Veterinary Science

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Arkansas Department of Career Education
Model Framework

Course Title: **Veterinary Science**

Career Cluster: **Agriculture Food, Fiber and Natural Resource Systems**

Secondary – Agriculture Science and Technology	
Course Number	491460
CIP Number	01.0903
Grade Level	11-12
Standard Length	1 Year
Teacher Certification	010 Agriculture 218 Agricultural Sciences & Technology
CTSO	FFA
Facility Requirements	http://arkansasfacilities.arkansas.gov/SchoolFacManual.aspx
Prerequisite Courses	Survey of Agriculture Systems, Animal Science I , and Animal Science II
Industry Certifications	http://www.tvma.org/Certifications/CVA

Course Description

This course will provide the student with a sound platform to master the knowledge and skills necessary to become a veterinary assistant. It will also prepare the student to pursue a rewarding career as part of the professional veterinarian team. It will also equip the next generation of veterinarians and veterinarian assistants with the new technological tools that reinforce our industries expectations. Finally, it provides academic knowledge, higher order reasoning and problem solving skills, work attitudes, general employability skills, technical skills and occupational skills.

Arkansas Department of Career Education
Student Performance Standards

Program Purpose/Structure

This course allows for an in-depth look at the Veterinary Science Industry while providing Hands on Laboratories, and opportunities to participate in FFA and Supervised Agriculture Experiences.

Standard 1.0 Investigate Careers, Educational Requirements, along with Safety Procedures and Concepts in Veterinary Science

1.1 Investigate Careers in Veterinary Science
1.2 Investigate Educational Requirements for Careers in Veterinary Science
1.3 Apply Safety Concepts/Procedures in the Classroom, Lab and the Veterinarian Clinic

Standard 2.0 Demonstrate Methods of Animal Restraint

2.1 Demonstrate Livestock Restraint Methods
2.2 Demonstrate Companion Animal Restraint Methods

Standard 3.0 Apply Assisting Techniques used in Exams and Treatments

3.1 Perform Physical Exams-Clinical
3.2 Perform First Aid- Clinical
3.3 Apply Concepts with Handling & Administering Medications-Clinical

Standard 4.0 Research Laboratory Aids and Perform Examinations

4.1 Research Fecal, Blood & Urine Examinations
4.2 Research Bacteriologic Tests
4.3 Adhere to Radiology Safety Practices - Clinical
4.4 Practice Examination Procedures

Standard 5.0 Sterilization and Disinfection

5.1 Investigate Sterilization Methods
5.2 Demonstrate Disinfection Procedures

Standard 6.0 Demonstrate Surgical Assistance Procedures

6.1 Critique Surgical Instruments & Terminology
6.2 Differentiate Surgical Preparation & Procedures
6.3 Formulate Proper Procedures for Anesthesia Preparation
6.4 Apply Concepts for Preparing Hands & Field of Operation

Standard 7.0 Investigate Veterinary Medicine Regulations

7.1 Compare Control & Eradication Programs
7.2 Analyze Regulations

Laboratory Activities

In this course students will perform laboratory activities that are regular functions that would occur in a Veterinary Practice. Along with the instruction that will occur in the classroom students may also work with a local Veterinarian. Please refer to the website listed above for certification requirements.

Standard 1.0 Investigate Careers, Educational Requirements, along with Safety Procedures and Concepts in Veterinary Science			
Performance Indicator 1.1 Investigate Careers in Veterinary Science	**Suggested Application/Activity**	**Common Core State Standards**	**Common Career Technical Core**
1.1.1 Assess careers in the profession of veterinary science	• Invite/tour individuals/facilities of Veterinary Assistant, Veterinarian Technician and Veterinarian	SL11-12.3	AG-ANI2 CRP4
1.1.2 Analyze Roles in the Vet Clinic	• Create a skit pertaining to roles played in a typical Veterinarian Clinic given various situations. (**Veterinarian, Veterinarian Technician, Veterinarian Assistant,** Patient Owner**, Receptionist, Veterinary Technologist, NAVTA**)	SL11-12.4	AG-ANI1 CRP4
Performance Indicator 1.2 Investigate Educational Requirements for Careers in Veterinary Science	**Suggested Application/Activity**	**CCSS ELA**	**CCTC**
1.2.1Compare Veterinary Science Certifications that require less than a BS Degree.	• Invite / tour an educational institute that offers the certification that requires less than a BS Degree.	SL11-12.3	AG-ANI2 CRP4
1.2.2 Contrast Veterinary Science Certifications that require a BS Degree or more.	• Create a presentation comparing the Veterinary Science Certifications that require a BS Degree or more.	SL11-12.4	
Performance Indicator 1.3 Apply Safety Concepts/Procedures in the Classroom, Lab and the Veterinarian Clinic	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**

