Statewide Framework Document for: 510808

Standards may be added to this document prior to submission, but may not be removed from the framework to meet state credit equivalency requirements. Performance assessments may be developed at the local level. In order to earn state approval, performance assessments must be submitted within this framework. **This course is eligible for 1 credit of laboratory science.** The Washington State Science Standards performance expectations for high school blend core ideas (Disciplinary Core Ideas, or DCIs) with scientific and engineering practices (SEPs) and crosscutting concepts (CCCs) to support students in developing usable knowledge that can be applied across the science disciplines. These courses are to be taught in a three-dimensional manner. The details about each performance expectation can be found at Next Generation Science Standards, and the supporting evidence statements can be found under Resources.

Veterinarian Assistant

Course Title: Veterinarian Assistant	**Total Framework Hours: 540**
CIP Code: 510808 ☐ Exploratory ☒ Preparatory	**Date Last Modified: May 4, 2015**
Career Cluster: Agriculture, Food, and Natural Resources	**Cluster Pathway: Animal Systems**
Eligible for Equivalent Credit in: ☐ Math ☒ Science	**Total Number of Units: 7**

Course Overview

Summary:
This course prepares individuals (under the supervision of veterinarians, laboratory animal specialists, and zoological professionals) to provide patient management, care, and clinical procedures assistance as well as owner communication. Instruction will include animal nursing care, animal health and nutrition, animal handling, clinical pathology, radiology, anesthesiology, dental prophylaxis, surgical assisting, clinical laboratory procedures, office administration skills, patient and owner management, and applicable standards and regulations.

As with all agriculture courses, instruction and assessment in the Supervised Agriculture Experience (SAE) is a requirement. The SAE includes placing a student in a position where he or she will learn the practices of entrepreneurship and the fundamentals of research and experimentation in the agricultural field. Participants in the SAE will conduct exploratory projects with the purpose of learning about and improving practices in their surroundings.
SAE.01. This course will include instruction in and Student involvement in Supervised Agriculture Experience Projects (SAE).

Unit 1: Introduction to the Veterinary Technology Profession	Total Learning Hours for Unit: 45

Performance Assessments:

Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.

It is expected that students will:
- Understand the need to routinely participate in life-long learning activities to stay current with trends, technology, and techniques pertaining to the veterinary industry, including refresher courses for Vet Techs, subscribing to Vet Tech journals, and active participation in professional organizations.
- Identify how performance on assessments such as the SAT®, ACT®, ASVAB®, COMPASS®, and ACCUPLACER® affect personal academic and career goals.
- Prepare a personal budget reflecting desired lifestyle, and compare and contrast at least three careers of interest in regard to salary expectations and education/training costs.

All students will create an academic portfolio which includes:
- Résumé
- Application
- Application Letter
- Mission Statement
- Employability Skills Rubric
- Program Competency Checklist (Grades, Progress Report, Transcripts)
- Leadership Experiences
- Final Project including a project, a presentation, and a reflection paper
- Best Work
- High School and Beyond Plan (based on local school district requirements)
- Digital Documentation of Work

Leadership Alignment:
- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.
- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.
  Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

Students will work independently, manage goals and time, and produce results in the creation of the academic portfolio. Students will think creatively, be self-directed learners, and reason effectively to create a High School and Beyond Plan and final project.

Industry Standards and Competencies

Agriculture, Food, and Natural Resources (AFNR) Standards: Animal Science Pathway:
AS.01.01. Performance Indicator: Evaluate the development and implications of animal origin, domestication and distribution.
 Level I: AS.01.01.02.a. Define major components of the animal industry.
 Level II: AS.01.01.02.b. Outline the development of the animal industry and the resulting products, services and careers.
 Level III: AS.01.01.02.c. Predict trends and implications of future development of the animal systems industry.

Agriculture, Food, and Natural Resources (AFNR) Standards: LifeKnowledge and Cluster Skills:
CS.01.03. Performance Indicator: Vision: Establish a clear image of what the future should look like.

CS.01.05. Performance Indicator: Awareness: Desire purposeful understanding related to professional and personal activities.

CS.01.06. Performance Indicator: Continuous Improvement: Pursue learning and growth opportunities related to professional and personal aspirations.

Aligned Washington Academic Standards

Washington State Science Standards (Next Generation Science Standards):

HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

Washington English Language Arts Standards (Common Core State Standards) - Science and Technology Literacy Standards (Grades 9-10):

RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

RST.9-10.2 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.

