



VIRGINIA  

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FFA ASSOCIATION

# Veterinary Science Handbook

2017-2021

## Purpose

*The purpose of the veterinary science career development event is to promote college and career readiness by providing opportunities to develop technical knowledge and demonstrate practical skills in the field of veterinary science.*

## Objectives

*Participants will demonstrate professional ethics, decision-making, business competency, communication and problem-solving skills.*

Participants will demonstrate technical competency with small and large animals in the areas of:

- Anatomy and physiology
- Clinical procedures
- Identification
- Health and safety
- Medical terminology
- Veterinary math applications

## Event Rules

*Teams will consist of four members with all four members' scores counting toward total team score.*

### ELIGIBILITY

Active FFA members from the same chapter in grades 7-12 may constitute a team of four.

### DRESS CODE:

**Day 1:** It is required that participants wear FFA Official Dress for the written portion of the event.

**Day 2:** All participants must wear either scrubs (top and bottoms; solid color) or polo with slacks. All participants must wear closed toe, closed heel and flat shoes (no clogs, sandals or flip-flops). No jewelry may be worn on the second day of this event. This includes rings, bracelets, earrings and exposed body piercings.

### TOOLS AND EQUIPMENT:

- Students should bring 2 pencils, a four function calculator, a clean clipboard, and clean scratch paper.
- FFA will provide the specific tools and equipment needed to complete practicums.
- Any participant in possession of an electronic device in the event area is subject to disqualification.

# Event Rules

## INDIVIDUAL ACTIVITIES

### WRITTEN EXAM (100 POINTS)

The objective exam is designed to determine team members' broad understanding of the veterinary science field. The written exam will consist of 50 questions. Forty minutes will be given for the exam.

Topics for the exam may include:

- Behavior
- Disease (causes and sources, signs and clinical signs)
- Medical terminology
- Medical records
- Anatomy/physiology
- Regulations (OSHA: Federal Occupational Safety and Health Administration; GHS: Globally Harmonized System for Hazard Communication; SDS: Safety Data Sheets)
- Patient management
- Facility management
- Practice management
- Genetics
- Nutrition
- Husbandry

### MATH APPLICATIONS EXAM (100 POINTS)

The number of practicum questions will vary based on the type of activity that is assigned. Participants will have 30 minutes to complete the entire math application practicum. Questions may include conversions, dose calculations, dilutions, cost calculations and invoices.

### IDENTIFICATION (100 POINTS TOTAL)

Participants will identify equipment, parasites and breeds/species for a total of 100 points (two points per item). Forty minutes will be given for this activity. Identification lists are located at the end of this handbook.

### EQUIPMENT (50 POINTS)

Participants will identify pieces of equipment (actual equipment and photos). They will also need to have general knowledge about the use for each item.

### PARASITES/MICROSCOPIC (30 POINTS)

Participants will identify parasites (specimen and photos) and explain the life cycles of selected parasites.

Participants will identify microscopic organisms.

**BREEDS (20 POINTS)**

Participants will identify breeds of small and large animals (photos).

**PRACTICUMS (320 POINTS) TOTAL****Clinical Procedure Practicum (200 points)**

Participants will be given four clinical procedure activities to complete (50 points each). Fifteen to thirty minutes will be allotted for this section depending on the activities selected each year. Participants are expected to talk through the clinical procedure steps to a judge as they are being scored. Judges may ask participants for clarification on steps performed. All clinical procedure scorecards can be found at the end of this handbook.

**Handling and Restraining Practicum (120 points)**

Participants will be given four handling/restraint activities to complete (30 points each). Fifteen to thirty minutes will be allotted for this section depending on the activities selected each year. Participants are expected to talk through the handling and restraining steps to a judge as they are being scored. Judges may ask participants for clarification on steps performed. All handling and restraining scorecards can be found at the end of this handbook.

**Team Activity (500 points)**

Teams will conduct research using local veterinarians and veterinary resources based on the annual topic posted on the CDE webpage in November. The team will be provided a specific scenario when they begin their team activity. They will have a total of 15 minutes to prepare their presentation. Teamwork will be assessed during the plan development time.

Teams will evaluate the information provided and prepare the questions, diagnostics and recommendations as well as explain steps and procedures for the veterinary process in their plan. Teams need to determine what aspects of veterinary medicine and roles are most important to demonstrate based on the annual topic.

After preparation the team will be required to give an oral presentation for a maximum of 15 minutes explaining decisions made by the team. All team members are expected to participate in the presentation. The team will then be required to answer questions from judges regarding the decisions reached by their team.

Resources provided for the team activity may include diagnostic information like blood work, synopsis of disease state, treatment recommendations and cost information.

## Scoring

ACTIVITIES	Individual Points	Team Points
Written Exam	100	400
Identification	100	400
Math Application Exam	100	400
Handling and Restraining Exam	120	480
Clinical Procedures Practicum	200	800
Team Activity		500
	<b>620</b>	<b>2,980</b>

## TIEBREAKERS

Team tiebreakers will be settled in the following order:

1. Combined individual practicum total score
2. Combined individual written exam total score

Individuals tiebreakers will be settled in the following order:

1. Combined practicum score
2. Written exam score

## Awards

*Awards will be presented to individuals and teams based upon their rankings at the awards ceremony.*

## Resources

*This list of references is not intended to be all inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. Make sure to use discretion when selecting website references by only using reputable, proven sites. The following list contains references that may prove helpful during event preparation. The most current edition of resources will be used.