1.3.1 Assess common safety practices in the high school classroom/lab setting	• Demonstrate safety procedures specific to your program.	L11-12.4 L11-12.4a	AG-ANI2 CRP3
1.3.2 Design proper safety practices within the Veterinarian Clinic	• Observe vet clinic personnel and record how many times they perform hand washing procedures.	R11-12.3	AG-ANI2 CRP3
1.3.3 Recognize and avoid potential safety hazards.	• Identify safety hazards found in the veterinarian lab / clinic (physical, chemical, biological and zoonotic). • List the most common causes of animal related accidents • Practice safety precautions around animals.	L11-12.4 L11-12.6	AG3 AG-ANI2 CRP2
1.3.4 Utilize proper safety precautions and procedures when working in the animal hospital (laboratory, kennel, surgery/prep area, treatment, microscope, and exam room).	Demonstrate knowledge on how to use personal protective equipment- PPE (wears gloves, goggles, face mask, ear plugs, apron, gown, cap, and shoe covers when needed)	W11-12.2	AG3 AG-ANI2 CRP2
1.3.5 Locate and demonstrates use of an eye wash solution or station	• Tour a facility and illustrate the floor plan focusing on the eye wash station, first aid kit, and fire extinguisher	W11-12.3	AG3 AG-ANI2 CRP2
1.3.6 Locate first aid kit and fire extinguisher	• Tour a facility and illustrate the floor plan focusing on the eye wash station, first aid kit and fire extinguisher	L11-12.6	AG3 AG-ANI2 CRP2
1.3.7 Explain OSHA (Occupational Safety and Health Act) and its regulations pertaining to a veterinary practice, including sanitation, safety of employees and the employee's right to know of potential work place hazards through MSDS (Material Safety Data Sheets) and the written hazard communication plan	• Demonstrate knowledge of OSHA regulations regarding the handling, placement and disposition of sharps and bio-hazardous material	L11-12.6	AG3 AG-ANI2 CRP2

Standard 2.0 Demonstrate Methods of Animal Restraint			
Performance Indicator 2.1 Demonstrate Livestock Restraint Methods	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
2.1.1 Evaluate the proper techniques for restraining and controlling livestock animals	• Build a temporary rope halter for a cow. • Halter a horse. • Halter a cow.	R11-12.3 R11-12.9	AG-ANI2 CRP1
2.1.2 Analyze various knot tying procedures	• Tie a **square knot**. • Tie a **reefer knot**. • Tie a double **half-hitch** knot. • Tie a half-hitch knot. • Tie a bow-line knot.	R11-12.3 R11-12.9	AG-ANI2 CRP2
2.1.3 Evaluate tools used when restraining livestock	Demonstrate the proper use of these livestock restraining tools: • Chain Twitch • Lead Rope / Halter • Squeeze Chute/Head Gate • Hog Snare • Horse Stock • Humane Twitch • Gag Mouth Speculum (large or small)	SL11-12.1	AG-ANI2 CRP2

Performance Indicator 2.2 Demonstrate Companion Animal Restraint Methods	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
2.2.1 Assess the proper procedure to restrain and control companion animals.	Demonstrate how to properly: • Carry a cat/dog • Use a cat bag • Remove a cat/dog from a cage • Apply cat/dog **muzzle** • Restrain a cat/dog in **lateral recumbancy** • Restrain a cat/dog in **sternal recumbancy** • Restrain a cat/dog for **veinipuncture** • Restrain a cat/dog for **jugular vein** puncture. • Restrain a cat/dog for **cephalic vein** puncture. • Perform a **recumbency** • Perform a **sternal recumbency** • Perform a **lateral recumbency** • Perform a **standing restraint**	SL11-12.1	AG-ANI2 CRP3
2.2.2 Describe tools used when restraining companion animals	Demonstrate how to properly use the following restraining tools: • Cat bag • Catch pole or dog snare • Commercial Muzzle • Basket Muzzle	SL11-12.1	AG-ANI2 CRP3
Standard 3.0 Apply Assisting Techniques used in Exams and Treatments			
Performance Indicator 3.1 Perform Physical Exams-Clinical	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
3.1.1 Evaluate the nine body systems observed in an exam.	• Have students demonstrate a physical exam • Have students take **vital signs**	R11-12.3	AG-ANI6, AG-ANI7, CRP1
3.1.2 Apply concepts of tools and equipment used to perform a physical exam.	Demonstrate the proper use of each of these exam tools: • Thermometer • **Stethoscope** • **Ophthalmoscope** • **Otoscope**	SL11-12.1	AG-ANI2 CRP9

