthesia administration. <sup>(DOK 2)</sup>
  - b. Demonstrate induction techniques. <sup>(DOK 2)</sup>
  - c. Demonstrate monitoring techniques. <sup>(DOK 2)</sup>
  - d. Demonstrate endotracheal intubation. <sup>(DOK 2)</sup>
  - e. Demonstrate maintenance of anesthesia. <sup>(DOK 2)</sup>
  - f. Demonstrate anesthesia administration techniques used for vital signs. <sup>(DOK 2)</sup>
  - g. Demonstrate anesthesia administration techniques used for reflexes. <sup>(DOK 2)</sup>
  - h. Demonstrate surgical positioning. <sup>(DOK 2)</sup>
  - i. Demonstrate techniques used during recovery period. <sup>(DOK 1)</sup>
  - j. Demonstrate anesthesia administration techniques used for aspiration emergencies. <sup>(DOK 2)</sup>
7. Explain the types of anesthetic drugs. <sup>VET4, VET5</sup>
- a. Explain anesthetic barbiturates. <sup>(DOK 1)</sup>
  - b. Explain anesthetic cycloheximines. <sup>(DOK 1)</sup>
  - c. Explain inhalation anesthetics such as the following: <sup>(DOK 1)</sup>
    - (1) Ether
    - (2) Nitrous oxide
    - (3) Chlorofluorocarbons
      - (a) Halothane
      - (b) Isoflurane
      - (c) Methoxyflurane
  - d. Explain agents used in postanesthetic period. <sup>(DOK 1)</sup>
8. Demonstrate administration of barbiturate, cycloheximine, and inhalation anesthetic drugs. <sup>VET4, VET5</sup>
- a. Demonstrate administering barbiturate anesthetics. <sup>(DOK 2)</sup>
  - b. Demonstrate administering cycloheximine anesthetics. <sup>(DOK 2)</sup>
  - c. Demonstrate administering inhalation anesthetics such as the following: <sup>(DOK 2)</sup>
    - (1) Ether
    - (2) Nitrous oxide
    - (3) Chlorofluorocarbons
      - (a) Halothane
      - (b) Isoflurane
      - (c) Methoxyflurane
  - d. Demonstrate administering agents used in postanesthetic period. <sup>(DOK 2)</sup>
9. Explain types, care, and use of anesthetic equipment. <sup>VET4, VET5</sup>
- a. Explain equipment needed for anesthesia. <sup>(DOK 1)</sup>



- b. Identify endotracheal tubes. (DOK 1)
- c. Explain an anesthesia machine. (DOK 1)
- d. Explain anesthetic breathing systems. (DOK 1)
- e. Explain vaporizers. (DOK 1)
- f. Explain carrier gas flow rates. (DOK 1)
- g. Explain care of equipment. (DOK 1)
- 10. Demonstrate use and care of anesthetic equipment. VET4, VET5
  - a. Demonstrate use of equipment needed for anesthesia. (DOK 1)
  - b. Demonstrate use of an anesthesia machine. (DOK 1)
  - c. Demonstrate use of anesthetic breathing systems. (DOK 1)
  - d. Demonstrate use of vaporizers. (DOK 1)
  - e. Demonstrate use of carrier gas flow rates. (DOK 2)
  - f. Demonstrate care of equipment. (DOK 1)
- 11. Identify safety measures, anesthetic problems, emergencies, and special techniques involving anesthesia. VET1, VET4, VET5
  - a. Utilize workplace safety involving anesthetic gasses and other drugs. (DOK 1)
  - b. Identify anesthetic problems and emergencies including the following: (DOK 1)
    - (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: (DOK 1)
    - (1) Local analgesia
    - (2) Neuromuscular blocking agents
  - d. Demonstrate special anesthetic techniques including the following: (DOK 2)
    - (1) Local analgesia
    - (2) Neuromuscular blocking agents

## STANDARDS

*American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

- VET1 Office and Hospital Procedures, Client Relations, and Communication
- VET4 Anesthesia
- VET5 Surgical Nursing

### *Related Academic Standards*

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)

- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
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- M8 Percents
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- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
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- S1 Vowel (short, long)
- S2 Consonant (variant spelling, silent letter)
- S3 Structural Unit (root, suffix)

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### *21st Century Skills*

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- CS1 Global Awareness
- CS2 Financial, Economic, Business, and Entrepreneurial Literacy
- CS3 Civic Literacy
- CS4 Health Literacy
- CS7 Critical Thinking and Problem Solving
- CS8 Communication and Collaboration
- CS9 Information Literacy
- CS12 Flexibility and Adaptability
- CS13 Initiative and Self-Direction
- CS14 Social and Cross-Cultural Skills
- CS15 Productivity and Accountability
- CS16 Leadership and Responsibility

## SUGGESTED REFERENCES

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- Tear, M. (Ed.). (2010). *Veterinary technician*. Retrieved February 26, 2010, from <http://www.vettechjournal.com>

### Computer Software

- Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.

**Course Name:** Vet Lab Evaluation

**Course Abbreviation:** VAT 1513

**Classification:** Vocational–Technical Core

**Description:** This course encompasses an evaluation of students who have successfully completed the first year of the hybrid on-line veterinary technology curriculum. The evaluation of students will include the classes of VAT 1122 Office Procedures/Vet Terminology, VAT 1413 Surgical & Hospital Techniques, and VAT 1113 Vet Lab 1, Vet Animal Anatomy & Physiology, VAT 2112 Pharmacology, VAT 1111 Vet Math and VAT 1123 Vet Lab 2. Students enrolled in the hybrid on-line program will be required to meet with the Hinds Community College faculty and staff on the Raymond campus at a scheduled time during the summer. Students enrolled in the classroom program are not required to meet with the faculty during the summer.

(3 sch: 9-hr clinical)

**Prerequisite:** Successful completion of all academic courses in the veterinary technology curriculum in the first year with an overall GPA of 2.0 and no less than a “C” in all required VAT courses.

#### Competencies and Suggested Objectives

1. Apply practical skills and technical information while in a supervised professional work setting. (VET1, VET2, VET3, VET4, VET5, VET6, VET7, VET8, VET9)
  - a. Apply the scholastic knowledge acquired to practical applications in a veterinary practice. (DOK 2)
  - b. Perform duties as assigned by the veterinarian. (DOK 2)
  - c. Cooperate with the supervising veterinarian. (DOK 1)
  - d. Arrive at work on time, and willingly work the assigned days and hours. (DOK 1)
  - e. Appear for work appropriately dressed. (DOK 1)
  - f. Perform duties in a timely manner. (DOK 1)
  - g. Cooperate with other employees. (DOK 1)
  - h. Perform new duties and new techniques as they arise. (DOK 2)
  - i. Demonstrate initiative. (DOK 1)
  - j. Notify the veterinarian of unexpected absences or tardiness as soon as possible. (DOK 1)
  - k. Use knowledge base to the best of ability when required to do so. (DOK 2)
  - l. Treat all clients in a courteous manner. (DOK 1)
  - m. Ask for assistance and guidance if unsure about duties, laboratory tests, or other activities. (DOK 2)
  - n. Treat the veterinarian with respect at all times. (DOK 1)
  - o. Keep all client information confidential. (DOK 1)
  - p. Give the veterinarian honest, accurate information at all times. (DOK 1)

## STANDARDS

### *American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

VET1	Office and Hospital Procedures, Client Relations, and Communication
VET2	Pharmacy and Pharmacology
VET3	Nursing
VET4	Anesthesia
VET5	Surgical Nursing
VET6	Laboratory Procedures
VET7	Imaging
VET8	Laboratory Animal Procedures
VET9	Avian, Exotic, and Fish Procedures

### *Related Academic Standards*

R1	Interpret Graphic Information (forms, maps, reference sources)
R2	Words in Context (same and opposite meaning)
R3	Recall Information (details, sequence)
R4	Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
R5	Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1	Addition of Whole Numbers (no regrouping, regrouping)
M2	Subtraction of Whole Numbers (no regrouping, regrouping)
M3	Multiplication of Whole Numbers (no regrouping, regrouping)
M4	Division of Whole Numbers (no remainder, remainder)
M5	Decimals (addition, subtraction, multiplication, division)
M6	Fractions (addition, subtraction, multiplication, division)
M7	Integers (addition, subtraction, multiplication, division)
M8	Percents
M9	Algebraic Operations
A1	Numeration (ordering, place value, scientific notation)
A2	Number Theory (ratio, proportion)
A3	Data Interpretation (graph, table, chart, diagram)
A4	Pre-Algebra and Algebra (equations, inequality)
A5	Measurement (money, time, temperature, length, area, volume)
A6	Geometry (angles, Pythagorean theory)
A7	Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8	Estimation (rounding, estimation)
L1	Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
L2	Sentence Formation (fragments, run-on, clarity)
L3	Paragraph Development (topic sentence, supporting sentence, sequence)
L4	Capitalization (proper noun, titles)
L5	Punctuation (comma, semicolon)
L6	Writing Conventions (quotation marks, apostrophe, parts of a letter)
S1	Vowel (short, long)

- S2 Consonant (variant spelling, silent letter)  
 S3 Structural Unit (root, suffix)

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### *21st Century Skills*

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- CS1 Global Awareness  
 CS2 Financial, Economic, Business, and Entrepreneurial Literacy  
 CS3 Civic Literacy  
 CS4 Health Literacy  
 CS7 Critical Thinking and Problem Solving  
 CS8 Communication and Collaboration  
 CS9 Information Literacy  
 CS12 Flexibility and Adaptability  
 CS13 Initiative and Self-Direction  
 CS14 Social and Cross-Cultural Skills  
 CS15 Productivity and Accountability  
 CS16 Leadership and Responsibility

### **SUGGESTED REFERENCES**

#### Books

- Kahn, C. M., & Line, S. (Eds.). (2005). *The Merck veterinary manual* (9th ed.). Hoboken, NJ: John Wiley and Sons.
- Muir, W. W., & Hubbell, J. A. (2007). *Handbook of veterinary anesthesia* (4th ed.). St. Louis, MO: Mosby.
- Plumb, D. C. (2008). *Veterinary drug handbook* (6th ed.). Ames: Wiley-Blackwell.

