CTE Standards Unpacking
Advanced Animal Science

Course: Advanced Animal Science
Course Description: Advanced Animal Science will address the advanced knowledge and skills necessary to care for and meet the needs of animals, along with soft skills necessary for careers in the Agriculture, Food and Natural Resources sector. Topics covered include: animal health care practices, nutrition management, reproductive practices, medical terminology, animal classification, surgical techniques, and employability skills. Advanced Animal Science has an increased focus on the veterinary portion of animal husbandry. Utilizing appropriate equipment and technology should enhance classroom and laboratory content. Algebra, English, Biology and human relations skills will be reinforced in the course. Work-based learning strategies appropriate for this course are school-based enterprises and field trips. This class is reinforced through the FFA and Supervised Agricultural Experience (SAE) activities such as the Livestock Evaluation Career Development Event and related Proficiency Awards. Each student will be expected to maintain a SAE.
Career Cluster: Agriculture, Food and Natural Resources
Prerequisites: Recommended: Intro to AFNR, Fundamental Animal Science
Program of Study Application: Advanced Animal Science is the second pathway course in the Agriculture, Food and Natural Resources Program of Study, Animal Systems pathway. Advanced Animal Science is preceded by Fundamental Animal Science and is recommended to be taken prior to participation in Ag Biotechnology.

INDICATOR #ADAn 1: Select proper health care practices for animals.		
SUB-INDICATOR 1.1 (Webb Level: 4 Extended Thinking): Choose prevention and treatment programs for animal diseases, parasites and disorders.		
SUB-INDICATOR 1.2 (Webb Level: 2 Skill/Content): Discuss how to provide biosecurity for animals, people, and facilities.		
Knowledge (Factual):	**Understand (Conceptual):**	**Do (Application):**
-Types of vectors and fomites	-Understand how vectors and fomites impact animal health	-Diagnose illnesses based on symptoms
-Biosecurity		-Examine treatment options for various diseases
-Types of parasites	-Why biosecurity plans are in place	
-Disease causing organisms	-Best management practices	-Tour a biosecurity facility
-Common symptoms of disease		-Check animal vitals
		-Fecal analysis

Benchmarks:
Students will be assessed on their ability to:
- Create a biosecurity plan for an animal production.
- Read a case study and determine an illness.
- Write a treatment for an animal disease.

Academic Connections	
ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
English: 1,)9-12 W.2 – Write to inform	-Write a treatment plan after determine animal illness.
2.)9-12 RI.1 – Interpreting a text explicitly and drawing inferences.	-Compare and Contrast a biosecurity plan for species given.

INDICATOR #ADAn 2: **Develop proper nutrition management practices to optimize animal performance.**

SUB-INDICATOR 2.1 (Webb Level: 3 Strategic Thinking): Assess nutritional elements as they affect animal performances.

SUB-INDICATOR 2.2 (Webb Level: 3 Strategic Thinking): Assemble feed rations to provide for animals' nutritional needs.

Knowledge (Factual):	Understand (Conceptual):	Do (Application):
-Feedstuffs	-Understand what each nutrient does for the body	-Evaluate feedstuffs for nutritional value
-Identify nutrient classes		
	-Which feedstuffs provide certain nutrients	-Convert between dry matter and as-fed
-Plant nutritional content based on plant development		-Convert calories
-Organs of digestion systems		-Determine nutrient for animals
-Key points of nutritional labels (TDN, crude fat, crude fiber, crude protein)		-Determine calories found in animal feeds
		-Visit with an animal nutritionist
		-Balance rations while

		using a Pearson's Square

Benchmarks:
Students will be assessed on their ability to:
- Develop a feed program for various stages of feed production.
- Prescribe feed additives and growth promotions for a set of animals.
- Design a total mixed ration for a herd of animals.
- Compare and contrast animal feeds and human foods.

<p align="center">Academic Connections</p>

ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	Sample Performance Task Aligned to the Academic Standard(s):
English: 9-12 W.6 – Use technology, including the internet, to produce an individual writing product	-Create an informational flyer describing a fictional feedstuff.

INDICATOR #ADAn 3: Select reproductive practices to optimize animal production.

SUB-INDICATOR 3.1 (Webb Level: 4 Extended Thinking): Identify management practices in breeding that account for high quality animals.

Knowledge (Factual):	Understand (Conceptual):	Do (Application):
-Artificial insemination	-Importance of different breeding programs	-Compare and contrast breeding systems
-Embryo transfer		
-Natural breeding	-Understand how estrous cycles are involved in breeding management	-Observe a veterinarian performing artificial insemination
-Organs in the reproductive system		-Conduct a semen test for motility and morphology
-Stages of the estrous cycle		
-Hormones involved with estrous cycles and reproductive health		-Observe a veterinarian collecting animal semen

Benchmarks:

Students will be assessed on their ability to:
- Develop a breeding program for a livestock.
- Categorize breeding programs for efficiency.
- Compare and contrast reproductive systems between animal species.