Performance Indicator 3.2 **Perform First Aid- Clinical**	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
3.2.1 Annalyze proper first aid for a non-bleeding wound.	• Demonstrate how to apply antiseptics.	SL11-12.1a R11-12.3	AG-ANI7 CRP11
3.2.2 Apply the concepts of the proper technique for applying a wound bandage.	• Demonstrate how to apply a wound bandage. • Demonstrate how to remove a wound bandage. • Demonstrate how to apply a turnicate.	SL11-12.1a R11-12.3	AG-ANI7 CRP2
3.2.3 Demonstrate the proper technique for applying a pressure bandage.	• Demonstrate how to apply a pressure bandage. • Demonstrate how to remove a pressure bandage.	SL11-12.1a R11-12.3	AG-ANI7 CRP2
3.2.4 Evaluate the proper precautions to take when applying a wound bandage.	• Compare and contrast correct and incorrect procedures when working with wound bandages.	SL11-12.1 SL11-12.1a	AG-ANI7 CRP1
3.2.5 Differentiate among the tools used in bandaging techniques. • Half circle suture needle. • Straight Littauer Stitch Scissors • Lister Bandage Scissors • Utility Bandage Scissors	Demonstrate the proper procedure for each of these techniques: • Half circle suture • Straight Littauer Stitch • Lister Bandage • Utility Bandage	SL11-12.1	AG-ANI2 CRP2
Performance Indicator 3.3 **Apply Concepts with Handling & Administering Medications-Clinical**	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
3.3.1 Assess how to properly store various medications.	• Read and interpret a medication label.	SL11-12.1 SL11-12.1a	AG-ANI2 CRP8
3.3.2 Explain proper use of a syringe, drench gun and balling gun.	• Demonstrate how to properly fill a syringe, drench gun and balling gun.	R11-12.3	AG-ANI7 CRP1
3.3.3 Differentiate among the tools used in handling and administering medications.	• Demonstrate the proper use of each of these medication administering devises: • Disposable Syringe • Automatic Dose Syringe • Balling Gun • Pill Counting Tray	SL11-12.1 SL11-12.1a	AG-ANI2 CRP9

	• Indwelling IV Catheter • IV Butterfly Catheter • Drench Gun		
Standard 4.0 Research Laboratory Aids and Perform Examinations			
Performance Indicator 4.1 Research Fecal, Blood & Urine Examinations	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
4.1.1 Recall the steps involved when performing a **fecal flotation** with a fecalyzer.	• Demonstrate how to perform a fecal flotation using a fecalyzer.	R11-12.3	AG-ANI7 CRP2
4.1.2 Describe the proper procedures used when performing a blood examination.	• Demonstrate how to perform a blood exam. • Perform a blood **panel**	R11-12.3	AG-ANI7 CRP1
4.1.3 Evaluate the four parts of blood. (Red cells, white cells, platelets, plasma)	• Explore the four parts of blood by using anti-coagulant in a tube of blood for one hour.	SL11-12.1	AG-ANI2 CRP7
4.1.4 Perform a **urinalysis**.	• Conduct gross urine examinations of a horse and a dog.	R11-12.3	AG-ANI7 CRP7
Performance Indicator 4.2 Research Bacteriologic Tests	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
4.2.1 Evaluate the three general forms of bacteria.	• Examine and draw the three general forms of bacteria.	SL11-12.5	AG-ANI5 CRP2
4.2.2 Perform a Bacteriologic Test	• Conduct a Bacteriologic Test on an animal.	SL11-12.1	AG-ANI7 CRP2
Performance Indicator 4.3 Adhere to Radiology Safety Practices - Clinical	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
4.3.1 Assess the nine safety precautions when performing an x-ray.	• Observe a veterinarian performing an x-ray and discuss the safety practices being used. (visit a clinic or watch a video)	SL11-12.2	AG-ANI2 CRP3