RST.9-10.4 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.

Unit 2: Safety	Total Learning Hours for Unit: 50

Performance Assessments:

Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.

Recommended resource: *The Right To Know* (obtain from PLIT—Professional Liability Insurance Trust)

Checklists are used on all safety procedures:
- Students are required to have tetanus shot (based on local school district requirements).
- Students must pass the final safety written test before working with lab supplies, equipment, or animals.

Leadership Alignment:
- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.
- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.
  Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

Students will use systems thinking, use and manage information, and work independently to pass the final safety written test to work with lab supplies, equipment, or animals.

Industry Standards and Competencies

Agriculture, Food, and Natural Resources (AFNR) Standards: Animal Science Pathway:

AS.06.01. Performance Indicator: Demonstrate safe animal handling and management techniques.
    Level I: AS.06.01.01.a. Discuss the dangers involved in working with animals.
    Level II: AS.06.01.01.b. Outline safety procedures for working with animals by species.

Level III: AS.06.01.01.c. Interpret animal behaviors and execute protocols for safe handling of animals.
Level I: AS.06.01.02.a. Explain the implications of animal welfare and animal rights for animal agriculture.
AS.06.02. Performance Indicator: Implement procedures to ensure that animal products are safe.
Level I: AS.06.02.01.a. Identify animal production practices that could pose health risks or are considered to pose risks by some.
Level II: AS.06.02.01.b. Discuss consumer concerns with animal production practices relative to human health.
Level III: AS.06.02.01.c. Implement a program to assure the safety of animal products.
AS.07.01. Performance Indicator: Design animal housing, equipment and handling facilities for the major systems of animal production.
Level I: AS.07.01.02.a. Identify equipment and handling facilities used in modern animal production.
Level II: AS.07.01.02.b. Explain how modern equipment and handling facilities enhance the safe and economic production of animals.
Level III: AS.07.01.02.c. Select equipment and implement animal handling procedures and improvements to enhance production efficiency.

Aligned Washington Academic Standards

Washington Science Standards (Next Generation Science Standards):
HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
HS-LS1-4. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.
HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.
HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.
HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

Washington English Language Arts Standards (Common Core State Standards) - Science and Technology Literacy Standards (Grades 9-10):
RST.9-10.4 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.
RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

Unit 3: Clinical Procedures	Total Learning Hours for Unit: 100

Unit Summary:
In this unit, students will learn how to complete a patient history and conduct a physical exam. Students will learn about:
Anatomy and Physiology
  • Medical terminology
  • Breed research
  • Systems research
Diagnostic
  • Common collection techniques
  • Preparation of lab tests
Wounds
  • Students practice on animals
  • Ongoing if they have an animal in house with a wound
  • Students practice technique and are assessed by peers, then teacher with rubric
Patient Management and Nutrition
  • Vaccines (pros and cons)

- Talk about feline reproduction
- Problems in reproduction

Euthanasia
- Group discussion includes ethics
- Students write summary, conclusions from video and discussion

Performance Assessments:

Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.

It is expected that students will:
- Demonstrate how to complete an accurate patient record.
- Complete student projects and presentations on one or more of the unit topics.
- Participate in hands-on demonstrations of clinical procedures.
- Show that they are capable of safely muzzling, lifting, and restraining animals when necessary.

Leadership Alignment:
- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.
- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.
  Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

Students use systems thinking and work independently to demonstrate ability to properly muzzle, lift, and restrain animals. Students reason effectively, access and evaluate information, and communicate clearly to determine the pros and cons of vaccinations. Students use and manage information, solve problems, and be self-directed learners to learn animal anatomy and physiology and understand diagnostic tests.