#### Videos

- The American Veterinary Medical Association (Producer). (n.d.). *Veterinary medicine-- Dedicated to service* [Videotape]. (Available from the American Veterinary Medical Association, 1931 North Meacham Road – Suite 100, Schaumburg, IL 60173)

#### Web Sites

- National association of veterinary technicians in America*. (n.d.). Retrieved February 26, 2010, from <http://www.navta.net>
- The American veterinary medical association*. (n.d.). Retrieved February 26, 2010, from <http://www.avma.org>

**Course Name:** Veterinary Pharmacology

**Course Abbreviation:** VAT 2192

**Classification:** Vocational–Technical Core

**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. (2 sch: 2-hr lecture)

**Prerequisites:** Successful completion of first year VAT courses with a grade of “C” or higher

### Competencies and Suggested Objectives

1. Explain the brief history of veterinary pharmacology. <sup>VET1, VET2</sup>
  - a. Explain the evolution of pharmacology in veterinary medicine. <sup>(DOK 1)</sup>
  - b. Demonstrate knowledge of common terminology in veterinary pharmacology. <sup>(DOK 1)</sup>
  - c. Explain the various agencies and their involvement pharmacology. <sup>(DOK 1)</sup>
2. Explain veterinary drug development, procurement, and control. <sup>VET2</sup>
  - a. Explain the stages of veterinary drug development: <sup>(DOK 1)</sup>
    - (1) Overview of drug development
    - (2) Safety and effectiveness evaluation
    - (3) Toxicity evaluation
  - b. Demonstrate an understanding of procedures of acquiring veterinary drugs. <sup>(DOK 2)</sup>
  - c. Explain the difference of lethal and effective dose and how therapeutic index is determined. <sup>(DOK 1)</sup>
  - d. Explain the systems oriented screening of drugs and evaluation of long-term effects. <sup>(DOK 1)</sup>
  - e. Explain the various aspects of drug marketing. <sup>(DOK 1)</sup>
3. Explain the therapeutic range and routes of administration of drugs. <sup>VET2, VET3</sup>
  - a. Explain the safety of therapeutic range. <sup>(DOK 1)</sup>
  - b. Explain the various routes of administration and dose forms of the following: <sup>(DOK 1)</sup>
    - (1) Injectable drugs
    - (2) Inhalation drugs
    - (3) Topical medications
    - (4) Oral drugs
  - c. Explain the concepts of drug doses, dosage intervals, and safety zones. <sup>(DOK 1)</sup>
4. Demonstrate knowledge of pharmacokinetics. <sup>VET2</sup>
  - a. Explain the different forms of drug movement such as the following: <sup>(DOK 1)</sup>
    - (1) Passive diffusion
    - (2) Facilitated diffusion
    - (3) Active transport
    - (4) Pinocytosis and phagocytosis
5. Explain the following pharmacology chemical concepts: <sup>VET2</sup>
  - a. pH related to ionization of drugs <sup>(DOK 1)</sup>
  - b. Ion trapping <sup>(DOK 1)</sup>
  - c. Oral versus parenteral drug forms <sup>(DOK 1)</sup>
  - d. Patient factors <sup>(DOK 1)</sup>

- e. Membrane permeability <sup>(DOK 1)</sup>
  - f. Tissue perfusion <sup>(DOK 1)</sup>
  - g. Protein binding <sup>(DOK 1)</sup>
  - h. Volume of distribution <sup>(DOK 1)</sup>
  - i. Explain how drugs change in the body, how they work, and how they leave the body. <sup>(DOK 1)</sup>
6. Demonstrate knowledge of the concepts of veterinary drug use and prescribing drugs. <sup>VET2, VET3</sup>
    - a. Identify differences between drug standards, package inserts, and drug reference books. <sup>(DOK 1)</sup>
    - b. Explain dispensing drugs versus prescribing drugs. <sup>(DOK 1)</sup>
  7. Demonstrate knowledge of systems of measurement in veterinary pharmacology. <sup>VET2, VET3</sup>
    - a. Explain difference between household system and metric system. <sup>(DOK 1)</sup>
    - b. Demonstrate ability to convert the following: <sup>(DOK 2)</sup>
      - (1) Dose in mg
      - (2) Dose in tablets
      - (3) Dose in ml
      - (4) Dose in units
    - c. Perform the following: <sup>(DOK 1)</sup>
      - (1) Calculating total dose
      - (2) Calculate number of doses
      - (3) Percent concentration calculations
  8. Demonstrate knowledge of pharmaceuticals and their relationship to animal physiology. <sup>VET2, VET3</sup>
    - a. Identify the generic names of drugs used in the following body systems: <sup>(DOK 1)</sup>
      - (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: <sup>(DOK 1)</sup>
      - (1) Antimicrobials
      - (2) Antiparasitics
      - (3) Anti-inflammatory and pain reducing drugs
    - c. Recognize indications for the use of the following: <sup>(DOK 1)</sup>
      - (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: <sup>VET2</sup>
    - a. Types <sup>(DOK 1)</sup>
    - b. Usage <sup>(DOK 1)</sup>
    - c. Effects <sup>(DOK 1)</sup>
  10. Explain the following characteristics of herbal therapeutics used in veterinary medicine: <sup>VET2</sup>
    - a. Types <sup>(DOK 1)</sup>



- b. Usage <sup>(DOK 1)</sup>  
c. Effects <sup>(DOK 1)</sup>

## STANDARDS

### *American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

- VET1 Office and Hospital Procedures, Client Relations, and Communication  
VET2 Pharmacy and Pharmacology  
VET3 Nursing

### *Related Academic Standards*

- R1 Interpret Graphic Information (forms, maps, reference sources)  
R2 Words in Context (same and opposite meaning)  
R3 Recall Information (details, sequence)  
R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)  
R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)  
M1 Addition of Whole Numbers (no regrouping, regrouping)  
M2 Subtraction of Whole Numbers (no regrouping, regrouping)  
M3 Multiplication of Whole Numbers (no regrouping, regrouping)  
M4 Division of Whole Numbers (no remainder, remainder)  
M5 Decimals (addition, subtraction, multiplication, division)  
M6 Fractions (addition, subtraction, multiplication, division)  
M7 Integers (addition, subtraction, multiplication, division)  
M8 Percents  
M9 Algebraic Operations  
A1 Numeration (ordering, place value, scientific notation)  
A2 Number Theory (ratio, proportion)  
A3 Data Interpretation (graph, table, chart, diagram)  
A4 Pre-Algebra and Algebra (equations, inequality)  
A5 Measurement (money, time, temperature, length, area, volume)  
A6 Geometry (angles, Pythagorean theory)  
A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)  
A8 Estimation (rounding, estimation)  
L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)  
L2 Sentence Formation (fragments, run-on, clarity)  
L3 Paragraph Development (topic sentence, supporting sentence, sequence)  
L4 Capitalization (proper noun, titles)  
L5 Punctuation (comma, semicolon)  
L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)  
S1 Vowel (short, long)  
S2 Consonant (variant spelling, silent letter)  
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### *21st Century Skills*

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- CS1 Global Awareness
- CS2 Financial, Economic, Business, and Entrepreneurial Literacy
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- CS7 Critical Thinking and Problem Solving
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- CS9 Information Literacy
- CS12 Flexibility and Adaptability
- CS13 Initiative and Self-Direction
- CS14 Social and Cross-Cultural Skills
- CS15 Productivity and Accountability
- CS16 Leadership and Responsibility

### SUGGESTED REFERENCES

#### Books

- Curren, A. M. (2009). *Math for meds: Dosage and solutions* (10th ed.). Clifton Park, NY: Thomson Delmar.
- Kahn, C. M., & Line, S. (Eds.). (2005). *The Merck veterinary manual* (9th ed.). Hoboken, NJ: John Wiley and Sons.
- Plumb, D. C. (2008). *Veterinary drug handbook* (6th ed.). Ames: Wiley-Blackwell.
- Romich, J. A. (2010). *Fundamentals of pharmacology for veterinary technicians* (2nd ed.). Clifton Park, NY: Thomson Delmar Learning.

#### Web Sites

- American veterinary medical association*. (n.d.). Retrieved February 26, 2010, from <http://www.avma.org/>
- Association of veterinary technician educators*. (n.d.). Retrieved February 26, 2010, from <http://www.avte.net/>
- Vet med team: Your online education resource*. (n.d.). Retrieved February 26, 2010, from <http://www.vetmedteam.com>

### Journals and Magazines

Tear, M. (Ed.). (2010). *Veterinary technician*. Retrieved February 26, 2010, from <http://www.vettechjournal.com>.

### Computer Software

Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.