4.3.2 Describe the steps for a machine setting for a radiograph.	• Calculate sample problems with different machine settings. (kilovoltage, miliamperage, exposure time and distance in thickness in centimeters)	R11-12.3	AG-ANI7 CRP11
Performance Indicator 4.4 Practice Examination Procedures	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
4.4.1 Differentiate among the four "**posting**" instruments used.	• Compare and contrast the four posting instruments.	R11-12.1	AG-ANI2 CRP2
4.4.2 Assess conditions that assist the veterinarian in examining the post mortem examinations.	• Research five of the conditions that veterinarians use to assist in using a post mortem exam. • Perform a **necropsy**	SL11-12.1 SL11-12.1a	AG-ANI1 CRP7
4.4.3 Analyze the use of ultrasonography.	• Observe a veterinarian using an ultrasonography machine.	SL11-12.1c	AG-ANI2
Standard 5.0 Sterilization and Disinfection			
Performance Indicator 5.1 Investigate Sterilization Methods	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
5.1.1 Evaluate the five major methods of **sterilization**.	• Prepare a surgical pack for surgery. • Observe and describe the methods of sterilization in a clinic.	SL11-12.1 SL11-12.1c	AG-ANI7 CRP1
5.1.2 Assess the seven characteristics of an ideal antiseptic.	• Students will research and give an oral report on various types of antiseptics used in a veterinarian practice.	SL11-12.1a SL11-12.4	AG-ANI1 CRP4
Performance Indicator 5.2 Demonstrate Disinfection Procedures	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
5.2.1 Evaluate the three most common types of disinfectants. (alcohol, chlorine and iodine)	• Compare and contrast the three disinfectants.	SL11-12.1b	AG-ANI2 CRP8
5.2.2 Analyze the proper procedures	• Properly sterilize and disinfect an animal prepping it for a	R11-12.3	AG-ANI2

for Sterilization and Disinfection.	procedure.		CRP1
Standard 6.0 Demonstrate Surgical Assistance Procedures			
Performance Indicator 6.1 Critique Surgical Instruments & Terminology	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
6.1.1 Assess the function of the following surgical instruments: thumb forceps, hemostats, operating scissors, ecraseur and scalpel.	• Properly identify the different tools used in surgical procedures and explain their jobs.	SL11-12.1 SL11-12.1a	AG-ANI2 CRP2
6.1.2 Compare and Contrast surgical instruments and their functions.	• Create a Venn Diagram for each of the following surgical instruments: thumb forceps, hemostats, operating scissors, ecraseur and scalpel.	R11-12.8	AG-ANI7 CRP2
Performance Indicator 6.2 Differentiate Surgical Preparation & Procedures	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
6.2.1 Investigate the preoperative preparation of the surgery room.	• Demonstrate proper surgical preparation. • Set up a veterinary surgical room.	R11-12.3	AG-ANI2 CRP1
6.2.2 Analyze the postoperative procedures of the surgery room.	• Demonstrate proper post-surgical procedures.	R11-12.3	AG-ANI2 CRP1
Performance Indicator 6.3 Formulate Proper Procedures for Anesthesia Preparation	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
6.3.1 Design a proper protocol to use concerning veterinary **anesthesia**.	• Give various scenarios of animals and procedures and have students determine proper anesthesia.	SL11-12.1b	AG-ANI1 CRP8
6.3.2 Assess the four stages of anesthesia.	• Students will make a “skit” for each stage of anesthesia.	SL11-12.4	AG-ANI7 CRP4
6.3.3 Evaluate an animal to determine the depth of anesthesia.	• Observe a surgery and have students diagnose the level of anesthesia used.	SL11-12.1c	AG-ANI7 CRP2