Past CDE materials and other resources are available by logging in to  
<https://www.ffa.org/participate/cdes/veterinary-science>

## WRITTEN EXAM:

- Small Animal Care and Management. Warren. ISBN: 978-1-4180-4105-2
- McCurnin’s Clinical Textbook for Vet Technicians 8th edition- ISBN 978-1-4377-2690-0
- An Illustrated Guide to Veterinary Medical Terminology. Romich. ISBN: 978-1-4354-2012-0
- Official Guide: Maintaining and Cleaning Surgical Instruments. Stow.:  
[https://www.ffa.org/SiteCollectionDocuments/cde\\_vetsci\\_guide\\_maintaining\\_clearing\\_surgical\\_instruments.pdf](https://www.ffa.org/SiteCollectionDocuments/cde_vetsci_guide_maintaining_clearing_surgical_instruments.pdf)
- Veterinary Science: Preparatory Training for the Veterinary Assistant. Faries. ISBN: 978-0-9849115-0-9. Order online: [https://agriflifebookstore.org/publications\\_browse2.cfm?keywordid=4](https://agriflifebookstore.org/publications_browse2.cfm?keywordid=4)
- Introduction to Veterinary Science. Lawhead, Baker. ISBN: 978-1-4283-1225-8
- <http://todaysveterinarypractice.navc.com/>
- Veterinary Assisting: Fundamentals and Applications. Vanhorn, Clark. ISBN: 978-1-4354-5387-6
- Clinical Procedures & Handling/Restraining Practicums :
- Veterinary Assisting: Fundamentals and Applications. Vanhorn, Clark. ISBN: 978-1-4354-5387-6
- McCurnin’s Clinical Textbook for Vet Technicians 8th edition- ISBN 978-1-4377-2690-0
- Manual of Clinical Procedures in Dogs, Cats, Rabbits & Rodents. Crow, Walshaw, Boyle. ISBN: 978-0813813042
- Veterinary Science: Preparatory Training for the Veterinary Assistant. Faries. ISBN: 978-0-9849115-0-9. Order online: [https://agriflifebookstore.org/publications\\_browse2.cfm?keywordid=4](https://agriflifebookstore.org/publications_browse2.cfm?keywordid=4)

## IDENTIFICATION:

- Veterinary Instruments and Equipment: A Pocket Guide. Sonsthagen. ISBN: 978-0323032032  
<http://loudoun.nvcc.edu/vetonline/vet121/instruments.htm>

- <https://www.spectrumsurgical.com/product/10-0227/Surgical-Instrument-Flash-Cards.php>
- American Kennel Club – <http://www.akc.org/index.cfm>
- Cat Fanciers' Association – <http://www.cfa.org/client/breeds.aspx>
- American Rabbit Breeders Association – <http://www.arba.net/>

## **MATH PRACTICUM:**

- Medical Mathematics and Dosage Calculations for Veterinary Professionals. Bill, Robert. ISBN: 978-08138263
- Essential Calculations for Veterinary Nurses and Technicians. Terry Lake and Nicola Green. ISBN 978-0-7020-2930-1
- <https://www.ffa.org/SiteCollectionDocuments/Math%20Resource.pdf>

## Equipment and Materials Identification List

- 100. Ambubag
- 101. Anesthetic machines
- 102. Autoclave
- 103. Autoclave tape indicator
- 104. Backhaus towel clamps
- 105. Balling gun
- 106. Bandaging material — Elasticon
- 107. Bandaging material — roll gauze
- 108. Bandaging material — vet wrap
- 109. Bands (castration or docking)
- 110. Cat bag
- 111. Catch pole (dog snare)
- 112. Catheter — butterfly
- 113. Catheter — IV
- 114. Catheter — Tomcat urinary
- 115. Centrifuge
- 116. Chemical indicator strips
- 117. Cold sterile tray
- 118. Dehorner — Barnes
- 119. Dehorner — electric
- 120. Dental floats
- 121. Dental scaler
- 122. Drench gun — small ruminant
- 123. Ear notcher
- 124. Elastrator
- 125. Elizabethan collar
- 126. Emasculators
- 127. Endoscope
- 128. Endotracheal tubes
- 129. Fecal loop
- 130. Fecalyzers
- 131. Feeding tube for small animals
- 132. Fetal extractor — calf
- 133. Forceps — Alligator
- 134. Forceps — Allis tissue
- 135. Forceps — Babcock tissue
- 136. Forceps — Brown-Adson thumb
- 137. Forceps — Crile
- 138. Forceps — Kelly
- 139. Forceps — Halstead mosquito hemostatic
- 140. Forceps — Rat tooth thumb
- 141. Gravity feeder / J tube
- 142. Head gate
- 143. Hog snare
- 144. Hoof knife
- 145. Hoof rasp
- 146. IV administration set
- 147. Laparoscope
- 148. Laryngoscopes
- 149. Muzzle — basket
- 150. Muzzle — nylon
- 151. Needle holder — Mayo-Hegar
- 152. Needle holder — Olsen-Hegar
- 153. Obstetrical chain and handle
- 154. Ophthalmoscope
- 155. Otoscope
- 156. Pig tooth nippers
- 157. Radiology personal protective equipment
- 158. Rectal prolapse ring — swine
- 159. Rumen magnet
- 160. Scalpel blade
- 161. Scalpel handle
- 162. Scissors — Suture wire cutting
- 163. Scissors — Bandage
- 164. Scissors — Lister bandage
- 165. Scissors — Littauer suture removal
- 166. Scissors — Mayo dissecting
- 167. Scissors — Metzenbaum dissecting
- 168. Silver nitrate sticks
- 169. Small animal oxygen cage
- 170. Snook ovariohysterectomy hook
- 171. Speculum — large animal oral
- 172. Speculum — small animal oral
- 173. Speculum — vaginal
- 174. Squeeze chute
- 175. Staple remover
- 176. Stethoscope
- 177. Surgical drapes
- 178. Suture needle — cutting
- 179. Suture needle — taper
- 180. Syringe — automatic, multi-dose
- 181. Tattooing instruments — small and large
- 182. Tonometer
- 183. Tourniquet
- 184. Trocar and cannula
- 185. Twitch chain
- 186. Humane Twitch