**Course Name:** Animal Health Care

**Course Abbreviation:** VAT 2113

**Classification:** Vocational–Technical Core

**Description:** General health care of small animals including nutrition, emergency care, first aid, animal hygiene, disease detection, and small animal sanitation (3sch: 3-hr lecture)

**Prerequisites:** Successful completion of first year VAT courses with a grade of “C” or higher

### Competencies and Suggested Objectives

1. Demonstrate knowledge of procedures, anatomy, physiology, and concepts of small animal procedures. VET1, VET2, VET3, VET4, VET5, VET9
  - a. Demonstrate knowledge of procedures, anatomy, physiology, and concepts of small animal procedures in dentistry including the following: (DOK 2)
    - (1) Embryology and formation of teeth
    - (2) Clinical situations and disease of gums, oral cavity, and teeth
    - (3) Performing dental prophylaxis
    - (4) Dental charting
    - (5) Anesthesia, analgesia, and postsurgical support
  - b. Demonstrate knowledge of procedures, anatomy, physiology, and concepts of small animal procedures in small animal nutrition including the following: (DOK 2)
    - (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. Demonstrate knowledge of procedures, anatomy, physiology, and concepts of small animal procedures in emergency and first aid situations including the following: (DOK 2)
    - (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. Demonstrate knowledge of procedures, anatomy, physiology, and concepts of small animal procedures in vaccines including the following: (DOK 2)
    - (1) Definition and types of vaccines

- |                           |
|---------------------------|
| (2) Issues of vaccine use |
| (3) Vaccine protocols     |
| (4) Vaccine examples      |

## STANDARDS

### *American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

- VET1 Office and Hospital Procedures, Client Relations, and Communication  
 VET2 Pharmacy and Pharmacology  
 VET3 Nursing  
 VET4 Anesthesia  
 VET5 Surgical Nursing  
 VET9 Avian, Exotic, and Fish Procedures

### *Related Academic Standards*

- R1 Interpret Graphic Information (forms, maps, reference sources)  
 R2 Words in Context (same and opposite meaning)  
 R3 Recall Information (details, sequence)  
 R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)  
 R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)  
 M1 Addition of Whole Numbers (no regrouping, regrouping)  
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 M5 Decimals (addition, subtraction, multiplication, division)  
 M6 Fractions (addition, subtraction, multiplication, division)  
 M7 Integers (addition, subtraction, multiplication, division)  
 M8 Percents  
 M9 Algebraic Operations  
 A1 Numeration (ordering, place value, scientific notation)  
 A2 Number Theory (ratio, proportion)  
 A3 Data Interpretation (graph, table, chart, diagram)  
 A4 Pre-Algebra and Algebra (equations, inequality)  
 A5 Measurement (money, time, temperature, length, area, volume)  
 A6 Geometry (angles, Pythagorean theory)  
 A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)  
 A8 Estimation (rounding, estimation)  
 L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)  
 L2 Sentence Formation (fragments, run-on, clarity)  
 L3 Paragraph Development (topic sentence, supporting sentence, sequence)  
 L4 Capitalization (proper noun, titles)  
 L5 Punctuation (comma, semicolon)

- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
- S1 Vowel (short, long)
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### *21st Century Skills*

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- CS1 Global Awareness
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- CS8 Communication and Collaboration
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- CS15 Productivity and Accountability
- CS16 Leadership and Responsibility

### **SUGGESTED REFERENCES**

#### Books

- Colville, T. P., & Bassert, J. M. (2008). *Clinical anatomy and physiology for veterinary technicians* (2nd ed.). St. Louis, MO: Mosby.
- Warren, D. M. (2009). *Small animal care and management* (3rd ed.). New York, NY: Delmar Cengage Learning.

#### Web Sites

- American veterinary medical association*. (n.d.). Retrieved February 26, 2010, from <http://www.avma.org/>
- Association of veterinary technician educators*. (n.d.). Retrieved February 26, 2010, from <http://www.avte.net/>
- Vet med team: Your online education resource*. (n.d.). Retrieved February 26, 2010, from <http://www.vetmedteam.com>

### Journals and Magazines

Tear, M. (Ed.). (2010). *Veterinary technician*. Retrieved February 26, 2010, from <http://www.vettechjournal.com>

### Computer Software

Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.

**Course Name:** Board Examination Review

**Course Abbreviation:** VAT 2122

**Classification:** Vocational–Technical Core

**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. (2 sch: 2-hr lecture)

**Prerequisites:** Successful completion of first, second, and third semester VAT courses with a grade of “C” or higher

### Competencies and Suggested Objectives

1. Complete sample board examinations. (DOK 1)
2. Review the competencies and objectives from the following: VET1, VET2, VET3, VET4, VET5, VET6, VET7, VET8, VET9
  - a. Animal Restraint and Medication (DOK 1)
  - b. Surgical and Hospital Techniques (DOK 1)
  - c. Vet Labs (DOK 1)
  - d. Animal Anatomy and Physiology (DOK 1)
  - e. Pharmacology (DOK 1)
  - f. Vet Math (DOK 1)
  - g. Animal Health Care (DOK 1)
  - h. Clinical Pathology (DOK 1)
  - i. Principles of Imaging (DOK 1)
  - j. Large Animal Procedures (DOK 1)
  - k. Exotic/Lab Animal Procedures (DOK 1)
  - l. Animal Parasites and Disease (DOK 1)
3. Review effective techniques for taking objective type examinations. (DOK 1)

### STANDARDS

*American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

- |      |   |
|------|---|
| VET1 | Office and Hospital Procedures, Client Relations, and Communication |
| VET2 | Pharmacy and Pharmacology   |
| VET3 | Nursing   |
| VET4 | Anesthesia  |
| VET5 | Surgical Nursing  |
| VET6 | Laboratory Procedures   |
| VET7 | Imaging   |
| VET8 | Laboratory Animal Procedures  |
| VET9 | Avian, Exotic, and Fish Procedures                                  |



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*Related Academic Standards*


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- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
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- M8 Percents
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- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
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- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
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*21st Century Skills*


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- CS1 Global Awareness
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- CS9 Information Literacy
- CS12 Flexibility and Adaptability

- CS13 Initiative and Self-Direction
- CS14 Social and Cross-Cultural Skills
- CS15 Productivity and Accountability
- CS16 Leadership and Responsibility

## SUGGESTED REFERENCES

### Books

Tighe, M., & Brown, M. (2007). *Mosby's comprehensive review for veterinary technicians* (3rd ed.). St. Louis, MO: Mosby.

### Web Sites

*American veterinary medical association*. (n.d.). Retrieved February 26, 2010, from <http://www.avma.org/>

*Association of veterinary technician educators*. (n.d.). Retrieved February 26, 2010, from <http://www.avte.net/>

*Vet med team: Your online education resource*. (n.d.). Retrieved February 26, 2010, from <http://www.vetmedteam.com>

### Journals and Magazines

Tear, M. (Ed.). (2010). *Veterinary technician*. Retrieved February 26, 2010, from <http://www.vettechjournal.com>

### Computer Software

Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.

**Course Name:** Vet Lab III

**Course Abbreviation:** VAT 2133

**Classification:** Vocational–Technical Core

**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, preanesthetic, anesthesiology, and anesthetic emergencies. Vet Lab III includes the practical application of large animal, exotic, and laboratory animals. (3 sch: 6-hr clinical)

**Prerequisites:** Successful completion of first year VAT courses with a grade of “C” or higher

### Competencies and Suggested Objectives

1. Demonstrate proper techniques in restraining domestic animals. <sup>VET3</sup>
  - a. Demonstrate proper restraining techniques for horses. <sup>(DOK 1)</sup>
  - b. Demonstrate proper restraining techniques for cows. <sup>(DOK 1)</sup>
  - c. Demonstrate proper restraining techniques for dogs. <sup>(DOK 1)</sup>
  - d. Demonstrate proper restraining techniques for cats. <sup>(DOK 1)</sup>
  - e. Demonstrate proper restraining techniques for other domestic and exotic animals. <sup>(DOK 1)</sup>
2. Demonstrate techniques of collecting medical history data, performing a physical examination, and completing a medical record. <sup>VET1, VET3</sup>
  - a. Take a medical history. <sup>(DOK 2)</sup>
  - b. Perform a physical examination. <sup>(DOK 2)</sup>
  - c. Record normal body temperature, pulse, and respiration. <sup>(DOK 1)</sup>
  - d. Perform auscultation of lungs and heart. <sup>(DOK 2)</sup>
  - e. Palpate normal body structures. <sup>(DOK 1)</sup>
  - f. Maintain a correct medical record. <sup>(DOK 1)</sup>
3. Use a microscope to perform a fecal examination and identify common parasite ova. <sup>VET6</sup>
  - a. Explain the parts of a microscope and its proper use. <sup>(DOK 1)</sup>
  - b. Perform a direct smear and flotation microscopic fecal examination. <sup>(DOK 1)</sup>
  - c. Perform a flotation fecal examination. <sup>(DOK 1)</sup>
  - d. Perform a gross fecal examination. <sup>(DOK 1)</sup>
  - e. Identify small animal and large animal common intestinal parasites and ova such as roundworms, hookworms, coccidia, tapeworms, HONs, and strongles. <sup>(DOK 1)</sup>
4. Administer medication to both small animals and large animals. <sup>VET2, VET3</sup>
  - a. Perform oral administration of liquid and solid medication. <sup>(DOK 1)</sup>
  - b. Differentiate between various syringe and needle types and sizes. <sup>(DOK 1)</sup>
  - c. Demonstrate parenteral administration of medication, which includes intravenous, intramuscular, subcutaneous, intradermal, and intraperitoneal. <sup>(DOK 2)</sup>
  - d. Demonstrate passage of a stomach tube. <sup>(DOK 1)</sup>
  - e. Demonstrate other methods of administration of medication such as topical and ophthalmologic. <sup>(DOK 1)</sup>