Performance Indicator 6.4 Apply Concepts for Preparing Hands & Field of Operation	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
6.4.1 Analyze the necessary actions to prepare for surgery.	• Demonstrate the actions taken to prepare for surgery.	R11-12.3	AG-ANI2 CRP1
6.4.2 Investigate the preparation of a surgical site.	• Demonstrate procedures for a surgical site preparation.	R11-12.3	AG-ANI2 CRP2
6.4.3 Analyze proper procedures for putting on gloves and gowns.	• Demonstrate how to properly put on surgical gloves. • Demonstrate how to properly put a surgical gown on.	SL11-12.1b	
Standard 7.0 Investigate Veterinary Medicine Regulations			
Performance Indicator 7.1 Compare Control & Eradication Programs	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
7.1.1 Investigate the **Brucellosis** eradication program.	• Students will choose one of the eradication programs, research, and give an oral report on their findings.	W11-12.4 R11-12.9 R11-12.10	AG-ANI1 CRP7
7.1.2 Investigate the control programs for rabies control program, pseudo rabies eradication control program, west nile encephalitis control program and the bovine trichomoniasis control program.	• Students will choose one of the control programs, research, and give an oral report on their findings	R11-12.9 W11-12.2	AG-ANI1 CRP7
Performance Indicator 7.2 Analyze Regulations	**Recommended Application/Activity**	**CCSS ELA**	**CCTC**
7.2.1 Analyze proper carcass disposal regulations and medical waste disposal regulations	• Produce a “skit” for each regulation area and how to properly follow them.	SL11-12.1a SL11-12.3	AG-ANI1 CRP4
7.2.2 Analyze proper animal welfare regulations and pesticide regulations.	• Create a report on animal welfare regulations and pesticide regulations.	W11-12.1b	AG-ANI5 CRP8

Glossary

Standard 1.0 **Investigate Careers, Educational Requirements, along with Safety Procedures and Concepts in Veterinary Science**

1. Veterinarian - the doctor that holds a state license to practice veterinary medicine and holds the ultimate responsibility in the veterinary facility

2. Veterinarian Technician - the two year associate degree in specialized training to assist veterinarians

3. Veterinary Assistant - the staff member trained to assist veterinarians and technicians in various duties

4. Receptionist - personal greeting and communicating with patients as they come in and leave the facility

5. Veterinary Technologist - the four year bachelor degree trained in specialized training to assist veterinarians

6. NAVTA - National Association of Veterinary Technicians in America

7. zoonotic hazards - safety concerns that allow contagious organism to be spread to humans

8. EPPE - Equipment for safety purposes and protection

9. MSDS - Material Safety Data Sheet

10. OSHA - occupational safety and Health Administration

Standard 2.0 **Demonstrate Methods of Animal Restraint**

1. Restraint - to hold back, check, or suppress

2. Tranquilizer - medication given to an animal to keep it calm during certain stressful procedures or circumstances

3. Muzzle - a device placed over the mouth and nose of an animal to prevent it from biting

4. Square Knot - commonly used to secure an animal and is a nonslip knot that doesn't come untied or easily loosen

5. Head Gate - structure used to contain large animals so that procedures can be performed safely

6. Knot = made from one to two pieces of rope material where one section of the rope prevents slipping of another

7. Reefer Knot - a single bow knot that allows a nonslip, quick release tie

8. Half Hitch - a tie that makes a loop around a stationary location, such as a post or a fence

9. Recumbency - lying position

10. Standing restraint - used to keep an animal standing for a procedure and preventing it from sitting or lying down

11. Sitting Restraint - used to keep an animal in a sitting position for ease of completing a procedure

12. Sternal Recumbency - placing the animal on its chest for restraint

13. Lateral Recumbency - placing the animal on its side for restraint

14. Cephalic Vein - the vein located in the medial aspect of the front limbs

15. Veinipunture - the practice of placing a needle into a blood vessel

16. Jugular Vein - the vein located on either side of the neck in the throat area

17. Saphenous vein - located on the lateral surface of the rear limbs a proximal to the hock

18. Cat bag - restraint equipment that hold the body and limbs of the cat

Standard 3.0 **Apply Assisting Techniques used in Exams and Treatments**

1. Stethoscope - instrument used to listen to the heart, lungs and chest

2. Ophthalmoscope - instrument used to examine the eyes

3. Otoscope - instrument used to examine the ears

4. Thermometer - instrument used to determine and animals internal body temperature

5. Vital signs - the signs of life

6. Anisicoria - uneven pupil signs

7. Calculus - mineralized plaque material that appears brown to dark yellow in color and is difficult to remove from teeth

8. PLR - Pupil Light Response

9 .Plaque - soft build-up of material found over the surfaces of the teeth that is composed of bacteria, food materials and saliva

10. Pulse - the heart rate

11. Murmur - abnormal heart sound that presents as a swishing sound

Standard 4.0 Research Laboratory Aids and Perform Examinations

1. Fecal floatation - technique done to sample the fecal material to determine if any parasite eggs are within the sample by placing feces within a liquid