Industry Standards and Competencies

Agriculture, Food, and Natural Resources (AFNR) Standards: Animal Science Pathway:
AS.02.02. Performance Indicator: Apply principles of comparative anatomy and physiology to uses within various animal systems.
 Level I: AS.02.02.01.a. Identify basic characteristics of animal cells, tissues, organs and body systems.
 Level II: AS.02.02.01.b. Compare and contrast animal cells, tissues, organs and body systems.
 Level III: AS.02.02.02.c. Describe the molecular makeup of animal cells and its importance in animal production and management.
AS.03.01. Performance Indicator: Prescribe and implement a prevention and treatment program for animal diseases, parasites and other disorders.
 Level I: AS.03.01.01.a. Explain methods of determining animal health and disorders.
 Level II: AS.03.01.01.b. Perform simple health-check evaluations on animals.
 Level III: AS.03.01.01.c. Perform diagnostic tests to detect health problems in animals.
 Level I: AS.03.01.02.a. Identify common diseases, parasites and physiological disorders that affect animals.
 Level I: AS.03.01.04.a. Explain the clinical significance of common considerations in veterinary treatments, such as aseptic techniques.
 Level II: AS.03.01.04.b. Prepare animals, facilities and equipment for surgical and nonsurgical veterinary treatments and procedures.
 Level III: AS.03.01.04.c. Perform surgical and nonsurgical veterinary treatments and procedures in animal health care.
 Level I: AS.03.01.05.a. Identify and describe zoonotic diseases.
 Level II: AS.03.01.05.b. Explain the health risk of zoonotic diseases to humans and their historical significance and future implications.
 Level III: AS.03.01.05.c. Implement zoonotic disease prevention methods and procedures for the safe handling and treatment of animals.
AS.06.01. Performance Indicator: Demonstrate safe animal handling and management techniques.
 Level I: AS.06.01.01.a. Discuss the dangers involved in working with animals.

AS.06.02. Performance Indicator: Implement procedures to ensure that animal products are safe.
> Level I: AS.06.02.02.a. Describe how animal identification systems can track an animal's location, nutrition requirements, production progress and changes in health.
> Level II: AS.06.02.02.b. Explain why animal trace-back capability, using individual animal and farm identification systems, is important to producers and consumers.
> Level III: AS.06.02.02.c. Implement an animal and/or premises identification program.

Aligned Washington Academic Standards

Washington Science Standards (Next Generation Science Standards):
HS-LS1-1. Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
HS-LS1-4. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.
HS-LS1-6. Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.
HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and tradeoffs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

Washington English Language Arts Standards (Common Core State Standards) - Science and Technology Literacy Standards (Grades 9-10):
RST.9-10.2 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.
RST.9-10.3 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.
RST.9-10.4 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.
RST.9-10.7 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.
RST.9-10.9 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.
RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

Unit 4: Surgical and Medical Procedures	Total Learning Hours for Unit: 25

Unit Summary:
In this unit, competencies include:
- Surgical Instruments
- Aseptic Technique
- Animal Medical Nursing

Performance Assessments:

Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.

Students will demonstrate skill and knowledge as follows:
- Complete the *Surgical Lab Assignment*

Leadership Alignment:
- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.
- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.
  Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

Students will manage projects, and manage goals and time to learn proper surgical instrument selection and tool usage. Students will think creatively, make judgments and decisions, and solve problems implementing animal medical nursing techniques. Students will use and manage information and produce results by demonstrating proper aseptic techniques.

Industry Standards and Competencies

Agriculture, Food, and Natural Resources (AFNR) Standards: Animal Science Pathway:
AS.02.01. Performance Indicator: Classify animals according to hierarchical taxonomy and agricultural use.
    Level III: AS.02.01.02.c. Appraise and evaluate the economic value of animals for various applications in the agriculture industry.
AS.02.02. Performance Indicator: Apply principles of comparative anatomy and physiology to uses within various animal systems.
    Level I: AS.02.02.01.a. Identify basic characteristics of animal cells, tissues, organs and body systems.
    Level II: AS.02.02.01.b. Compare and contrast animal cells, tissues, organs and body systems.
    Level I: AS.02.02.04.a. Describe the properties, locations, functions and types of animal tissues.
    Level II: AS.02.02.04.b. Explain the relationship of animal tissues to growth, performance and health.
    Level I: AS.02.02.05.a. Describe the properties, locations, functions and types of animal organs.
    Level II: AS.02.02.05.b. Compare and contrast organ types and functions among animal species.
    Level III: AS.02.02.05.c. Relate the importance of animal organs to the health, growth and reproduction of animals.
    Level I: AS.02.02.06.a. Describe the functions of the animal body systems and system components.
    Level III: AS.02.02.06.c. Explain the impact of animal body systems on performance, health, growth and reproduction.
AS.02.03. Performance Indicator: Select animals for specific purposes and maximum performance based on anatomy and physiology.
    Level I: AS.02.03.01.a. Identify ways an animal's health can be affected by anatomical and physiological disorders.
AS.03.01. Performance Indicator: Prescribe and implement a prevention and treatment program for animal diseases, parasites and other disorders.
    Level I: AS.03.01.02.a. Identify common diseases, parasites and physiological disorders that affect animals.
    Level I: AS.03.01.04.a. Explain the clinical significance of common considerations in veterinary treatments, such as aseptic techniques.
    Level II: AS.03.01.04.b. Prepare animals, facilities and equipment for surgical and nonsurgical veterinary treatments and procedures.
    Level III: AS.03.01.04.c. Perform surgical and nonsurgical veterinary treatments and procedures in animal health care.
    Level III: AS.03.01.05.c. Implement zoonotic disease prevention methods and procedures for the safe handling and treatment of animals.
AS.06.02. Performance Indicator: Implement procedures to ensure that animal products are safe.
    Level I: AS.06.02.02.a. Describe how animal identification systems can track an animal's location, nutrition requirements, production progress and changes in health.
    Level II: AS.06.02.02.b. Explain why animal trace-back capability, using individual animal and farm identification systems, is important to producers and consumers.
    Level III: AS.06.02.02.c. Implement an animal and/or premises identification program.