Academic Connections	
ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
English: 9-12 W.4 - Produce writing that is appropriate for the task or audience.	-Illustrate a step by step process for proper AI techniques.

INDICATOR #ADAn 4: Articulate medical terminology as it relates to animals.

SUB-INDICATOR 4.1 (Webb Level: 1 Recall): Recognize relevant medical terminology related to animals.
SUB-INDICATOR 4.2 (Webb Level: 2 Skill/Concept): Apply medical terminology in the correct context.

Knowledge (Factual):	**Understand (Conceptual):**	**Do (Application):**
-Roots, prefixes, suffixes -Medical terminology	-The relationship between medical terminology -The difference between vaccines and antibiotics	-Prescribe a medication for a given illness -Participate in a herd inspection

Benchmarks:
Students will be assessed on their ability to:
- Convert units of measurements.
- Fill out herd health records.
- Complete herd inspection records.

Academic Connections	
ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
Math: HSN.Q.A.3 - Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	-Properly administer a medication, selecting a unit appropriate to the size of the animal.

INDICATOR #ADAn 5: Classify, evaluate and select animals based on anatomical and physiological characteristics (National AFNR AS.06).

SUB-INDICATOR 5.1 (Webb Level: 2 Skill/Concept): Apply principles of anatomy and physiology to uses within various animal systems.
SUB-INDICATOR 5.2 (Webb Level: 1 Recall): Identify and explain the relationships among the various systems of the body.

Knowledge (Factual):	Understand (Conceptual):	Do (Application):
-Identify external anatomy -Knowing terminology used to defend animal selection	-The relationship between anatomy and physiology and animal production and use -The impacts of body systems on animal performance, health, growth, and reproduction	-Compare and contrast body systems and adaptations between animal systems -Participate in the Livestock Evaluation CDE

Benchmarks:
Students will be assessed on their ability to:
- Research the relationships between body systems and their effects.
- Write and present a set of reasons defending animal selection.
- Create a poster depicting desirable structural traits.

Academic Connections	
ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
Science: HS-LS4-3 – Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.	-Write a lab report to use with an Agriscience fair project, explaining why animal selection leads to advantageous traits in livestock.
English: 9-12 W.6 – Use technology, including the internet, to produce an individual writing product.	-Create a Prezi to depict the difference between body systems.

INDICATOR #ADAn 6: Utilize principles of surgical techniques.

SUB-INDICATOR 6.1 (Webb Level: 1 Recall): Identify surgical tools and supplies.

SUB-INDICATOR 6.2 (Webb Level: 4 Extended Thinking): Apply proper surgical techniques to medical situations.

Knowledge (Factual):	Understand (Conceptual):	Do (Application):
-Identify tools and equipment	-The importance of spaying and neutering -Understand the appropriate uses of tools	-Read a health product label -Analyze surgical scenarios -Apply techniques using a cadaver -Practice handling restraints on animals -Observe a veterinarian perform a surgery

Benchmarks:

Students will be assessed on their ability to:

- Illustrate the steps of an animal surgery.
- Administer medications using a syringe.
- Perform suture techniques.

Academic Connections	
ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
English: 9-12 RI.1 – Interpreting a text explicitly and drawing inferences.	-Analyze a surgical report after watching the surgery.
Math: HSN.Q.A.3 - Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	-Properly draw a medication using various tools, paying close attention to proper units of measurement for the given task.

INDICATOR #ADAn 7: Develop employability skills related to the Animal Systems Pathway.

SUB-INDICATOR 7.1 (Webb Level: 2 Skill/Concept): Develop soft skills to enhance employability.

Knowledge (Factual):	Understand (Conceptual):	Do (Application):
-Proper communication etiquette	-Importance of employability skills in careers	-Job shadow
-Proper interview apparel	-Job interview skills	-Tour industries
-How to give a proper hand shake		-Write e-mails to industry professionals
-How to tie a tie		

Benchmarks:
Students will be assessed on their ability to:
- Perform mock interview.
- Compose a cover letter and resume.
- Develop questions for an industry tour.

Academic Connections

ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	Sample Performance Task Aligned to the Academic Standard(s):
English: 1) 9-12 SL.1 - Participate in collaborative discussion	-Organize a panel discussion over small professionals.
2) 9-12 W.2 – Write to inform	-Complete a small animal proficiency application.

Additional Resources
www.vspn.org
Create flashcards; quizlet
www.dreveterinary.com
Local veterinarian for supply catalog, example tools, and live surgical demonstrations
Use virtual labs.