5. Demonstrate special clinical procedures and bandaging techniques. <sup>VET3</sup>
  - a. Demonstrate ophthalmic procedures. <sup>(DOK 2)</sup>
  - b. Demonstrate ear care. <sup>(DOK 2)</sup>
  - c. Demonstrate a pedicure. <sup>(DOK 2)</sup>
  - d. Demonstrate anal sac expression. <sup>(DOK 2)</sup>
  - e. Demonstrate an enema. <sup>(DOK 2)</sup>
  - f. Demonstrate intravenous catheters. <sup>(DOK 2)</sup>
  - g. Demonstrate gastric lavage. <sup>(DOK 2)</sup>
  - h. Demonstrate dental prophylaxis. <sup>(DOK 2)</sup>
  - i. Demonstrate centesis. <sup>(DOK 2)</sup>
  - j. Demonstrate semen collection and artificial insemination. <sup>(DOK 2)</sup>
  - k. Demonstrate wound management. <sup>(DOK 2)</sup>
  - l. Demonstrate bandaging and splint care. <sup>(DOK 2)</sup>
6. Apply surgical procedures, aseptic techniques, and use of surgical instruments. <sup>VET5</sup>
  - a. Demonstrate surgical procedures. <sup>(DOK 1)</sup>
  - b. Demonstrate aseptic techniques. <sup>(DOK 1)</sup>
  - c. Demonstrate use and handling of surgical instruments. <sup>(DOK 1)</sup>
7. Demonstrate surgical preparation procedures for surgical rooms, equipment, patients, and personnel. <sup>VET1, VET5</sup>
  - a. Apply aseptic techniques in the following areas: <sup>(DOK 1)</sup>
    - (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. <sup>VET4, VET5</sup>
  - a. Demonstrate the use of preanesthetics. <sup>(DOK 1)</sup>
  - b. Demonstrate the classical stages of anesthesia administration. <sup>(DOK 2)</sup>
  - c. Demonstrate induction techniques. <sup>(DOK 2)</sup>
  - d. Demonstrate monitoring techniques. <sup>(DOK 2)</sup>
  - e. Demonstrate endotracheal intubation. <sup>(DOK 2)</sup>
  - f. Demonstrate maintenance of anesthesia. <sup>(DOK 2)</sup>
  - g. Demonstrate anesthesia administration techniques used for vital signs. <sup>(DOK 2)</sup>
  - h. Demonstrate anesthesia administration techniques used for reflexes. <sup>(DOK 2)</sup>
  - i. Demonstrate surgical positioning. <sup>(DOK 2)</sup>
  - j. Demonstrate techniques used during recovery period. <sup>(DOK 1)</sup>
  - k. Demonstrate anesthesia administration techniques used for aspiration emergencies. <sup>(DOK 2)</sup>

## STANDARDS

*American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

- VET1 Office and Hospital Procedures, Client Relations, and Communication  
 VET2 Pharmacy and Pharmacology  
 VET3 Nursing

- VET4 Anesthesia  
 VET5 Surgical Nursing  
 VET6 Laboratory Procedures

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*Related Academic Standards*

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- R1 Interpret Graphic Information (forms, maps, reference sources)  
 R2 Words in Context (same and opposite meaning)  
 R3 Recall Information (details, sequence)  
 R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)  
 R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)  
 M1 Addition of Whole Numbers (no regrouping, regrouping)  
 M2 Subtraction of Whole Numbers (no regrouping, regrouping)  
 M3 Multiplication of Whole Numbers (no regrouping, regrouping)  
 M4 Division of Whole Numbers (no remainder, remainder)  
 M5 Decimals (addition, subtraction, multiplication, division)  
 M6 Fractions (addition, subtraction, multiplication, division)  
 M7 Integers (addition, subtraction, multiplication, division)  
 M8 Percents  
 M9 Algebraic Operations  
 A1 Numeration (ordering, place value, scientific notation)  
 A2 Number Theory (ratio, proportion)  
 A3 Data Interpretation (graph, table, chart, diagram)  
 A4 Pre-Algebra and Algebra (equations, inequality)  
 A5 Measurement (money, time, temperature, length, area, volume)  
 A6 Geometry (angles, Pythagorean theory)  
 A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)  
 A8 Estimation (rounding, estimation)  
 L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)  
 L2 Sentence Formation (fragments, run-on, clarity)  
 L3 Paragraph Development (topic sentence, supporting sentence, sequence)  
 L4 Capitalization (proper noun, titles)  
 L5 Punctuation (comma, semicolon)  
 L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)  
 S1 Vowel (short, long)  
 S2 Consonant (variant spelling, silent letter)  
 S3 Structural Unit (root, suffix)

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*21st Century Skills*

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- CS1 Global Awareness  
 CS2 Financial, Economic, Business, and Entrepreneurial Literacy  
 CS3 Civic Literacy  
 CS4 Health Literacy

- CS7 Critical Thinking and Problem Solving
- CS8 Communication and Collaboration
- CS9 Information Literacy
- CS12 Flexibility and Adaptability
- CS13 Initiative and Self-Direction
- CS14 Social and Cross-Cultural Skills
- CS15 Productivity and Accountability
- CS16 Leadership and Responsibility

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- Warren, D. M. (2009). *Small animal care and management* (3rd ed.). New York, NY: Delmar Cengage Learning.

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- Association of veterinary technician educators*. (n.d.). Retrieved February 26, 2010, from <http://www.avte.net/>
- Vet med team: Your online education resource*. (n.d.). Retrieved February 26, 2010, from <http://www.vetmedteam.com>

### Journals and Magazines

- Tear, M. (Ed.). (2010). *Veterinary technician*. Retrieved February 26, 2010, from <http://www.vettechjournal.com>

### Computer Software

- Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.

**Course Name:** Vet Lab IV

**Course Abbreviation:** VAT 2143

**Classification:** Vocational–Technical Core

**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, preanesthetic, anesthesiology, and anesthetic emergencies. Includes practical application of large animal, exotic, and laboratory animals (3 sch: 6-hr clinical)

**Prerequisites:** Successful completion of first, second, and third semester VAT courses with a grade of “C” or higher

#### Competencies and Suggested Objectives

1. Demonstrate proper techniques in restraining domestic animals. <sup>VET3</sup>
  - a. Demonstrate proper restraining techniques for horses. <sup>(DOK 1)</sup>
  - b. Demonstrate proper restraining techniques for cows. <sup>(DOK 1)</sup>
  - c. Demonstrate proper restraining techniques for dogs. <sup>(DOK 1)</sup>
  - d. Demonstrate proper restraining techniques for cats. <sup>(DOK 1)</sup>
  - e. Demonstrate proper restraining techniques for other domestic and exotic animals. <sup>(DOK 1)</sup>
2. Demonstrate techniques of collecting medical history data, performing a physical examination, and completing a medical record. <sup>VET1, VET3</sup>
  - a. Take a medical history. <sup>(DOK 2)</sup>
  - b. Perform a physical examination. <sup>(DOK 2)</sup>
  - c. Record normal body temperature, pulse, and respiration. <sup>(DOK 1)</sup>
  - d. Perform auscultation of lungs and heart. <sup>(DOK 2)</sup>
  - e. Palpate normal body structures. <sup>(DOK 1)</sup>
  - f. Maintain a correct medical record. <sup>(DOK 1)</sup>
3. Use a microscope to perform a fecal examination and identify common parasite ova. <sup>VET6</sup>
  - a. Explain the parts of a microscope and its proper use. <sup>(DOK 1)</sup>
  - b. Perform a direct smear and flotation microscopic fecal examination. <sup>(DOK 1)</sup>
  - c. Perform a flotation fecal examination. <sup>(DOK 1)</sup>
  - d. Perform a gross fecal examination. <sup>(DOK 1)</sup>
  - e. Identify small animal and large animal common intestinal parasites and ova such as roundworms, hookworms, coccidia, tapeworms, HONs, and strongles. <sup>(DOK 1)</sup>
4. Administer medication to both small animals and large animals. <sup>VET2, VET3</sup>
  - a. Perform oral administration of liquid and solid medication. <sup>(DOK 1)</sup>
  - b. Differentiate between various syringe and needle types and sizes. <sup>(DOK 1)</sup>
  - c. Demonstrate parenteral administration of medication, which includes intravenous, intramuscular, subcutaneous, intradermal, and intraperitoneal. <sup>(DOK 2)</sup>
  - d. Demonstrate passage of a stomach tube. <sup>(DOK 1)</sup>
  - e. Demonstrate other methods of administration of medication such as topical and

- ophthalmologic. <sup>(DOK 1)</sup>
5. Demonstrate special clinical procedures and bandaging techniques. <sup>VET3</sup>
    - a. Demonstrate ophthalmic procedures. <sup>(DOK 2)</sup>
    - b. Demonstrate ear care. <sup>(DOK 2)</sup>
    - c. Demonstrate a pedicure. <sup>(DOK 2)</sup>
    - d. Demonstrate anal sac expression. <sup>(DOK 2)</sup>
    - e. Demonstrate an enema. <sup>(DOK 2)</sup>
    - f. Demonstrate intravenous catheters. <sup>(DOK 2)</sup>
    - g. Demonstrate gastric lavage. <sup>(DOK 2)</sup>
    - h. Demonstrate dental prophylaxis. <sup>(DOK 2)</sup>
    - i. Demonstrate centesis. <sup>(DOK 2)</sup>
    - j. Demonstrate semen collection and artificial insemination. <sup>(DOK 2)</sup>
    - k. Demonstrate wound management. <sup>(DOK 2)</sup>
    - l. Demonstrate bandaging and splint care. <sup>(DOK 2)</sup>
  6. Apply surgical procedures, aseptic techniques, and use of surgical instruments. <sup>VET5</sup>
    - a. Demonstrate surgical procedures. <sup>(DOK 1)</sup>
    - b. Demonstrate aseptic techniques. <sup>(DOK 1)</sup>
    - c. Demonstrate use and handling of surgical instruments. <sup>(DOK 1)</sup>
  7. Demonstrate surgical preparation procedures for surgical rooms, equipment, patients, and personnel. <sup>VET1, VET5</sup>
    - a. Apply aseptic techniques in the following areas: <sup>(DOK 1)</sup>
      - (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. <sup>VET4, VET5</sup>
    - a. Demonstrate the use of preanesthetics. <sup>(DOK 1)</sup>
    - b. Demonstrate the classical stages of anesthesia administration. <sup>(DOK 2)</sup>
    - c. Demonstrate induction techniques. <sup>(DOK 2)</sup>
    - d. Demonstrate monitoring techniques. <sup>(DOK 2)</sup>
    - e. Demonstrate endotracheal intubation. <sup>(DOK 2)</sup>
    - f. Demonstrate maintenance of anesthesia. <sup>(DOK 2)</sup>
    - g. Demonstrate anesthesia administration techniques used for vital signs. <sup>(DOK 2)</sup>
    - h. Demonstrate anesthesia administration techniques used for reflexes. <sup>(DOK 2)</sup>
    - i. Demonstrate surgical positioning. <sup>(DOK 2)</sup>
    - j. Demonstrate techniques used during recovery period. <sup>(DOK 1)</sup>
    - k. Demonstrate anesthesia administration techniques used for aspiration emergencies. <sup>(DOK 2)</sup>

## STANDARDS

*American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

VET1 Office and Hospital Procedures, Client Relations, and Communication

VET2 Pharmacy and Pharmacology



VET3	Nursing
VET4	Anesthesia
VET5	Surgical Nursing
VET6	Laboratory Procedures
VET7	Imaging
VET8	Laboratory Animal Procedures
VET9	Avian, Exotic, and Fish Procedures

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### *Related Academic Standards*

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- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
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*21st Century Skills*

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- CS1 Global Awareness
- CS2 Financial, Economic, Business, and Entrepreneurial Literacy
- CS3 Civic Literacy
- CS4 Health Literacy
- CS7 Critical Thinking and Problem Solving
- CS8 Communication and Collaboration
- CS9 Information Literacy
- CS12 Flexibility and Adaptability
- CS13 Initiative and Self-Direction
- CS14 Social and Cross-Cultural Skills
- CS15 Productivity and Accountability
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*Association of veterinary technician educators.* (n.d.). Retrieved February 26, 2010, from <http://www.avte.net/>

*Vet med team: Your online education resource.* (n.d.). Retrieved February 26, 2010, from <http://www.vetmedteam.com>

### Journals and Magazines

Tear, M. (Ed.). (2010). *Veterinary technician.* Retrieved February 26, 2010, from <http://www.vettechjournal.com>

### Computer Software

Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.