AS.07.01. Performance Indicator: Design animal housing, equipment and handling facilities for the major systems of animal production.

Level I: AS.07.01.02.a. Identify equipment and handling facilities used in modern animal production.
Level II: AS.07.01.02.b. Explain how modern equipment and handling facilities enhance the safe and economic production of animals.
Level III: AS.07.01.02.c. Select equipment and implement animal handling procedures and improvements to enhance production efficiency.

Aligned Washington Academic Standards

Washington Science Standards (Next Generation Science Standards):

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and tradeoffs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

Washington English Language Arts Standards (Common Core State Standards) - Science and Technology Literacy Standards (Grades 9-10):

RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

RST.9-10.2 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.

RST.9-10.3 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.

RST.9-10.4 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.

RST.9-10.7 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.

RST.9-10.9 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.

RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

Unit 5: Pharmacology	**Total Learning Hours for Unit: 50**

Unit Summary:
In this unit, competencies include:
- Medical Math
- Common Pharmaceuticals
- Government Classifications (legend, U.S. Controlled, U.S. OTC)

Performance Assessments:
Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.

Leadership Alignment:
- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.
- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.
    Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

Students will reason effectively and solve problems to use medical math in application of pharmacology concepts. Students will access and evaluate, and use and manage information to understand government classification of animal pharmaceuticals.

Industry Standards and Competencies

Agriculture, Food, and Natural Resources (AFNR) Standards: Animal Science Pathway:
AS.04.02. Performance Indicator: Prescribe and administer animal feed additives and growth promotants in animal production.
    Level I: AS.04.02.01.a. Explain the purpose and benefits of feed additives and growth promotants in animal production.
    Level II: AS.04.02.01.b. Discuss how feed additives and growth promotants are administered and the precautions that should be taken.
    Level III: AS.04.02.01.c. Prescribe and administer feed additives and growth promotants.

Aligned Washington Academic Standards

Washington Science Standards (Next Generation Science Standards):
HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
HS-LS1-6. Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.
HS-PS1-5. Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.
HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

Washington English Language Arts Standards (Common Core State Standards) - Science and Technology Literacy Standards (Grades 9-10):
RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
RST.9-10.3 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.
RST.9-10.4 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.
RST.9-10.7 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.
RST.9-10.8 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.
RST.9-10.9 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.
RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

Unit 6: Anatomy and Physiology and the Process of Disease	Total Learning Hours for Unit: 180

Unit Summary:
In this unit, competencies include:
- Musculoskeletal, Disease Process, and Pathology
- Gastrointestinal System
- Parasitology
- Cardiology and Circulation
- Urogenital System
- Respiration and Anesthesia

Performance Assessments:
Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.

Students will demonstrate skills and knowledge as follows:
Clinical Procedures
- Cat dissection lab and practical
- Medical terminology by acclaimed Dean Vaughn system using autonyms, power points, and creative reasoning
Diagnostic
- Common collection techniques
- Lab tests (i.e., ear cytology, fecal floats, blood slides, and CBC with differential)

Leadership Alignment:
- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.
- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.
  Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

Students will demonstrate the ability to use systems thinking, reason effectively, make judgments and decisions, and collaborate with others to complete the cat dissection lab. Students will think creatively, access and evaluate information, manage goals and time, and be self-directed learners by completing laboratory tests.