## Parasite/Microscopic Identification List

200. Blowfly (Family Calliphoridae)
201. Calcium oxalate crystals
202. Cat Warble (Genus Cuterebra)
203. Cocci (bacteria)
204. Coccidia (Genus Isospora or Eimeria)
205. Demodectic Mite (Genus Demodex)
206. Ear Mite (Family Psoroptidae ; Genus Otodectes)
207. Eosinophils
208. Epithelial cells (urine)
209. Flea Larva (Genus Ctenocephalides)
210. Flea Tapeworm Egg\* (Genus Dipylidium)
211. Flea Tapeworm Segment\* (Genus Dipylidium)
212. Flea Tapeworm\* (Genus Dipylidium)
213. Fleas\* (Genus Ctenocephalides)
214. Giardia\* (Genus Giardia)
215. Heartworm Adult\* (Genus Dirofilaria)
216. Heartworm Microfilaria\* (Genus Dirofilaria)
217. Hookworm Adult\* (Family Ancylostomatidae; Genus Ancylostoma, Uncinaria, Bunostomum or Globocephalus)
218. Hookworm Egg\* (Family Ancylostomatidae; Genus Ancylostoma, Uncinaria, Bunostomum or Globocephalus)
219. Horse Bots\* (Genus Gasterophilus)
220. Horse Strongyles\* (Family Strongylidae; Genus Strongylus)
221. Lice — Biting (Order Mallophaga; Genus Bovicola or Trichodectes)
222. Lice — Sucking (Order Anoplura; Genus Linognathus or Hematopinus)
223. Liver Fluke (Class Trematoda; Genus Fasciola, Fascioloides or Dicrocoelium)
224. Mosquito Adult (Family Culicidae; Genus Anopheles, Culex or Aedes)
225. Mosquito Larva (Family Culicidae; Genus Anopheles, Culex or Aedes)
226. Neutrophils
227. Platelets
228. Red blood cell (erythrocyte)
229. Rod (bacteria)
230. Roundworm Adult\* (Family Ascarididae or Toxocaridae; Genus Toxocara, Toxascaris, Ascaris, Parascaris or Neoascaris)
231. Roundworm Egg\* (Family Ascarididae or Toxocaridae; Genus Toxocara, Toxascaris, Ascaris, Parascaris or Neoascaris)
232. Sarcoptic Mite (Family Sarcoptidae ; Genus Sarcoptes or Notoedres)
233. Struvite crystals (triple magnesium phosphate)
234. Taenia Tapeworm Egg\* (Family Taeniidae; Genus Taenia)
235. Taenia Tapeworm Segment\* (Family Taeniidae; Genus Taenia)
236. Taenia Tapeworm\* (Family Taeniidae; Genus Taenia)
237. Tick — American Dog (Family Dermacentor; Genus variabilis)
238. Tick — Black Legged Deer (Family Ixodes; Genus scapularis)
239. Tick — Brown Dog (Family Rhipicephalus; Genus sanguineus)
240. Tick — Lonestar (Family Amblyomma; Genus americanum)
241. Whipworm Egg\* (Genus Trichuris)
242. Whipworm\* (Genus Trichuris)
243. Yeast (cytology)

\*Asterisk indicates which parasite life cycles could have questions.

# Breed/Species Identification List

## DOGS

### HERDING GROUP

- 300. Australian Cattle Dog
- 301. Australian Shepherd
- 302. Border Collie
- 303. Collie
- 304. German Shepherd Dog
- 305. Old English Sheepdog
- 306. Pembroke Welsh Corgi
- 307. Shetland Sheepdog

### HOUND GROUP

- 308. Afghan Hound
- 309. Basenji
- 310. Basset Hound
- 311. Beagle
- 312. Black and Tan Coonhound
- 313. Bloodhound
- 314. Dachshund
- 315. Greyhound
- 316. Rhodesian Ridgeback

### NON-SPORTING GROUP

- 317. Bichon Frise
- 318. Boston Terrier
- 319. Bulldog
- 320. Chinese Shar-Pei
- 321. Chow Chow
- 322. Dalmatian
- 323. Poodle

### SPORTING GROUP

- 324. Brittany Spaniel
- 325. Cocker Spaniel
- 326. English Setter
- 327. German Shorthaired Pointer
- 328. Golden Retriever
- 329. Irish Setter
- 330. Labrador Retriever
- 331. Weimaraner

### TERRIER GROUP

- 332. Bull Terrier
- 333. Cairn Terrier
- 334. Parson Russell Terrier
- 335. Scottish Terrier
- 336. West Highland White Terrier