**Course Name:** Animal Parasites and Diseases

**Course Abbreviation:** VAT 2152

**Classification:** Vocational–Technical Core

**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. (2 sch: 2-hr lecture)

**Prerequisite:** Successful completion of first, second, and third semester VAT courses with a grade of “C” or higher

<b>Competencies and Suggested Objectives</b>	
1.	Explain disease terminology, cause, spread, effects, bodily defenses, and prevention. <sup>VET3</sup>
a.	Define disease terminology. <sup>(DOK 1)</sup>
b.	Discuss the history of disease. <sup>(DOK 1)</sup>
c.	Describe classifications of diseases. <sup>(DOK 1)</sup>
d.	Identify duration of diseases. <sup>(DOK 1)</sup>
e.	Identify systems that disease affects. <sup>(DOK 1)</sup>
f.	Discuss infectious and noninfectious causes of diseases. <sup>(DOK 1)</sup>
g.	Identify classifications of microorganisms that cause disease conditions. <sup>(DOK 1)</sup>
h.	Discuss transmission of diseases. <sup>(DOK 1)</sup>
i.	Explain how diseases enter the body. <sup>(DOK 1)</sup>
j.	Explain how the body protects itself from diseases. <sup>(DOK 1)</sup>
k.	Discuss prevention of diseases. <sup>(DOK 1)</sup>
l.	Discuss common disinfectants. <sup>(DOK 1)</sup>
2.	Explain small animal internal parasites. <sup>VET2, VET3</sup>
a.	Describe life cycle, disease production, prevention, and control of the following small animal internal parasites: <sup>(DOK 1)</sup>
(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. <sup>VET2, VET3</sup>
a.	Describe life cycle, disease production, prevention, and control of the following small animal external parasites: <sup>(DOK 1)</sup>
(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. VET2, VET3
- a. Describe life cycle, disease production, prevention, and control of the following large animal external and internal parasites: (DOK 1)
- (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 anthelmintics. (DOK 1)
5. Explain common small animal viral, bacterial, fungal, and other diseases. VET2, VET3, VET6
- a. Describe the etiology, method of spread, pathology, tests to aid in diagnosing, symptoms, prevention, and control of the following small animal diseases: (DOK 1)
- (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
6. Explain common viral, bacterial, mycotic, and lameness diseases of the equine species. VET2, VET3, VET6
- a. Describe the etiology, method of spread, pathology, and tests to aid in diagnosing, symptoms, prevention, and control of the following common equine diseases: (DOK 1)
- (1) Viral diseases such as encephalomyelitis, equine infectious anemia (EIA), influenza, and viral rhinopneumonitis
- (2) Bacterial diseases such as anthrax, glanders, strangles, leptospirosis, tetanus, and navel ill
- (3) Fungal infections
- (4) Lameness
- (5) Colic
7. Explain common viral, bacterial, protozoal, and metabolic diseases of cattle and swine. VET2, VET3, VET6
- a. Describe the etiology, method of spread, pathology, tests to aid in diagnosing, symptoms, prevention, and control of the following cattle and swine diseases: (DOK 1)
- (1) Viral diseases such as foot and mouth diseases, vesicular stomatitis, infectious

- bovine rhinotracheitis (IBR), bovine viral diarrhea (BVD), bluetongue, pinkeye, and shipping fever
- (2) Bacterial diseases such as anthrax, clostridial diseases, brucellosis, leptospirosis, tuberculosis, and mastitis
  - (3) Protozoal diseases such as anaplasmosis
  - (4) Metabolic diseases such as milk fever, grass tetany, bloat, and acetoneuria
  - (5) Common viral swine diseases such as hog cholera, transmissible gastroenteritis (TGE), pseudorabies, swine influenza, and viral pig pneumonia (VPP)
  - (6) Common bacterial swine diseases such as erysipelas, leptospirosis, and pneumonia
  - (7) Protozoal disease such as eperythrozoonosis
8. Explain the source, symptoms, prevention, and control of common poisons that affect farm animals. VET2, VET3, VET6
- a. Describe the source of, pathology symptoms, prevention, and control of the most common poisons of farm animals and pets to include the following: (DOK 1)
    - (1) Arsenic
    - (2) Lead
    - (3) Strychnine
    - (4) Cyanide
    - (5) Salt
    - (6) Nitrate
    - (7) Organophosphorus
    - (8) Chlorinated hydrocarbons
    - (9) Warfarin
    - (10) Common poisonous plants

## STANDARDS

*American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

- VET2 Pharmacy and Pharmacology  
 VET3 Nursing  
 VET6 Laboratory Procedures

### *Related Academic Standards*

- R1 Interpret Graphic Information (forms, maps, reference sources)  
 R2 Words in Context (same and opposite meaning)  
 R3 Recall Information (details, sequence)  
 R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)  
 R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)  
 L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)  
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### *21st Century Skills*

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- CS1 Global Awareness
- CS2 Financial, Economic, Business, and Entrepreneurial Literacy
- CS3 Civic Literacy
- CS4 Health Literacy
- CS7 Critical Thinking and Problem Solving
- CS8 Communication and Collaboration
- CS12 Flexibility and Adaptability
- CS13 Initiative and Self-Direction
- CS14 Social and Cross-Cultural Skills
- CS15 Productivity and Accountability
- CS16 Leadership and Responsibility

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- Kahn, C. M., & Line, S. (Eds.). (2005). *The Merck veterinary manual* (9th ed.). Hoboken, NJ: John Wiley and Sons.
- McCurnin, D. M., & Bassert, J. M. (Eds.). (2010). *Clinical textbook for veterinary technicians* (7th ed.). Philadelphia, PA: W. B. Saunders.

#### Web Sites

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- Association of veterinary technician educators.* (n.d.). Retrieved February 26, 2010, from <http://www.avte.net/>
- Vet med team: Your online education resource.* (n.d.). Retrieved February 26, 2010, from <http://www.vetmedteam.com>

### Journals and Magazines

Patterson, J. S. (2003, Summer). West Nile virus. *The NAVTA Journal*, 43–45.

Tear, M. (Ed.). (2010). *Veterinary technician*. Retrieved February 26, 2010, from <http://www.vettechjournal.com>

### Computer Software

Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.

**Course Name:** Clinical Pathology

**Course Abbreviation:** VAT 2283

**Classification:** Vocational–Technical Core

**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. (3 sch: 3-hr lecture)

**Prerequisite:** Successful completion of first year VAT courses with a grade of “C” or higher

<b>Competencies and Suggested Objectives</b>	
1.	Explain basic microscopy. <sup>VET6</sup>
a.	Identify the types of microscopes. (DOK 1)
b.	Discuss the function of microscopes. (DOK 1)
c.	Identify the parts of a microscope. (DOK 1)
d.	Discuss how to use a microscope. (DOK 1)
e.	Discuss how to care for and maintain a microscope. (DOK 1)
2.	Demonstrate how to perform a fecal analysis, identify common parasite ova, identify common external parasites, and perform skin tests. <sup>VET6</sup>
a.	Perform a fecal analysis. (DOK 2)
b.	Identify common parasite ova. (DOK 1)
c.	Identify common external parasites. (DOK 1)
d.	Discuss the diagnostic aids to help identify common external parasites. (DOK 1)
e.	Perform a skin scraping. (DOK 1)
f.	Discuss other skin diagnostic tests. (DOK 2)
3.	Perform a complete urinalysis. <sup>VET1, VET6, VET8, VET9</sup>
a.	Take a correct history regarding urinary problems in animals. (DOK 1)
b.	Discuss the normal function of the urinary system. (DOK 1)
c.	Perform a physical exam of urine. (DOK 1)
d.	Perform a chemical exam of urine. (DOK 2)
e.	Perform a microscopic exam of urine. (DOK 2)
4.	Perform blood chemistry exams to evaluate the function of the liver, kidney, pancreas, thyroid, and other body organs, and serology tests. <sup>VET1, VET3, VET6, VET8, VET9</sup>
a.	Collect blood samples for specific tests. (DOK 1)
b.	Perform blood or body fluid chemistry tests to evaluate the following: (DOK 2)
(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. <sup>VET3</sup>
  - a. Explain the formation of blood, blood composition, and blood physiology that includes the following: <sup>(DOK 1)</sup>
    - (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. <sup>VET1, VET3, VET6</sup>
  - a. Explain how blood clots and diagnostic tests are used to evaluate the blood clotting procedure. <sup>(DOK 1)</sup>
    - (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. <sup>VET1, VET3, VET6, VET8, VET9</sup>
  - a. Explain a CBC, the normal CBC values for common domestic animals, and how to perform each test including: <sup>(DOK 1)</sup>
    - (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. <sup>VET1, VET3</sup>
  - a. Recognize pathological blood conditions including the following: <sup>(DOK 1)</sup>
    - (1) Red blood cell abnormalities
    - (2) White blood cell abnormalities
    - (3) Blood parasites such as heartworms, haemobartonella, and anaplasmosis