Industry Standards and Competencies

Agriculture, Food, and Natural Resources (AFNR) Standards: Animal Science Pathway:
AS.01.01. Performance Indicator: Evaluate the development and implications of animal origin, domestication and distribution.
　　　　Level I: AS.01.01.01.a. Identify the origin, significance, distribution and domestication of animal species.
　　　　Level II: AS.01.01.01.b. Evaluate and describe characteristics of animals that developed in response to the animals' environment and led to their domestication.
　　　　Level III: AS.01.01.01.c. Predict adaptations of animals to production practices and environments.
AS.02.01. Performance Indicator: Classify animals according to hierarchical taxonomy and agricultural use.
　　　　Level I: AS.02.01.02.a. Identify major animal species by common and scientific names.
AS.02.02. Performance Indicator: Apply principles of comparative anatomy and physiology to uses within various animal systems.
　　　　Level I: AS.02.02.01.a. Identify basic characteristics of animal cells, tissues, organs and body systems.
　　　　Level II: AS.02.02.01.b. Compare and contrast animal cells, tissues, organs and body systems.

Level III: AS.02.02.01.c. Explain how the components and systems of animal anatomy and physiology relate to the production and use of animals.

Level I: AS.02.02.04.a. Describe the properties, locations, functions and types of animal tissues.

Level II: AS.02.02.04.b. Explain the relationship of animal tissues to growth, performance and health.

Level III: AS.02.02.04.c. Explain the importance and uses made of animal tissues in the agriculture industry.

Level I: AS.02.02.05.a. Describe the properties, locations, functions and types of animal organs.

Level II: AS.02.02.05.b. Compare and contrast organ types and functions among animal species.

Level III: AS.02.02.05.c. Relate the importance of animal organs to the health, growth and reproduction of animals.

Level I: AS.02.02.06.a. Describe the functions of the animal body systems and system components.

Level II: AS.02.02.06.b. Compare and contrast body systems and system adaptations between animal species.

Level III: AS.02.02.06.c. Explain the impact of animal body systems on performance, health, growth and reproduction.

AS.02.03. Performance Indicator: Select animals for specific purposes and maximum performance based on anatomy and physiology.

Level I: AS.02.03.01.a. Identify ways an animal's health can be affected by anatomical and physiological disorders.

Level II: AS.02.03.01.b. Compare and contrast desirable anatomical and physiological characteristics of animals within and between species.

Level III: AS.02.03.01.c. Evaluate and select animals to maximize performance based on anatomical and physiological characteristics that affect health, growth and reproduction.

Level I: AS.02.03.02.a. Create a program to develop an animal to its highest potential performance.

Level II: AS.02.03.02.b. Assess an animal to determine if it has reached its optimal performance level based on anatomical and physiological characteristics.

AS.03.01. Performance Indicator: Prescribe and implement a prevention and treatment program for animal diseases, parasites and other disorders.

Level I: AS.03.01.01.a. Explain methods of determining animal health and disorders.

Level I: AS.03.01.02.a. Identify common diseases, parasites and physiological disorders that affect animals.

Level II: AS.03.01.02.b. Diagnose illnesses and disorders of animals based on symptoms and problems caused by diseases, parasites and physiological disorders.

Level III: AS.03.01.02.c. Treat common diseases, parasites and physiological disorders of animals.

Level I: AS.03.01.03.a. Explain characteristics of causative agents and vectors of diseases and disorders in animals.

Level II: AS.03.01.03.b. Evaluate preventive measures for controlling and limiting the spread of diseases, parasites and disorders among animals.

Level III: AS.03.01.03.c. Design and implement a health maintenance and disease and disorder prevention plan for animals in their natural and/or confined environments.

Level I: AS.03.01.04.a. Explain the clinical significance of common considerations in veterinary treatments, such as aseptic techniques.

Level II: AS.03.01.04.b. Prepare animals, facilities and equipment for surgical and nonsurgical veterinary treatments and procedures.

Level III: AS.03.01.04.c. Perform surgical and nonsurgical veterinary treatments and procedures in animal health care.

Level I: AS.03.01.05.a. Identify and describe zoonotic diseases.

Level II: AS.03.01.05.b. Explain the health risk of zoonotic diseases to humans and their historical significance and future implications.

Level III: AS.03.01.05.c. Implement zoonotic disease prevention methods and procedures for the safe handling and treatment of animals.

AS.03.02. Performance Indicator: Provide for the biosecurity of agricultural animals and production facilities.

Level I: AS.03.02.01.a. Explain the importance of biosecurity to the animal industry.