### TOY GROUP

- 337. Cavalier King Charles Spaniel
- 338. Chihuahua
- 339. Miniature Pinscher
- 340. Papillon
- 341. Pekingese
- 342. Pomeranian
- 343. Poodle
- 344. Pug
- 345. Shih Tzu
- 346. Yorkshire Terrier

### WORKING GROUP

- 347. Bernese Mountain Dog
- 348. Boxer
- 349. Doberman Pinscher
- 350. Great Dane
- 351. Great Pyrenees
- 352. Mastiff
- 353. Newfoundland
- 354. Portuguese Water Dog
- 355. Rottweiler
- 356. Saint Bernard
- 357. Siberian Husky
- 358. Standard Schnauzer

## CATS

- 359. Abyssinian
- 360. American Shorthair
- 361. Burmese
- 362. Maine Coon
- 363. Manx
- 364. Persian
- 365. Ragdoll
- 366. Russian Blue
- 367. Siamese
- 368. Sphynx

## BIRDS

- 369. African Gray Parrot
- 370. Canary
- 371. Cockatiel
- 372. Cockatoos
- 373. Love Birds
- 374. Macaw
- 375. Parakeet
- 376. Sun Conure
- 377. Zebra Finch

## REPTILES

- 378. Bearded Dragon
- 379. Chameleon
- 380. Gecko
- 381. Iguana

## POULTRY

- 382. Chicken — Cornish
- 383. Chicken — Leghorns
- 384. Chicken — Plymouth Rock
- 385. Chicken — Rhode Island Red
- 386. Duck
- 387. Geese
- 388. Quail
- 389. Turkey

## SMALL MAMMALS

- 390. Chinchilla
- 391. Ferret
- 392. Gerbils
- 393. Guinea Pig
- 394. Hamster
- 395. Hedgehog
- 396. Sugar Glider

**RABBITS**

- 397. Angora
- 398. Californian
- 399. Dutch
- 400. English Spot
- 401. Holland Lop
- 402. Mini-Rex
- 403. Netherland Dwarf
- 404. New Zealand

**DAIRY CATTLE**

- 405. Ayrshire
- 406. Brown Swiss
- 407. Guernsey
- 408. Holstein
- 409. Jersey

**BEEF CATTLE**

- 410. Angus
- 411. Brahman
- 412. Charolais
- 413. Hereford
- 414. Shorthorn

- 415. Simmental

**HORSE**

- 416. Appaloosa
- 417. Arabian
- 418. Belgian
- 419. Clydesdale
- 420. Morgan
- 421. Paint
- 422. Percheron
- 423. Quarter Horse
- 424. Saddlebred
- 425. Tennessee Walking Horse
- 426. Thoroughbred

**GOAT**

- 427. Alpine
- 428. Nubian
- 429. Angora
- 430. Boer
- 431. LaMancha
- 432. Saanen
- 433. Toggenburg

**SHEEP**

- 434. Columbia
- 435. Dorper
- 436. Dorset
- 437. Hampshire
- 438. Merino
- 439. Rambouillet
- 440. Southdown
- 441. Suffolk

**SWINE**

- 442. American Landrace
- 443. Berkshire
- 444. Chester White
- 445. Duroc
- 446. Hampshire
- 447. Yorkshire

# Team Activity Preparation Rubric

200 points

INDICATOR	Very strong evidence of skill 5-4 points	Moderate evidence of skill 3-2 points	Weak evidence of skill 1-0 points	Points Earned	Weight	Total Score
<b>Effective listening</b>	Clearly evident that all team members are listening.	Listening occurs but distraction is evident.	Not listening to each other and/or talking over each other.		X 5	
<b>Oral communication</b>	Clearly evident that all team members are discussing the topic.	Communication occurs but side conversations are occurring or two to three members dominating.	One member dominating conversation.		X5	
<b>Demonstrated cooperation</b>	Clearly all team members completing tasks, sharing written and oral solutions.	Tasks primarily completed by two to three members, other members assist occasionally.	Tasks primarily completed by one member, other members contributing only slightly.		X8	
	Clearly all team members respected the input of other team members.	Most team members respected the input of other team members.	The team members did not respect the input of other team members.		X7	
<b>Participated in the team preparation</b>	Clearly all team members are engaged, attentive, and making notes for the full term of event.	Members are engaged and attentive with two to three making notes, participation fades over time.	One to two members form the primary team, other members participate occasionally early, fade over time.		X8	
	Clearly all team members demonstrate efficient use of his/her time in comprising the plan.	Most team members demonstrate efficient use of his/her time in comprising the plan.	One to two team members demonstrate efficient use of his/her time in comprising the plan.		X7	
<b>TOTAL</b>						