## STANDARDS

### *American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

- VET1 Office and Hospital Procedures, Client Relations, and Communication
- VET3 Nursing
- VET6 Laboratory Procedures
- VET8 Laboratory Animal Procedures
- VET9 Avian, Exotic, and Fish Procedures

### *Related Academic Standards*

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- M1 Addition of Whole Numbers (no regrouping, regrouping)
- M2 Subtraction of Whole Numbers (no regrouping, regrouping)
- M3 Multiplication of Whole Numbers (no regrouping, regrouping)
- M4 Division of Whole Numbers (no remainder, remainder)
- M5 Decimals (addition, subtraction, multiplication, division)
- M6 Fractions (addition, subtraction, multiplication, division)
- M7 Integers (addition, subtraction, multiplication, division)
- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
- S1 Vowel (short, long)
- S2 Consonant (variant spelling, silent letter)
- S3 Structural Unit (root, suffix)

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## 21st Century Skills

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- CS1 Global Awareness
- CS2 Financial, Economic, Business, and Entrepreneurial Literacy
- CS3 Civic Literacy
- CS4 Health Literacy
- CS7 Critical Thinking and Problem Solving
- CS8 Communication and Collaboration
- CS12 Flexibility and Adaptability
- CS13 Initiative and Self-Direction
- CS14 Social and Cross-Cultural Skills
- CS15 Productivity and Accountability
- CS16 Leadership and Responsibility

## SUGGESTED REFERENCES

### Books

- Kahn, C. M., & Line, S. (Eds.). (2005). *The Merck veterinary manual* (9th ed.). Hoboken, NJ: John Wiley and Sons.
- McCurnin, D. M., & Bassert, J. M. (Eds.). (2010). *Clinical textbook for veterinary technicians* (7th ed.). Philadelphia, PA: W. B. Saunders.
- Sirois, M. & Hendrix, C. (2007). *Laboratory procedures for veterinary technicians* (5th ed.). St. Louis, MO: Mosby.

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- Association of veterinary technician educators*. (n.d.). Retrieved February 26, 2010, from <http://www.avte.net/>
- Vet med team: Your online education resource*. (n.d.). Retrieved February 26, 2010, from <http://www.vetmedteam.com>

### Journals and Magazines

- Patterson, J. S. (2003, Summer). West Nile virus. *The NAVTA Journal*, 43–45.
- Tear, M. (Ed.). (2010). *Veterinary technician*. Retrieved February 26, 2010, from <http://www.vettechjournal.com>

## Computer Software

Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.

**Course Name:** Exotic/Lab Animal Procedures

**Course Abbreviation:** VAT 2172

**Classification:** Vocational–Technical Core

**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. (2 sch: 2-hr lecture)

**Prerequisites:** Successful completion of first, second, and third semester VAT courses with a grade of “C” or higher

### Competencies and Suggested Objectives

1. Demonstrate knowledge of zoonotic diseases. <sup>VET3</sup>
  - a. Identify the types of zoonotic diseases. <sup>(DOK 1)</sup>
  - b. Identify the effects of zoonotic diseases. <sup>(DOK 1)</sup>
  - c. Discuss treatment of zoonotic diseases. <sup>(DOK 1)</sup>
  - d. Explain prevention of zoonotic diseases. <sup>(DOK 1)</sup>
2. Demonstrate knowledge of life span, diseases, therapeutics, behaviors, clinical procedures, and history of the following: <sup>VET3</sup>
  - a. Ferrets <sup>(DOK 1)</sup>
  - b. Rabbits <sup>(DOK 1)</sup>
  - c. Guinea pigs <sup>(DOK 1)</sup>
  - d. Chinchillas <sup>(DOK 1)</sup>
  - e. Hedgehogs <sup>(DOK 1)</sup>
  - f. Degus <sup>(DOK 1)</sup>
  - g. Hamsters and gerbils <sup>(DOK 1)</sup>
  - h. Rats and mice <sup>(DOK 1)</sup>
3. Demonstrate knowledge of life span, diseases, therapeutics, behaviors, clinical procedures, and history of the following: <sup>VET3</sup>
  - a. All species and types of avian <sup>(DOK 1)</sup>
  - b. Different types of reptiles <sup>(DOK 1)</sup>
  - c. All species of amphibians <sup>(DOK 1)</sup>
4. Demonstrate knowledge of life span, diseases, therapeutics, behaviors, clinical procedures, and history of the following: <sup>VET3</sup>
  - a. Alpacas and llamas <sup>(DOK 1)</sup>
  - b. Miniature pigs <sup>(DOK 1)</sup>

### STANDARDS

*American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

VET3 Nursing

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### *Related Academic Standards*

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- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
- S1 Vowel (short, long)
- S2 Consonant (variant spelling, silent letter)
- S3 Structural Unit (root, suffix)

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### *21st Century Skills*

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- CS1 Global Awareness
- CS2 Financial, Economic, Business, and Entrepreneurial Literacy
- CS3 Civic Literacy
- CS4 Health Literacy
- CS7 Critical Thinking and Problem Solving
- CS8 Communication and Collaboration
- CS12 Flexibility and Adaptability
- CS13 Initiative and Self-Direction
- CS14 Social and Cross-Cultural Skills
- CS15 Productivity and Accountability
- CS16 Leadership and Responsibility

### **SUGGESTED REFERENCES**

#### Books

Judah, V., & Nutall, K. (2009). *Exotic animal care and management* (1st ed.). New York, NY: Thomson Delmar Learning.

#### Web Sites

*American veterinary medical association*. (n.d.). Retrieved February 26, 2010, from <http://www.avma.org/>

*Association of veterinary technician educators.* (n.d.). Retrieved February 26, 2010, from <http://www.avte.net/>

*Vet med team: Your online education resource.* (n.d.). Retrieved February 26, 2010, from <http://www.vetmedteam.com>

#### Journals and Magazines

Tear, M. (Ed.). (2010). *Veterinary technician.* Retrieved February 26, 2010, from <http://www.vettechjournal.com>

#### Computer Software

Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.

**Course Name:** Internship

**Course Abbreviation:** VAT 2183

**Classification:** Vocational–Technical Core

**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. (4 sch: 12-hr clinical)

**Prerequisite:** Successful completion of all academic courses in the veterinary technology curriculum with an overall GPA of 2.0 and no less than a “C” in all required VAT courses.

### Competencies and Suggested Objectives

1. Apply practical skills and technical information while in a supervised professional work setting. (VET1, VET2, VET3, VET4, VET5, VET6, VET7, VET8, VET9)
  - a. Apply the scholastic knowledge acquired to practical applications in a veterinary practice. (DOK 2)
  - b. Perform duties as assigned by the veterinarian. (DOK 2)
  - c. Cooperate with the supervising veterinarian. (DOK 1)
  - d. Arrive at work on time, and willingly work the assigned days and hours. (DOK 1)
  - e. Appear for work appropriately dressed. (DOK 1)
  - f. Perform duties in a timely manner. (DOK 1)
  - g. Cooperate with other employees. (DOK 1)
  - h. Perform new duties and new techniques as they arise. (DOK 2)
  - i. Demonstrate initiative. (DOK 1)
  - j. Notify the veterinarian of unexpected absences or tardiness as soon as possible. (DOK 1)
  - k. Use knowledge base to the best of ability when required to do so. (DOK 2)
  - l. Treat all clients in a courteous manner. (DOK 1)
  - m. Ask for assistance and guidance if unsure about duties, laboratory tests, or other activities. (DOK 2)
  - n. Treat the veterinarian with respect at all times. (DOK 1)
  - o. Keep all client information confidential. (DOK 1)
  - p. Give the veterinarian honest, accurate information at all times. (DOK 1)

### STANDARDS

*American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

- VET1 Office and Hospital Procedures, Client Relations, and Communication  
 VET2 Pharmacy and Pharmacology  
 VET3 Nursing  
 VET4 Anesthesia  
 VET5 Surgical Nursing



- VET6 Laboratory Procedures
- VET7 Imaging
- VET8 Laboratory Animal Procedures
- VET9 Avian, Exotic, and Fish Procedures

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### *Related Academic Standards*

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- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- M1 Addition of Whole Numbers (no regrouping, regrouping)
- M2 Subtraction of Whole Numbers (no regrouping, regrouping)
- M3 Multiplication of Whole Numbers (no regrouping, regrouping)
- M4 Division of Whole Numbers (no remainder, remainder)
- M5 Decimals (addition, subtraction, multiplication, division)
- M6 Fractions (addition, subtraction, multiplication, division)
- M7 Integers (addition, subtraction, multiplication, division)
- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
- S1 Vowel (short, long)
- S2 Consonant (variant spelling, silent letter)
- S3 Structural Unit (root, suffix)

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### *21st Century Skills*

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- CS1 Global Awareness
- CS2 Financial, Economic, Business, and Entrepreneurial Literacy
- CS3 Civic Literacy

- CS4 Health Literacy
- CS7 Critical Thinking and Problem Solving
- CS8 Communication and Collaboration
- CS9 Information Literacy
- CS12 Flexibility and Adaptability
- CS13 Initiative and Self-Direction
- CS14 Social and Cross-Cultural Skills
- CS15 Productivity and Accountability
- CS16 Leadership and Responsibility

## SUGGESTED REFERENCES

### Books

- Kahn, C. M., & Line, S. (Eds.). (2005). *The Merck veterinary manual* (9th ed.). Hoboken, NJ: John Wiley and Sons.
- Muir, W. W., & Hubbell, J. A. (2007). *Handbook of veterinary anesthesia* (4th ed.). St. Louis, MO: Mosby.
- Plumb, D. C. (2008). *Veterinary drug handbook* (6th ed.). Ames: Wiley-Blackwell.