Level II: AS.03.02.01.b. Discuss procedures at the local, state and national levels to ensure biosecurity of the animal industry.

AS.04.01. Performance Indicator: Formulate feed rations to provide for the nutritional needs of animals.

Level I: AS.04.01.01.a. Compare and contrast common types of feedstuffs and the roles they play in the diets of animals.

AS.04.02. Performance Indicator: Prescribe and administer animal feed additives and growth promotants in animal production.

Level I: AS.04.02.01.a. Explain the purpose and benefits of feed additives and growth promotants in animal production.

Level II: AS.04.02.01.b. Discuss how feed additives and growth promotants are administered and the precautions that should be taken.

AS.05.01. Performance Indicator: Evaluate the male and female reproductive systems in selecting animals.

Level I: AS.05.01.01.a. Explain the male and female reproductive organs of the major animal species.

Level II: AS.05.01.01.b. Describe the functions of major organs in the male and female reproductive systems.

AS.05.02. Performance Indicator: Evaluate animals for breeding readiness and soundness.
    Level I: AS.05.02.01.a. Explain how age, size, life cycle, maturity level and health status affect the reproductive efficiency of male and female animals.
    Level II: AS.05.02.01.b. Summarize factors that lead to reproductive maturity.
    Level I: AS.05.02.02.a. Discuss the importance of efficient and economic reproduction in animals.
    Level II: AS.05.02.02.b. Evaluate reproductive problems that occur in animals.
AS.05.03. Performance Indicator: Apply scientific principles in the selection and breeding of animals.
    Level I: AS.05.03.01.a. Explain genetic inheritance in agricultural animals.
    Level I: AS.05.03.02.a. Define natural and artificial breeding methods.
    Level II: AS.05.03.02.b. Explain the processes of natural and artificial breeding methods.
    Level I: AS.05.03.05.a. Discuss the uses and advantages and disadvantages of natural breeding and artificial insemination.
    Level II: AS.05.03.05.b. Explain the materials, methods and processes of artificial insemination.
AS.07.01. Performance Indicator: Design animal housing, equipment and handling facilities for the major systems of animal production.
    Level I: AS.07.01.01.a. Identify facilities needed to house and produce each animal species safely and efficiently.
    Level II: AS.07.01.01.b. Critique designs for an animal facility and prescribe alternative layouts and adjustments for the safe and efficient use of the facility.
    Level I: AS.07.01.02.a. Identify equipment and handling facilities used in modern animal production.
    Level II: AS.07.01.02.b. Explain how modern equipment and handling facilities enhance the safe and economic production of animals.
AS.07.02. Performance Indicator: Comply with government regulations and safety standards for facilities used in animal production.
    Level I: AS.07.02.01.a. List the general standards (e.g., environmental, zoning, construction) that must be met in facilities for animal production.
    Level II: AS.07.02.01.b. Evaluate an animal facility to determine if standards have been met.
AS.08.02. Performance Indicator: Evaluate the effects of environmental conditions on animals.
    Level I: AS.08.02.01.a. Identify optimal environmental conditions for animals.
    Level II: AS.08.02.01.b. Describe the effects of environmental conditions on animal populations and performance.

Aligned Washington Academic Standards

Washington Science Standards (Next Generation Science Standards):
HS-LS1-1. Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
HS-LS1-6. Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.
HS-LS1-7. Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.
HS-LS2-1. Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.
HS-LS2-3. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.
HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.
HS-LS2-8. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.
HS-LS3-1. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.
HS-LS3-3. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.
HS-LS4-2. Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.

HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and tradeoffs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

Washington English Language Arts Standards (Common Core State Standards) - Science and Technology Literacy Standards (Grades 9-10):
RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
RST.9-10.2 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.
RST.9-10.3 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.
RST.9-10.4 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.
RST.9-10.5 Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).
RST.9-10.6 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.
RST.9-10.7 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.
RST.9-10.8 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.
RST.9-10.9 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.
RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

Unit 7: Professional Application and Externship	Total Learning Hours for Unit: 90

Unit Summary:
In this unit, students will apply learned concepts outside of the classroom.

Performance Assessments:
Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.

It is expected that students will:
- Run a dog wash service:
    - This is a service-learning project outside of class time.
    - Students provide grooming and animal care to the community.
    - Students rotate roles such as manager, receptionist, and pet caretakers.
    - Students generate intake forms for every client and communicate clients' wants and needs to peers.
- Complete in-clinic externships: Students will (based on numbers, availability, and demonstrated employability skills) be able to go (two days a week during class time) to a clinic to job shadow and follow cases. They will observe firsthand the inner mechanism of clinic-based medicine and are required to participate in weekly grand rounds.