# Team Activity Presentation Rubric

300 points

INDICATOR	Very strong evidence of skill 5-4 points	Moderate evidence of skill 3-2 points	Weak evidence of skill 1-0 points	Points Earned	Weight	Total Score
<b>Non-verbal – 50 points</b>						
<b>Attention (eye contact)</b>	Eye contact constantly used as an effective connection. Constantly looks at the entire audience (90-100 percent of the time).	Eye contact is mostly effective and consistent. Mostly looks around the audience (60-80 percent of the time).	Eye contact does not always allow connection with the speaker. Occasionally looks at someone or some groups (less than 50 percent of the time).		X4	
<b>Mannerisms</b>	Does not have distracting mannerisms that affect effectiveness.	Sometimes has distracting mannerisms that pull from the presentation.	Has mannerisms that pull from the effectiveness of the presentation.		X3	
<b>Gestures</b>	Gestures are purposeful and effective. Hand motions are expressive, and used to emphasize talking points. Confident with positive body language.	Usually uses purposeful gestures. Hands are sometimes used to express or emphasize. Occasionally slumps; sometimes negative body language.	Occasionally gestures are used effectively. Hands are not used to emphasize talking points; hand motions are sometimes distracting. Lacks positive body language; slumps.		X3	
<b>Oral – 50 points</b>						
<b>Speaking without hesitation</b>	Speaks very articulately without hesitation. Never has the need for unnecessary pauses or hesitation when speaking.	Speaks articulately, but sometimes hesitates. Occasionally has the need for a long pause or moderate hesitation when speaking.	Speaks articulately, but frequently hesitates. Frequently hesitates or has long, awkward pauses while speaking.		X 3	
<b>Tone</b>	Appropriate tone is consistent. Speaks at the right pace to be clear. Pronunciation of words is very clear and intent is apparent.	Appropriate tone is usually consistent. Speaks at the right pace most of the time, but shows some nervousness. Pronunciation of words is usually clear, sometimes vague.	Has difficulty using an appropriate tone. Pace is too fast; nervous. Pronunciation of words is difficult to understand; unclear.		X 2	
<b>All team members participated</b>	All team members took an active role in the presentation.	Three team members took an active role in the presentation.	Two or less team members took an active role in the presentation.		X 5	

Content – 200 points						
<b>Veterinary topic research</b>	Demonstrates prior research and preparedness of the veterinary topic.	Demonstrates somewhat prior research and preparedness of the veterinary topic.	Does not demonstrate prior research and preparedness of the veterinary process.		X 5	
	Full understanding of disease and/or veterinary process.	Somewhat understanding of disease and/or veterinary process.	Does not understand the disease and/or veterinary process.		X 5	
	Full understanding of treatment protocols and/or recommendation for the topic.	Somewhat understanding of treatment protocols and/or recommendation for the topic.	Does not understand the treatment protocols and/or recommendation for the topic.		X5	
<b>Demonstrates knowledge of topic</b>	Presentation supports strong knowledge of the subject with good evidence of support.	Presentation supports some knowledge of the subject with fair evidence of support.	Presentation supports little knowledge of the subject with poor evidence of support.		X 15	
<b>Q&amp;A: Knowledge of the topic</b>	Participants knowledge of topics: Strong knowledge with solid answers.	Participants knowledge of topics: Somewhat knowledgeable but with less concise and clear answers.	Participants knowledge of topics: Little knowledge with weak evidence of support to answers.		X5	
	Speaks unrehearsed with comfort and ease. Is able to speak quickly with organized thoughts and concise answers.	Speaks unrehearsed mostly with comfort and ease, but sometimes seems nervous or unsure. Is able to speak effectively, has to stop and think sometimes, and gets off focus.	Shows nervousness or seems unprepared when speaking unrehearsed. Seems to ramble or speaks before thinking.		X5	
					<b>TOTAL</b>	

## Clinical Procedures Practicum

# Administering Aural Medication

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student successfully administered the proper amount of medication into the ear canal. <ul style="list-style-type: none"> <li>• Ear pinna held upright</li> <li>• Correct amount of medication was administered without contamination</li> </ul>	20	
The student massages the base of the outside of the ear canal causing a swishing sound from the medication moving around in the ear canal.	15	
The student wipes any solution that may have leaked onto the outside of the ear flap or hair.	15	
<b>TOTAL POINTS</b>	<b>50</b>	

## Clinical Procedures Practicum

# Administering Ophthalmic Medication

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student wipes any discharge from the patient's eye using a gauze sponge or cotton ball.	8	
The student opens the end of the ophthalmic medicine	6	
The student uses the index finger and thumb to pull the upper and lower lids apart to open the eye. The student's thumb pulls the lower lid down and the index finger pulls the upper lid upward. The student's other finger may rest on the head of the animal.	12	
While resting the hand holding the medication on the head of the patient, the student applies the drops or ointment gently into the eye without touching the eye, counting each drop or applying the proper amount of ointment without contamination.	12	
The student releases the eyelids.	6	
The student allows the animal to blink to move the medication throughout the eye.	6	
<b>TOTAL POINTS</b>	<b>50</b>	



## Clinical Procedures Practicum

# Administering an Intramuscular Injection

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student selected the proper site for administration.	10	
The student directs the needle through the skin and into the muscle.	10	
The student aspirates; if no blood is noted, inject.	10	
The student withdraws the needle and places in the sharps container.	10	
The student massages the area where the injection was given and praises the patient.	10	
<b>TOTAL POINTS</b>	<b>50</b>	

## Clinical Procedures Practicum

# Administering a Subcutaneous Injection

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student lifts the skin using the thumb and forefinger forming a triangle or tent with the skin.	10	
The student inserts the needle into the skin at the base of the tent or triangle parallel to the body.	10	
The student aspirates; looking for any signs of blood entering the syringe; if no blood enters the syringe, the student administers the injection.	10	
The student withdraws the needle and places in the sharps container.	10	
The student rubs the injection site and praises the patient.	10	
<b>TOTAL POINTS</b>	<b>50</b>	