2. Gram stain - test are evaluated to determine the presence of bacteria and type of bacteria

3. Necropsy - procedure done by examining the body of a deceased animal to determine the cause of death

4. Refractometer - tool used to measure the weight of a liquid and determine a liquids ph level

5. Panel - and individual blood test

6. Eye piece - portion of the microscope that you look through

7. Lens objective - the microscope viewer that offers a variety of different powers

8. Morphology - the cell structure, shape, color and appearance

9. Hematocrit - the measurement of the percentage of red blood cells

10. Stage - part of the microscope that is the flat section of the lens

Standard 5.0 Sterilization and Disinfection

1. Sterilization – killing all living organisms on surface

2. Isolation ward=separate housing that groups similar patients

3. Nosocomial infection=when a human causes the spread of disease to an animal

4. Physical cleaning=the most common method of sanitary control within a facility

5. Radiation=using ultraviolet or gamma rays to kill living organisms

6. Sanitation=the process of keeping an area clean and neat

7. Spectrum=wide variety of factors

8. Sterile Techniques=swashing the hands frequently, wearing gloves when handling animals, and cleaning all surfaces with disinfectants to prevent the spread of disease

9. Sterilizing=destroying all microorganisms on object using chemicals and or extreme heat or cold

10. Ultra sound=passing high frequency sound waves through a solution to create a vibration that scrubs a object to remove debris

Standard 6.0 Demonstrate Surgical Assistance Procedures

1. Open gloving - process done by removing the left glove using the right hand by grasping it and the edge of the cuff

2. Staple remover - device placed under the staple and squeezed to remove the staple

3. Scrub Pack - the sterile supply that contains the necessary items to properly prepare the surgeon, technician, or assistant for surgery for washing hands

4. Surgery Pack - the sterile instrument prepared for surgical procedures with tools and supplies required for the procedure

5. Sphygmomanometer - a device used to measure an animal's blood pressure during surgery

6. Mosquito hemostats - small in size with a fine tip that is used to hold delicate blood vessels

7. Rat tooth forceps- instrument with large teeth, similar a rats, that hold large thick tissues and skin

8. Tissue forceps - instrument used to grasps tissue and have teeth that grip the tissue

9. Towel Clamp- instrument used to hold the surgical drape placed over the patient during surgery

10. Autoclave- most common method for surgical sterilization of packs and equipment by using a large box-like area to heat the items
11. Endotracheal tube- a flexible tube that should fit snuggly into the trachea

12. Laryngoscope - a tool made of heavy metal that has a light source on the end to help light the airway view

Standard 7.0 Investigate Veterinary Medicine Regulations

1. Veterinary Practice Act - legal document that outlines rules and regulations of veterinary professionals

2. DEA - Drug Enforcement Agency

3. FDA - Food and Drug Administration

4. Ethical - the act of doing what is right

5.Unethical - the act of doing something wrong

6. Malpractice - the act of working below the standards of practice

7. State Board of Veterinary Medicine - each states agency of veterinary members and public members that take disciplinary action in the profession and they monitor the rights of the public

8. Rabies certificate - documentation the animals has received proper vaccination for rabies

9. Rabies laws - legal standards in each state to prevent the spread of rabies infections

10. Animal Welfare Act - rules governing how animals are handled and cared for

Common Core State Standards Grades 9-12

ELA Speaking and Listening Standards Grades 9-10

1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. **SL9-10.1**
    a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. **SL9-10.1a**
    b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. **SL9-10.1b**
    c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. **SL9-10.1c**
    d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented. **SL9-10.1d**
2. Integrate multiple sources of information presented in diverse media or format (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source. **SL9-10.2**
3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence. **SL9-10.3**
4. Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task. **SL9-10.4**
5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest. **SL9-10.5**

ELA Speaking and Listening Standards Grades 11-12

1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. **SL11-12.1**
    a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. **SL11-12.1a**
    b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed. **SL11-12.1b**

c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. **SL11-12.1c**
d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task. **SL11-12.1d**

2. Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data. **SL11-12.2**
3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used. **SL11-12.3**
4. Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks. **SL11-12.4**
5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest. **SL11-12.5**

ELA Language Grades 9-10

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9–10 reading and content, choosing flexibly from a range of strategies. **L9-10.4**
   a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. **L9-10.4a**
   b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., analyze, analysis, analytical; advocate, advocacy). **L9-10.4b**
   c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology. **L9-10.4c**
   d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary). **L9-10.4d**
6. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression. **L9-10.6**