Leadership Alignment:
- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.
- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.
  Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

Students will interact effectively with others, manage goals and time, be flexible, manage projects, be responsible to others, and produce results while completing the externship project.

Industry Standards and Competencies

Agriculture, Food, and Natural Resources (AFNR) Standards: Animal Science Pathway:
AS.01.01. Performance Indicator: Evaluate the development and implications of animal origin, domestication and distribution.
    Level I: AS.01.01.01.a. Identify the origin, significance, distribution and domestication of animal species.
    Level I: AS.01.01.02.a. Define major components of the animal industry.
    Level II: AS.01.01.02.b. Outline the development of the animal industry and the resulting products, services and careers.
AS.02.01. Performance Indicator: Classify animals according to hierarchical taxonomy and agricultural use.
    Level I: AS.02.01.02.a. Identify major animal species by common and scientific names.
AS.02.02. Performance Indicator: Apply principles of comparative anatomy and physiology to uses within various animal systems.
    Level I: AS.02.02.01.a. Identify basic characteristics of animal cells, tissues, organs and body systems.
    Level II: AS.02.02.01.b. Compare and contrast animal cells, tissues, organs and body systems.
    Level I: AS.02.02.04.a. Describe the properties, locations, functions and types of animal tissues.
    Level I: AS.02.02.05.a. Describe the properties, locations, functions and types of animal organs.
    Level II: AS.02.02.05.b. Compare and contrast organ types and functions among animal species.
    Level III: AS.02.02.05.c. Relate the importance of animal organs to the health, growth and reproduction of animals.
    Level I: AS.02.02.06.a. Describe the functions of the animal body systems and system components.
    Level II: AS.02.02.06.b. Compare and contrast body systems and system adaptations between animal species.
    Level III: AS.02.02.06.c. Explain the impact of animal body systems on performance, health, growth and reproduction.
AS.02.03. Performance Indicator: Select animals for specific purposes and maximum performance based on anatomy and physiology.
    Level I: AS.02.03.01.a. Identify ways an animal's health can be affected by anatomical and physiological disorders.
    Level II: AS.02.03.01.b. Compare and contrast desirable anatomical and physiological characteristics of animals within and between species.
AS.03.01. Performance Indicator: Prescribe and implement a prevention and treatment program for animal diseases, parasites and other disorders.
    Level I: AS.03.01.01.a. Explain methods of determining animal health and disorders.
    Level II: AS.03.01.01.b. Perform simple health-check evaluations on animals.
    Level III: AS.03.01.01.c. Perform diagnostic tests to detect health problems in animals.
    Level I: AS.03.01.02.a. Identify common diseases, parasites and physiological disorders that affect animals.
    Level III: AS.03.01.02.c. Treat common diseases, parasites and physiological disorders of animals.
    Level I: AS.03.01.03.a. Explain characteristics of causative agents and vectors of diseases and disorders in animals.
    Level II: AS.03.01.03.b. Evaluate preventive measures for controlling and limiting the spread of diseases, parasites and disorders among animals.
    Level I: AS.03.01.04.a. Explain the clinical significance of common considerations in veterinary treatments, such as aseptic techniques.
    Level II: AS.03.01.04.b. Prepare animals, facilities and equipment for surgical and nonsurgical veterinary treatments and procedures.
    Level I: AS.03.01.05.a. Identify and describe zoonotic diseases.
    Level II: AS.03.01.05.b. Explain the health risk of zoonotic diseases to humans and their historical significance and future implications.
AS.03.02. Performance Indicator: Provide for the biosecurity of agricultural animals and production facilities.
    Level I: AS.03.02.01.a. Explain the importance of biosecurity to the animal industry.
    Level II: AS.03.02.01.b. Discuss procedures at the local, state and national levels to ensure biosecurity of the animal industry.
    Level III: AS.03.02.01.c. Implement a biosecurity plan for an animal production operation.