## Clinical Procedures Practicum

# Bandage Removal

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student chooses the bandage scissors and holds in proper orientation.	10	
The student keeps the blade flat against the body and the tip raised slightly upward in contact with bandage.	10	
The student begins cutting each layer from the distal end moving proximally.	10	
The student gently removes each layer of bandage.	10	
The student notes the status of the unbandaged area and states if it is normal or if there are any problems.	6	
The student cleans up work area.	4	
<b>TOTAL POINTS</b>	<b>50</b>	

## Clinical Procedures Practicum

# Filling a Syringe for Injection

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student determines the amount to be placed in the syringe.	6	
The student selects the proper-sized syringe.	8	
The student inserts the syringe into the top of the bottle.	6	
The student places the bottle upside down in one hand and holds securely.	6	
The student withdraws the proper volume.	6	
The student removes the syringe from the bottle.	6	
The student gently taps or snaps the edge of the syringe to remove any air bubbles, or slightly expel the air by pushing the end of the plunger.	6	
The student places syringe in the sharps container.	6	
<b>TOTAL POINTS</b>	<b>50</b>	

## Clinical Procedures Practicum

# Fecal Flotation with Fecalyzer

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student selected about ¼ teaspoon of feces and placed it into a fecalyzer.	6	
The student added enough flotation solution to fill the fecalyzer about half full.	6	
The student mixed the feces into solution until no large fecal particles remain.	6	
The student places insert into fecalyzer.	6	
The student filled the vial with more solution until there was a visible meniscus at the top.	6	
The student placed a cover slip on top of the fecalyzer.	6	
The student allowed the vial to sit undisturbed for 10-15 minutes.	6	
The student carefully removed the cover slip without tilting it and placed it on a microscope slide.	8	
<b>TOTAL POINTS</b>	<b>50</b>	

## Clinical Procedures Practicum

### Opening a Surgery Pack

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student placed the surgery pack on a clean, dry surface.	4	
The student removed or tore the tape securing the package.	4	
The student opened the first flap away from them.	8	
The student opens the side flaps without reaching across open pack.	8	
The student opens the last flap towards them.	8	
The student opened the pack without contamination.	12	
The student stepped away so the surgeon or scrub nurse could complete the opening of the pack.	6	
<b>TOTAL POINTS</b>	<b>50</b>	

## Clinical Procedures Practicum

### Prepare a Surgical Pack for Sterilization

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student gathered the appropriate instruments and instrument pan if applicable.	5	
The student gathered additional supplies if applicable.	10	
The student selected the appropriate packaging material and chemical indicator.	10	
The student assembled the pack correctly by following the instructions on the checklist or recipe.	10	
The student placed the chemical indicator in the correct area of the pack.	10	
The student properly wrapped, secured and labeled the pack.	5	
<b>TOTAL POINTS</b>	<b>50</b>	

## Clinical Procedures Practicum

# Surgical Site Preparation

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student applied antiseptic scrub to clipped area.	8	
The student prepped the clipped area with a clean surgical sponge beginning at the incision site moving in a circular motion and worked toward the edges.	8	
The student did not bring the sponge back to the incision site once it was moved away from the incision site.	8	
The student discarded the sponge once it reached the edge of the clipped area.	8	
The student wiped the clipped area with a rinse solution using a clean surgical sponge following the same pattern as when scrubbing with the antiseptic.	8	
The student repeated the scrub and rinse a minimum of three times or until the final rinse sponge was clean.	10	
<b>TOTAL POINTS</b>	<b>50</b>	



## Clinical Procedures Practicum

### Prescription Filling

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student reads and verbally interprets prescription.	10	
The student selects the correct drug and concentration.	20	
The student places the pill counting tray on the pharmacy counter with the channel to the left and the open plate in front of him/her.	1	
The student pours the medication tablets or capsules onto the tray plate.	1	
The student opens the channel cover.	1	
The student uses a spatula or tongue depressor to push groups of tablets or capsules into the channel.	1	
When the student has counted the desired amount of medication, he/she closes the channel cover. The student tilts the tray to return the unused medicine into the stock bottle.	4	
The student lifts the tray to place the channel spout into the medicine vial and transfers medication.	4	
The student places the lid on the vial and sets it on the counter.	1	
The student appropriately fills out label with prescription information.	7	
<b>TOTAL POINTS</b>	<b>50</b>	

## Clinical Procedures Practicum

### Removal of Sutures

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student clearly visualized and inspected the incision site.	10	
If there were problems with the incision site, the student informed the veterinarian. If there were no problems, the student removed the sutures.	10	
The student chose the correct tool to remove the sutures.	10	
The student placed the curved blade underneath the suture for removal and removed the suture.	15	
The student did not cause unnecessary harm or discomfort to the patient.	5	
<b>TOTAL POINTS</b>	<b>50</b>	

## Clinical Procedures Practicum

# Administer Oral Tablet/Capsule

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student reads and interprets the veterinarian's order.	10	
The student selects the correct drug and concentration.	20	
The student was able to open the mouth of the animal.	5	
The student maintained control of the head or muzzle during the administration of the medication.	5	
The student used an appropriate technique to encourage the patient to swallow.	5	
The student was able to control the animal in a manner that was adequate to administer the medication yet did no harm to the patient.	5	
<b>TOTAL POINTS</b>	<b>50</b>	