### Videos

- The American Veterinary Medical Association (Producer). (n.d.). *Veterinary medicine-- Dedicated to service* [Videotape]. (Available from the American Veterinary Medical Association, 1931 North Meacham Road – Suite 100, Schaumburg, IL 60173)

### Web Sites

- National association of veterinary technicians in America*. (n.d.). Retrieved February 26, 2010, from <http://www.navta.net>
- The American veterinary medical association*. (n.d.). Retrieved February 26, 2010, from <http://www.avma.org>

**Course Name:** Large Animal Procedures

**Course Abbreviation:** VAT 2223

**Classification:** Vocational–Technical Core

**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. (3 sch: 3-hr clinical)

**Prerequisites:** Successful completion of first, second, and third semester VAT courses with a grade of “C” or higher

### Competencies and Suggested Objectives

1. Demonstrate knowledge and uses of the following types of ropes used in veterinary medicine: <sup>VET1, VET3</sup>
  - a. Bowline knot <sup>(DOK 1)</sup>
  - b. Tomfool knot <sup>(DOK 1)</sup>
  - c. Double half hitch knot <sup>(DOK 1)</sup>
  - d. Tail tie <sup>(DOK 1)</sup>
2. Explain key terms, objectives, and complications of restraint of the horse including the following: <sup>VET1, VET3</sup>
  - a. Rules of tying <sup>(DOK 1)</sup>
  - b. Use of stocks <sup>(DOK 1)</sup>
  - c. Haltering and leading <sup>(DOK 1)</sup>
  - d. Applying chains and twitches <sup>(DOK 1)</sup>
  - e. Loading horses in trailers <sup>(DOK 1)</sup>
  - f. Special handling scenarios <sup>(DOK 1)</sup>
3. Explain key terms, objectives, and complications of restraint of cattle including the following: <sup>VET1, VET3</sup>
  - a. Processing facilities <sup>(DOK 1)</sup>
  - b. Operating chutes <sup>(DOK 1)</sup>
  - c. Haltering and tailing up <sup>(DOK 1)</sup>
  - d. Casting and flanking cattle <sup>(DOK 1)</sup>
  - e. Securing cattle feet for examination <sup>(DOK 1)</sup>
  - f. Miscellaneous equipment used in cattle restraint <sup>(DOK 1)</sup>
4. Explain key terms, objectives, and complications of restraint of goats including the following: <sup>VET1, VET3</sup>
  - a. Collaring and leading <sup>(DOK 1)</sup>
  - b. Use of stanchions <sup>(DOK 1)</sup>
5. Explain key terms, objectives, and complications of restraint of swine including the following: <sup>VET1, VET3</sup>
  - a. Use of pig boards <sup>(DOK 1)</sup>
  - b. Castration restraint <sup>(DOK 1)</sup>
  - c. Use of snout snare <sup>(DOK 1)</sup>
6. Demonstrate knowledge of key terms, objectives, and procedures of the following: <sup>VET1,</sup>

VET3

- a. Basic grooming <sup>(DOK 1)</sup>
- b. Use of blankets and face masks <sup>(DOK 1)</sup>

## STANDARDS

### *American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

- VET1 Office and Hospital Procedures, Client Relations, and Communication  
 VET3 Nursing

### *Related Academic Standards*

- R1 Interpret Graphic Information (forms, maps, reference sources)  
 R2 Words in Context (same and opposite meaning)  
 R3 Recall Information (details, sequence)  
 R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)  
 R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)  
 L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)  
 L2 Sentence Formation (fragments, run-on, clarity)  
 L3 Paragraph Development (topic sentence, supporting sentence, sequence)  
 L4 Capitalization (proper noun, titles)  
 L5 Punctuation (comma, semicolon)  
 L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)  
 S1 Vowel (short, long)  
 S2 Consonant (variant spelling, silent letter)  
 S3 Structural Unit (root, suffix)

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### *21st Century Skills*

- CS1 Global Awareness  
 CS2 Financial, Economic, Business, and Entrepreneurial Literacy  
 CS3 Civic Literacy  
 CS4 Health Literacy  
 CS7 Critical Thinking and Problem Solving  
 CS8 Communication and Collaboration  
 CS12 Flexibility and Adaptability  
 CS13 Initiative and Self-Direction  
 CS14 Social and Cross-Cultural Skills  
 CS15 Productivity and Accountability  
 CS16 Leadership and Responsibility

## SUGGESTED REFERENCES

### Books

Rockett, J., & Bosted, S. (2006). *Veterinary clinical procedures in large animal practice* (1st ed.). New York, NY: Thomson Delmar Learning.

### Web Sites

*American veterinary medical association*. (n.d.). Retrieved February 26, 2010, from <http://www.avma.org/>

*Association of veterinary technician educators*. (n.d.). Retrieved February 26, 2010, from <http://www.avte.net/>

*Vet med team: Your online education resource*. (n.d.). Retrieved February 26, 2010, from <http://www.vetmedteam.com>

### Journals and Magazines

Tear, M. (Ed.). (2010). *Veterinary technician*. Retrieved February 26, 2010, from <http://www.vettechjournal.com>

### Computer Software

Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.

**Course Name:** Principles of Imaging

**Course Abbreviation:** VAT 2272

**Classification:** Vocational–Technical Core

**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. (2 sch: 2-hr lecture)

**Prerequisites:** Successful completion of first, second, and third semester VAT courses with a grade of “C” or higher

### Competencies and Suggested Objectives

1. Explain the characteristics of radiation, the production of X-rays, and the formation of radiographs. <sup>VET1, VET3, VET6</sup>
  - a. Describe radiation formation. <sup>(DOK 1)</sup>
  - b. Discuss characteristics of radiation. <sup>(DOK 1)</sup>
  - c. Discuss an X-ray tube. <sup>(DOK 1)</sup>
2. Demonstrate an understanding of X-ray production, charting, patient positioning, and radiation safety. <sup>VET1, VET3, VET6</sup>
  - a. Demonstrate exposure factors. <sup>(DOK 1)</sup>
  - b. Identify the characteristics of radiographic quality. <sup>(DOK 1)</sup>
  - c. Perform film processing. <sup>(DOK 1)</sup>
  - d. Develop, interpret, and apply a technique chart. <sup>(DOK 2)</sup>
  - e. Demonstrate an understanding of proper patient positioning. <sup>(DOK 1)</sup>
  - f. Perform radiation safety measures. <sup>(DOK 1)</sup>
3. Discuss the steps followed for radiography in certain types of animals. <sup>VET3</sup>
  - a. Identify the radiography procedures followed for large animals. <sup>(DOK 1)</sup>
  - b. Identify the radiography procedures followed for avian and exotic animals. <sup>(DOK 1)</sup>
4. Discuss key concepts in alternative applications of animal radiography. <sup>VET3</sup>
  - a. Identify common practices in digital radiography. <sup>(DOK 1)</sup>
  - b. Discuss special procedures that can be used in animal radiography when normal operations do not apply to the patient. <sup>(DOK 1)</sup>
  - c. Discuss the types of alternative imaging technologies available in veterinary medicine. <sup>(DOK 1)</sup>

## STANDARDS

*American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*

- VET1 Office and Hospital Procedures, Client Relations, and Communication  
 VET3 Nursing  
 VET6 Laboratory Procedures

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*Related Academic Standards*


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- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- M1 Addition of Whole Numbers (no regrouping, regrouping)
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- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
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- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
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*21st Century Skills*


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- CS8 Communication and Collaboration
- CS12 Flexibility and Adaptability
- CS13 Initiative and Self-Direction



CS14 Social and Cross-Cultural Skills  
 CS15 Productivity and Accountability  
 CS16 Leadership and Responsibility

## **SUGGESTED REFERENCES**

### Books

Hendrix, C., & Sirois, M. (2007). *Laboratory procedures for veterinary technicians* (5th ed.). St. Louis, MO: Elsevier.

Lavin, L. M. (2009). *Radiography in veterinary technology* (4th ed.). St. Louis, MO: Elsevier.

### Web Sites

*American veterinary medical association*. (n.d.). Retrieved February 26, 2010, from <http://www.avma.org/>

*Association of veterinary technician educators*. (n.d.). Retrieved February 26, 2010, from <http://www.avte.net/>

*Vet med team: Your online education resource*. (n.d.). Retrieved February 26, 2010, from <http://www.vetmedteam.com>

### Journals and Magazines

Tear, M. (Ed.). (2010). *Veterinary technician*. Retrieved February 26, 2010, from <http://www.vettechjournal.com>

### Computer Software

Cornerstone. (Version 8.0) [Computer software]. Westbrook, ME: IDEXX.

## Recommended Tools and Equipment

### CAPITALIZED EQUIPMENT

1. X-ray machine (animal), with attachments (1 per program)
2. Dental unit with accessories (1 per program)
3. Anesthesia machine, Drager (2 per program)
4. Anesthesia machine, Scavenger (2 per program)
5. Operating table, V-top (1 per program)
6. Autoclave, large (1 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 (1 per program)
10. Electrosurgical unit (1 per program)
11. Dental scaler (1 per program)
12. Cardiac respiratory monitor (1 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 EQUIPMENT

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

23. Anatomical models, various organs (6 of each model per program)

#### RECOMMENDED INSTRUCTIONAL AIDS

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

## Assessment

### Blueprint

This program is assessed using the Mississippi Veterinary State Board of Veterinary Examiners examination and the National Veterinary Technician Board examination.

## Baseline Competencies

The following competencies and suggested objectives are taken from the publication Mississippi Curriculum Framework for Allied Health. These competencies and objectives represent the baseline that was used to develop the community/junior college Gerontology Technology courses. Students enrolled in postsecondary courses should either have documented mastery of these competencies or be provided with these competencies before studying the advanced competencies in the Gerontology Technology program.