AS.04.01. Performance Indicator: Formulate feed rations to provide for the nutritional needs of animals.
    Level III: AS.04.01.01.c. Select appropriate feedstuffs for animals based on factors such as economics, digestive system and nutritional needs.
    Level I: AS.04.01.02.a. Explain the importance of a balanced ration for animals.
AS.04.02. Performance Indicator: Prescribe and administer animal feed additives and growth promotants in animal production.
    Level I: AS.04.02.01.a. Explain the purpose and benefits of feed additives and growth promotants in animal production.
    Level II: AS.04.02.01.b. Discuss how feed additives and growth promotants are administered and the precautions that should be taken.
AS.05.01. Performance Indicator: Evaluate the male and female reproductive systems in selecting animals.
    Level I: AS.05.01.01.a. Explain the male and female reproductive organs of the major animal species.
    Level II: AS.05.01.01.b. Describe the functions of major organs in the male and female reproductive systems.
AS.05.03. Performance Indicator: Apply scientific principles in the selection and breeding of animals.
    Level I: AS.05.03.02.a. Define natural and artificial breeding methods.
    Level II: AS.05.03.02.b. Explain the processes of natural and artificial breeding methods.
AS.06.01. Performance Indicator: Demonstrate safe animal handling and management techniques.
    Level I: AS.06.01.01.a. Discuss the dangers involved in working with animals.
    Level II: AS.06.01.01.b. Outline safety procedures for working with animals by species.
    Level III: AS.06.01.01.c. Interpret animal behaviors and execute protocols for safe handling of animals.
    Level I: AS.06.01.02.a. Explain the implications of animal welfare and animal rights for animal agriculture.
AS.06.02. Performance Indicator: Implement procedures to ensure that animal products are safe.
    Level I: AS.06.02.01.a. Identify animal production practices that could pose health risks or are considered to pose risks by some.
    Level I: AS.06.02.02.a. Describe how animal identification systems can track an animal's location, nutrition requirements, production progress and changes in health.
    Level II: AS.06.02.02.b. Explain why animal trace-back capability, using individual animal and farm identification systems, is important to producers and consumers.
    Level III: AS.06.02.02.c. Implement an animal and/or premises identification program.
AS.07.01. Performance Indicator: Design animal housing, equipment and handling facilities for the major systems of animal production.
    Level I: AS.07.01.01.a. Identify facilities needed to house and produce each animal species safely and efficiently.
    Level II: AS.07.01.01.b. Critique designs for an animal facility and prescribe alternative layouts and adjustments for the safe and efficient use of the facility.
    Level I: AS.07.01.02.a. Identify equipment and handling facilities used in modern animal production.
    Level II: AS.07.01.02.b. Explain how modern equipment and handling facilities enhance the safe and economic production of animals.
    Level III: AS.07.01.02.c. Select equipment and implement animal handling procedures and improvements to enhance production efficiency.
AS.08.02. Performance Indicator: Evaluate the effects of environmental conditions on animals.
    Level I: AS.08.02.01.a. Identify optimal environmental conditions for animals.
    Level II: AS.08.02.01.b. Describe the effects of environmental conditions on animal populations and performance.
    Level III: AS.08.02.01.c. Establish and maintain favorable environmental conditions for animal growth and performance.

Aligned Washington Academic Standards

Washington Science Standards (Next Generation Science Standards):
HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and tradeoffs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

Washington English Language Arts Standards (Common Core State Standards) - Science and Technology Literacy Standards (Grades 9-10):

RST.9-10.3 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.

RST.9-10.4 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.

RST.9-10.7 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.

RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

21st Century Skills
Students will demonstrate in this course:

LEARNING & INNOVATION

Creativity and Innovation
☒Think Creatively
☒Work Creatively with Others
☒Implement Innovations

Critical Thinking and Problem Solving
☒Reason Effectively
☒Use Systems Thinking
☒Make Judgments and Decisions
☒Solve Problems

Communication and Collaboration
☒Communicate Clearly
☒Collaborate with Others

INFORMATION, MEDIA & TECHNOLOGY SKILLS

Information Literacy
☒Access and Evaluate Information
☒Use and Manage Information

Media Literacy
☒Analyze Media
☒Create Media Products

Information, Communications and Technology (ICT Literacy)
☒Apply Technology Effectively

LIFE & CAREER SKILLS

Flexibility and Adaptability
☒Adapt to Change
☒Be Flexible

Initiative and Self-Direction
☒Manage Goals and Time
☒Work Independently
☒Be Self-Directed Learners

Social and Cross-Cultural
☒Interact Effectively with Others
☒Work Effectively in Diverse Teams

Productivity and Accountability
☒Manage Projects
☒Produce Results

Leadership and Responsibility
☒Guide and Lead Others
☒Be Responsible to Others