ELA Language Grades 11-12

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11–12 reading and content, choosing flexibly from a range of strategies. **L11-12.4**

a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. **L11-12.4a**
b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., conceive, conception, conceivable). **L11-12.4b**
c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage. **L11-12.4c**
d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary **L11-12.4d**

6. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression. **L11-12.6**

Reading Standards for Literacy in Science and Technical Subjects Grades 9-10

1. Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. **R9-10.1**
2. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text. **R9-10.2**
3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text. **R9-10.3**
4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics. **R9-10.4**
5. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy). **R9-10.5**
6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address. **R9-10.6**
7. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. **R9-10.7**
8. Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem. **R9-10.8**
9. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts. **R9-10.9**
10. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently. **R9-10.10**

Reading Standards for Literacy in Science and Technical Subjects Grades 11-12

1. Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. **R11-12.1**
2. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. **R11-12.2**
3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. **R11-12.3**
4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. **R11-12.4**
5. Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas. **R11-12.5**
6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved. **R11-12.6**
7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. **R11-12.7**
8. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. **R11-12.8**
9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **R11-12.9**
10. By the end of grade 12, read and comprehend science/technical texts in the grades 11–CCR text complexity band independently and proficiently. **R11-12.10**

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects Grades 9-10

1. Write arguments focused on discipline-specific content. **W9-10.1**
    a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. **W9-10.1a**
    b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns. **W9-10.1b**
    c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. **W9-10.1c**
    d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. **W9-10.1d**
    e. Provide a concluding statement or section that follows from or supports the argument presented. **W9-10.1e**

2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. **W9-10.2**
   a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. **W9-10.2a**
   b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. **W9-10.2b**
   c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. **W9-10.2c**
   d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. **W9-10.2d**
   e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. **W9-10.2e**
   f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic). **W9-10.2f**
3. Write precise enough descriptions of the step-by-step procedures they use in their investigations or technical work that others can replicate them and (possibly) reach the same results. **W9-10.3**
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
   W9-10.4
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. **W9-10.5**
6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically. **W9-10.6**
7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. **W9-10.7**
8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation. **W9-10.8**
9. Draw evidence from informational texts to support analysis, reflection, and research. **W9-10.9**
10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. **W9-10.10**

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects Grades 11-12

1. Write arguments focused on discipline-specific content. **W11-12.1**

a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. **W11-12.1a**
b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases. **W11-12.1b**
c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. **W11-12.1c**
d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. **W11-12.1d**
e. Provide a concluding statement or section that follows from or supports the argument presented. **W11-12.1e**

2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. **W11-12.2**
   a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. **W11-12.2a**
   b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. **W11-12.2b**
   c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. **W11-12.2c**
   d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. **W11-12.2d**
   e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic). **W11-12.2e**
3. Write precise enough descriptions of the step-by-step procedures they use in their investigations or technical work that others can replicate them and (possibly) reach the same results. **W11-12.3**
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
   W11-12.4
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. **W11-12.5**
6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information. **W11-12.6**

7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. **W11-12.7**
8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation. **W11-12.8**
9. Draw evidence from informational texts to support analysis, reflection, and research. **W11-12.9**
10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. **W11-12.10**

Common Career and Technical Core Standards

Agriculture, Food, and Natural Resources Cluster

Agriculture, Food, & Natural Resources Career Cluster Standards (AG)

1. Analyze how issues, trends, technologies, and public policies impact systems in the Agriculture, Food, & Natural Resources (AFNR) Career Cluster. **AG1**
2. Evaluate the nature and scope of the AFNR cluster and the role AFNR plays in society and the economy. **AG2**
3. Examine and summarize importance of health, safety, and environmental management systems in AFNR organizations. **AG3**
4. Demonstrate stewardship of natural resources in AFNR activities. **AG4**
5. Describe career opportunities and means to achieve those opportunities in each of the AFNR career pathways.**AG5**
6. Analyze the interaction among ANFR systems in the production, processing and management of food, fiber, and fuel and sustainable use of natural resources. **AG6**

Agribusiness Systems Career Pathway (AG-BIZ)

1. Apply management planning principles in AFNR business enterprises. **AG-BIZ1**
2. Use record keeping to accomplish AFNR business objectives, manage budgets, and comply with laws and regulations. **AG-BIZ2**
3. Manage cash budgets, credit budgets, and credit for an AFNR business using generally accepted accounting principles. **AG-BIZ3**
4. Develop a business plan for an AFNR enterprise or business unit. **AG-BIZ4**
5. Use sales and marketing principles common to agribusiness systems to accomplish AFNR business objectives. **AG-BIZ5**