Baseline Competencies may be integrated into existing courses in the curriculum or taught as special “Introduction” courses. The “Introduction” courses may be taught for up to 6 semester hours of institutional credit and may be divided into two courses. If the Baseline Competencies are to be taught as “Introduction” courses, each course should be at least 3 credit hours. The following course number(s) and description should be used:

**Course Name(s):** Introduction to Gerontology Technology, Introduction to Gerontology Technology I, or Introduction to Gerontology Technology II

**Course Abbreviation(s):** GER 100(3–6), GER 1013, GER 1023

**Classification:** Vocational–Technical Core

**Description:** These courses contain the baseline competencies and suggested objectives from the high school curriculum that directly relate to the community college program. The courses are designed for students entering the community college who have had no previous training or documented experience in the field. (3–6 semester hours based upon existing skills for each student, may be divided into two courses for a maximum total of 6 hours of institutional credit)

### Competencies and Suggested Objectives:

1. Review material related to course and professional organizations.
  - a. Identify student and course expectations.
  - b. Identify allied health professional student organizations and their roles in individual career development.
  - c. Compare the time line of medical history.
2. Recognize safety procedures and policies.
  - a. Describe basic safety procedures.
  - b. Describe accident prevention methods and disaster plans of the local school district.
  - c. Discuss a safe and clean environment.
  - d. Follow state and facility guidelines, including dress requirements for clinical-type experiences.

## Appendix A: Standards and Guidelines for American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List<sup>1</sup>

- VET1 Office and Hospital Procedures, Client Relations, and Communication
- Participate in facility management utilizing traditional and electronic media and appropriate veterinary medical terminology and abbreviations.
  - Communicate in a professional manner in all formats - written, oral, nonverbal, and electronic.
  - Follow and uphold applicable laws and the veterinary technology profession's ethical codes to provide high quality care to patients.
- VET2 Pharmacy and Pharmacology
- Safely and effectively administer prescribed drugs to patients.
  - Accurately dispense and explain prescribed drugs to clients.
- VET3 Nursing
- Demonstrate and perform patient assessment techniques in a variety of animal species.
  - Understand and demonstrate husbandry, nutrition, therapeutic and dentistry techniques appropriate to various animal species.
- VET4 Anesthesia
- Safely and effectively manage patients in all phases of anesthetic procedures.
  - Safely and effectively select, utilize, and maintain anesthetic delivery and monitoring instruments and equipment.
- VET5 Surgical Nursing
- Understand and integrate all aspects of patient management for common surgical procedures in a variety of animal species.
  - Understand and provide the appropriate instruments, supplies, and environment to maintain asepsis during surgical procedures.
- VET6 Laboratory Procedures
- Properly package, handle, and store specimens for laboratory analysis.
  - Properly carry out analysis of laboratory specimens.
- VET7 Imaging
- Safely and effectively produce diagnostic radiographic and non-radiographic images.
- VET8 Laboratory Animal Procedures
- Safely and effectively handle common laboratory animals used in animal research.
- VET9 Avian, Exotic, and Fish Procedures
- Understand the approach to providing safe and effective care for birds, reptiles, amphibians, guinea pigs, hamsters, gerbils, and ferrets.

<sup>1</sup> American Veterinary Medicine Association. (2004). *Accreditation policies and procedures of the AVMA Committee on Veterinary Technician Education and Activities (CVTEA)*. Schaumburg, IL: Author.

## Appendix B: Related Academic Standards<sup>2</sup>

### Reading

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)

### Mathematics Computation

- M1 Addition of Whole Numbers (no regrouping, regrouping)
- M2 Subtraction of Whole Numbers (no regrouping, regrouping)
- M3 Multiplication of Whole Numbers (no regrouping, regrouping)
- M4 Division of Whole Numbers (no remainder, remainder)
- M5 Decimals (addition, subtraction, multiplication, division)
- M6 Fractions (addition, subtraction, multiplication, division)
- M7 Integers (addition, subtraction, multiplication, division)
- M8 Percents
- M9 Algebraic Operations

### Applied Mathematics

- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)

### Language

- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)

### Spelling

- S1 Vowel (short, long)
- S2 Consonant (variant spelling, silent letter)
- S3 Structural Unit (root, suffix)

<sup>2</sup> CTB/McGraw-Hill LLC. (1994). *Tests of adult basic education, forms 7 and 8*. Monterey, CA: Author. Reproduced with permission of CTB/McGraw-Hill LLC. TABE is a registered trademark of The McGraw-Hill Companies, Inc. Copyright © 1994 by CTB/McGraw-Hill LLC. Reproduction of this material is permitted for educational purposes only.

## Appendix C: 21st Century Skills<sup>3</sup>

### CSS1-21st Century Themes

#### CS1 Global Awareness

1. Using 21st century skills to understand and address global issues
2. Learning from and working collaboratively with individuals representing diverse cultures, religions and lifestyles in a spirit of mutual respect and open dialogue in personal, work and community contexts
3. Understanding other nations and cultures, including the use of non-English languages

#### CS2 Financial, Economic, Business, and Entrepreneurial Literacy

1. Knowing how to make appropriate personal economic choices
2. Understanding the role of the economy in society
3. Using entrepreneurial skills to enhance workplace productivity and career options

#### CS3 Civic Literacy

1. Participating effectively in civic life through knowing how to stay informed and understanding governmental processes
2. Exercising the rights and obligations of citizenship at local, state, national and global levels
3. Understanding the local and global implications of civic decisions

#### CS4 Health Literacy

1. Obtaining, interpreting and understanding basic health information and services and using such information and services in ways that enhance health
2. Understanding preventive physical and mental health measures, including proper diet, nutrition, exercise, risk avoidance and stress reduction
3. Using available information to make appropriate health-related decisions
4. Establishing and monitoring personal and family health goals
5. Understanding national and international public health and safety issues

#### CS5 Environmental Literacy

1. Demonstrate knowledge and understanding of the environment and the circumstances and conditions affecting it, particularly as relates to air, climate, land, food, energy, water and ecosystems.
2. Demonstrate knowledge and understanding of society's impact on the natural world (e.g., population growth, population development, resource consumption rate, etc.).
3. Investigate and analyze environmental issues, and make accurate conclusions about effective solutions.
4. Take individual and collective action towards addressing environmental challenges (e.g., participating in global actions, designing solutions that inspire action on environmental issues).

### CSS2-Learning and Innovation Skills

#### CS6 Creativity and Innovation

1. Think Creatively
2. Work Creatively with Others

<sup>3</sup> *21st century skills*. (n.d.). Washington, DC: Partnership for 21st Century Skills.



- 3. Implement Innovations
- CS7 Critical Thinking and Problem Solving**
  - 1. Reason Effectively
  - 2. Use Systems Thinking
  - 3. Make Judgments and Decisions
  - 4. Solve Problems
- CS8 Communication and Collaboration**
  - 1. Communicate Clearly
  - 2. Collaborate with Others
- CSS3-Information, Media and Technology Skills
  - CS9 Information Literacy**
    - 1. Access and Evaluate Information
    - 2. Use and Manage Information
  - CS10 Media Literacy**
    - 1. Analyze Media
    - 2. Create Media Products
  - CS11 ICT Literacy**
    - 1. Apply Technology Effectively
- CSS4-Life and Career Skills
  - CS12 Flexibility and Adaptability**
    - 1. Adapt to change
    - 2. Be Flexible
  - CS13 Initiative and Self-Direction**
    - 1. Manage Goals and Time
    - 2. Work Independently
    - 3. Be Self-directed Learners
  - CS14 Social and Cross-Cultural Skills**
    - 1. Interact Effectively with others
    - 2. Work Effectively in Diverse Teams
  - CS15 Productivity and Accountability**
    - 1. Manage Projects
    - 2. Produce Results
  - CS16 Leadership and Responsibility**
    - 1. Guide and Lead Others
    - 2. Be Responsible to Others

## Appendix D: National Educational Technology Standards for Students<sup>4</sup>

### 1. Creativity and Innovation

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students do the following:

- a. Apply existing knowledge to generate new ideas, products, or processes.
- b. Create original works as a means of personal or group expression.
- c. Use models and simulations to explore complex systems and issues.
- d. Identify trends and forecast possibilities.

### 2. Communication and Collaboration

Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning, and contribute to the learning of others. Students do the following:

- a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.
- b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats.
- c. Develop cultural understanding and global awareness by engaging with learners of other cultures.
- d. Contribute to project teams to produce original works or solve problems.

### 3. Research and Information Fluency

Students apply digital tools to gather, evaluate, and use information. Students do the following:

- a. Plan strategies to guide inquiry.
- b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.
- c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks.
- d. Process data and report results.

### 4. Critical Thinking, Problem Solving, and Decision Making

Students use critical-thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Students do the following:

- a. Identify and define authentic problems and significant questions for investigation.
- b. Plan and manage activities to develop a solution or complete a project.
- c. Collect and analyze data to identify solutions and/or make informed decisions.
- d. Use multiple processes and diverse perspectives to explore alternative solutions.

<sup>4</sup>ISTE / NETS for Students 2007. (2007). Retrieved February 26, 2010, from [http://www.iste.org/Content/NavigationMenu/NETS/ForStudents/2007Standards/NETS\\_for\\_Students\\_2007.htm](http://www.iste.org/Content/NavigationMenu/NETS/ForStudents/2007Standards/NETS_for_Students_2007.htm)

## 5. Digital Citizenship

Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students do the following:

- a. Advocate and practice safe, legal, and responsible use of information and technology.
- b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.
- c. Demonstrate personal responsibility for lifelong learning.
- d. Exhibit leadership for digital citizenship.

## 6. Technology Operations and Concepts

Students demonstrate a sound understanding of technology concepts, systems, and operations. Students do the following:

- a. Understand and use technology systems.
- b. Select and use applications effectively and productively.
- c. Troubleshoot systems and applications.
- d. Transfer current knowledge to learning of new technologies.