## Handling and Restraining Practicum

### Removing a Cat from a Cage and Placing in Cat Bag

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student opens the cage door and calls the cat by name.	2	
The student scruffs the cat with one hand and lifts it up.	3	
The student cradles the cat's abdomen with their other hand and removes the cat from the cage.	2	
With the cat still scruffed, the student places the cat under one arm close to their body and closes the cage door with their free hand.	3	
The student carries the cat close to their body to the exam table.	3	
The student scruffs the cat and lifts it into the bag in one swift motion while supporting the hind end.	4	
The student wraps the Velcro strap around the cat's neck and immediately zips up the bag.	4	
The student uses the proper zippered opening to expose the front limb.	4	
To remove the cat, the student removes the Velcro strap first, then unzips the bag and removes the cat by scruffing and supports hind end.	5	
<b>TOTAL POINTS</b>	<b>30</b>	

## Handling and Restraining Practicum

### Applying a Cat Muzzle

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student opens the cage door and calls the cat by name.	2	
The student scruffs the cat with one hand and lifts it up.	2	
The student cradles the cat's abdomen with their other hand and removes the cat from the cage.	2	
With the cat still scruffed, the student places the cat under one arm close to their body and closes the cage door with their free hand.	2	
The student places cat on table.	2	
The student selects a muzzle of appropriate size for the cat.	5	
The student places the cat in sitting or sternal position on exam table.	2	
The student positions the muzzle properly in his/her hands.	3	
The student approaches the cat from behind with the muzzle in both hands while another person restrains cat.	3	
The student brings the muzzle up to the cat's face in one swift motion.	4	
The student secures the muzzle.	3	
<b>TOTAL POINTS</b>	<b>30</b>	

## Handling and Restraining Practicum

# Restraint of the Cat in Lateral Recumbency for Femoral Venipuncture

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student places the cat on an examination table.	3	
The student scruffs the cat with one hand and lifts it off of the table enough to grasp both hind legs with his/her other hand or reach under cat to grasp both hind limbs.	8	
The student lays the cat on its side with the hind legs stretched rearward.	7	
The student tucks top rear leg and tail while occluding with side of hand.	8	
The student spoke to the patient in a calm and affectionate manner during the procedure.	4	
<b>TOTAL POINTS</b>	<b>30</b>	

## Handling and Restraining Practicum

### Restraint of the Cat for Jugular Venipuncture

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student places the cat in sternal recumbency with its chest close to the edge of the table.	6	
The student controls and lifts the head up by placing thumb and forefingers over top of head, fingers firm on zygomatic arches (below eyes).	7	
The student's other hand grasps the front legs and extends them down off the edge of the table.	7	
The student uses arm and elbow to restrain the cat's body close to the student's body.	6	
The student spoke to the patient in a calm and affectionate manner during the procedure.	4	
<b>TOTAL POINTS</b>	<b>30</b>	

## Handling and Restraining Practicum

### Restraint of the Dog for Cephalic Venipuncture

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student places a noose leash on the dog.	2	
The student restrains the dog in sternal recumbency.	5	
The student stands on the dog's right side; wrapping his/her right arm around the dog's neck.	5	
The student holds the dog's left forelimb with elbow in the palm of his/her hand; extend the limb forward toward the person performing the procedure.	6	
With the elbow of the dog in his/her palm, the student rotates his/her thumb up so it is on top of the limb at the bend of the elbow.	6	
The student occludes the vessel with the thumb, rotates the thumb laterally.	6	
<b>TOTAL POINTS</b>	<b>30</b>	



## Handling and Restraining Practicum

### Restraint of the Cat for Cephalic IV Catheter Placement

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student places the cat in sternal recumbency on an examination table.	4	
The student controls and lifts the head up by placing up by placing thumb and forefingers over top of head, fingers firm on zygomatic arches (below eyes).	7	
The student extends the left front limb forward by grasping the elbow in the palm of his/her hand with thumb on the top of the elbow joint.	7	
The student allows the judge to grasp the left front paw and extend the limb toward him/her.	5	
The student occludes the vein by pressing down on the top of the elbow joint with his/her thumb and then rotating his/her thumb laterally.	7	
<b>TOTAL POINTS</b>	<b>30</b>	

## Handling and Restraining Practicum

### Applying a Gauze Dog Muzzle

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student selects proper type of material and length.	4	
The student places the dog in sitting or sternal position on exam table or floor.	2	
The student makes a loop in the gauze and approaches the dog from behind.	6	
The student places the loop on the dog's face with the tie on top.	6	
The student quickly tightens the loop, and then crosses the ends under the dog's face.	6	
The student brings the ends back behind the dog's head under the ears and ties in a quick-release bow.	6	
<b>TOTAL POINTS</b>	<b>30</b>	

## Handling and Restraining Practicum

### Applying a Nylon Dog Muzzle

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student selects appropriate muzzle.	4	
The student places the dog in sitting or sternal position on exam table or floor.	2	
The student comes from behind the dog's head with the muzzle in one hand in the correct position.	7	
The student brings the muzzle up to the dog's face and slips it on while grasping the strap with the other hand.	6	
The student secures the muzzle.	5	
The student checks for proper fit (one finger inserted under the strap).	6	
<b>TOTAL POINTS</b>	<b>30</b>	