Animal Systems Career Pathway (AG-ANI)

1. Analyze historic and current trends impacting the animal systems industry. **AG-ANI1**

2. Utilize best practice protocols for husbandry and welfare based upon animal behaviors. **AG-ANI2**
3. Design and provide proper animal nutrition given desired outcomes for performance, development, reproduction, and/or economic production. **AG-ANI3**
4. Apply principles of animal reproduction given desired outcomes for performance, development, and/or economic production. **AG-ANI4**
5. Evaluate environmental factors affecting animal performance and implement procedures for enhancing performance and animal health. **AG-ANI5**
6. Classify, evaluate and select animals based on anatomical and physiological characteristics. **AG-ANI6**
7. Apply principles of effective animal health care. **AG-ANI7**

Environmental Service Systems Career Pathway (AG-ENV)

1. Use analytical procedures and instruments to manage environmental service systems. **AG-ENV1**
2. Evaluate the impact of public policies and regulations on environmental service system operations. **AG-ENV2**
3. Develop proposed solutions to environmental issues, problems, and applications using scientific principles of meteorology, soil science, hydrology, microbiology, chemistry, and ecology. **AG-ENV3**
4. Demonstrate the operation of environmental service systems (e.g., pollution control, water treatment, wastewater treatment, solid waste management, and energy conservation). **AG-ENV4**
5. Use tools, equipment, machinery, and technology common to tasks in environmental service systems. **AG-ENV5**

Food Products and Processing Systems Career Pathway (AG-FD)

1. Develop and implement procedures to ensure safety, sanitation, and quality in the food product and processing facilities. **AG-FD1**
2. Apply principles of nutrition, biology, microbiology, chemistry, and human behavior to development of food products. **AG-FD2**
3. Select and process food products for storage, distribution, and consumption. **AG-FD3**
4. Explain the scope of the food industry and the historical and current developments of food products and processing. **AG-FD4**

Natural Resources Systems Career Pathway (AG-NR)

1. Plan and conduct natural resource management activities that apply logical, reasoned, and scientifically based solutions to natural resource issues and goals. **AG-NR1**
2. Analyze the interrelationships between natural resources and humans. **AG-NR2**
3. Develop plans to ensure responsible and sustainable production and processing of natural resources. **AG-NR3**
4. Demonstrate responsible control and management procedures and techniques to protect or maintain natural resources. **AG-NR4**

Plant Systems Career Pathway (AG-PL)

1. Develop and implement a crop management plan for a given production goal that accounts for environmental factors. **AG-PL1**

2. Apply the principles of classification, plant anatomy, and plant physiology to plant production and management. **AG-PL2**
3. Propagate, culture, and harvest plants and plant products based on current industry standards. **AG-PL3**
4. Apply principles of design in plant systems to enhance an environment (e.g., floral, forest, landscape, and farm). **AG-PL4**

Power, Structural and Technical Systems Career Pathway (AG-PST)

1. Apply physical science principles and engineering applications related to mechanical equipment, structures, and biological systems to solve problems and improve performance in AFNR power, structural, and technical systems. **AG-PST1**
2. Operate and maintain AFNR mechanical equipment and power systems. **AG-PST2**
3. Service and repair AFNR mechanical equipment and power systems. **AG-PST3**
4. Plan, build, and maintain AFNR structures. **AG-PST4**
5. Use control, monitoring, geospatial, and other technologies in AFNR power, structural, and technical systems. **AG-PST5**

Common Career and Technical Core Career Ready Practices (CCTC CRP)

1. Act as a responsible and contributing citizen and employee. **CRP1**
2. Apply appropriate academic and technical skills. **CRP2**
3. Attend to personal health and financial well-being. **CRP3**
4. Communicate clearly, effectively, and with reason. **CRP4**
5. Consider the environmental, social and economic impacts of decisions. **CRP5**
6. Demonstrate creativity and innovation. **CRP6**
7. Employ valid and reliable research strategies. **CRP7**
8. Utilize critical thinking to make sense of problems and persevere in solving them. **CRP8**
9. Model integrity, ethical leadership, and effective management. **CRP9**
10. Plan education and career path aligned to personal goals.**CRP10**
11. Use technology to enhance productivity. **CRP11**
12. Work productively in teams while using cultural/global competence.