## Handling and Restraining Practicum

# Removing Dog from Floor Level Cage to Restrain for Lateral Saphenous Venipuncture

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student places a leash in one hand with a large loop open in the correct position (in the “P”) and ready to place over the dog’s head.	2	
While blocking the opening, the student opens the cage door enough to slip the hand holding the leash into the cage.	2	
The student slips the leash over the neck of the dog and gently tightens the leash around the neck.	2	
The student opens the door and allows the dog to exit the cage.	1	
The student lifts the dog and places on the table.	1	
The student places his/her right arm across the dog’s neck and reaches between the front legs to grasp the dog’s right forelimb in right hand.	4	
The student places left arm over the dog’s back and reaches for the dog’s right rear limb; just proximal to the hock.	5	
With the dog’s body close, the student gently lifts the limbs while allowing the dog’s body to lay on the table; the dog should be on its right side.	5	
The student allows the dog to relax for a couple seconds, not releasing the grasp on the limbs.	3	
The student uses left hand to hold the limb tightly in the area just distal to the stifle, which will occlude the vein.	5	
<b>TOTAL POINTS</b>	<b>30</b>	

## Handling and Restraining Practicum

### Restraint of the Small Dog for Jugular Venipuncture

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student puts a noose leash on the dog and has the dog sit.	3	
The student places one arm around the dog's neck and places the other arm around the dog's back to grasp the forelimbs.	6	
The student pushes the dog's back with his/her body to encourage the dog to lie down.	6	
The student holds the head up under the jaw, away from the chest (can be achieved by cupping hand underneath the muzzle and by pushing the head upward.)	8	
The student's other hand grasps the front legs and extends them over the end of the table.	7	
<b>TOTAL POINTS</b>	<b>30</b>	

## Handling and Restraining Practicum

### Restraint of the Dog for Cephalic Venipuncture

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student places a noose leash on the dog.	2	
The student restrains the dog in sternal recumbency.	5	
The student stands on the dog's right side; wrapping his/her right arm around the dog's neck.	5	
The student holds the dog's left forelimb with elbow in the palm of his/her hand; extend the limb forward toward the person performing the procedure.	6	
With the elbow of the dog in his/her palm, the student rotates his/her thumb up so it is on top of the limb at the bend of the elbow.	6	
The student occludes the vessel with the thumb, rotates the thumb laterally.	6	
<b>TOTAL POINTS</b>	<b>30</b>	

## Handling and Restraining Practicum

### Restraint of a Rabbit

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student approaches the rabbit calmly and quietly.	4	
The student scruffs the rabbit with one hand while gently lifting the front end.	6	
The student's other hand immediately reaches under the hind limbs and holds them (not allowing the hind limbs to dangle).	7	
The student rests the rabbit's body on the arm with the hand holding the hind limbs.	6	
The scruffing hold is released and the hand is moved to hold the rabbit's outside front leg.	7	
<b>TOTAL POINTS</b>	<b>30</b>	

## Handling and Restraining Practicum

### Haltering Ruminants

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
Without quick movements and loud noises, the student properly approaches the patient at a 45 degree angle to the patient's left shoulder.	5	
The student places crown piece of halter over ears, then slips nose through nosepiece.	6	
The student properly adjusts the halter such that the nose band crosses over bridge of nose halfway between the nostrils and eyes.	7	
The student ensures that the adjustable portion of the nose band is under the chin, not across the bridge of the nose.	6	
The student keeps the standing end or lead rope portion on the left side of the cow.	6	
<b>TOTAL POINTS</b>	<b>30</b>	



## Handling and Restraining Practicum

### Haltering a Horse

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
Without quick movements and loud noises, the student properly approaches the patient at a 45 degree angle to the patient's left shoulder.	5	
The student places end of the lead rope over the horse's neck and passes sufficient length of lead to form a handheld loop around the horse's neck.	5	
Holding the handheld loop in their right hand, with their left hand, the student slip the nose-band of the halter over the nose.	5	
Student releases the lead rope and with their right hand under the horse's neck, the student passes the crown strap over the head and behind the ears and attaches the end to the appropriate place on the halter.	5	
The student snaps the end of the lead to the lead ring of the halter and undrapes the lead rope from the horse's neck.	4	
The student adjusts the halter so it is snug enough that the nose piece could not fall over the end of the nose, but not so tight that the halter cut or rubbed the horse or restricted jaw movement or breathing.	6	
<b>TOTAL POINTS</b>	<b>30</b>	

## Handling and Restraining Practicum

### Placing a Tail Tie

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student lays the rope over the tail at the tip of the tail bone.	6	
The student folds all the tail hairs up over the rope.	6	
The student passes the short end of the rope behind the tail, and makes a fold or bight in it.	6	
The student passes the fold or bight over the folded tail and under the rope, which is looped around the tail.	6	
The student pulls tight.	6	
<b>TOTAL POINTS</b>	<b>30</b>	

## Handling and Restraining Practicum

### Applying Elizabethan Collar

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student chooses the correct size of E-collar for the patient.	6	
The student correctly prepared the E-collar for placement.	6	
The student correctly placed the E-collar on the animal.	6	
Placement was adequately secured so the animal could not remove the E-collar.	6	
The E-collar was secured such that the animal's breathing was not restricted.	6	
<b>TOTAL POINTS</b>	<b>30</b>	

## Handling and Restraining Practicum

### Snare Restraint of the Pig

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student, standing next to the patient, guided the loop of the snare into the mouth and over the nose or upper jaw	4	
The student made sure the loop is inserted far enough into the patient's mouth	5	
The student pulled the loop tight when it is in the proper position	5	
The student kept the loop tight while moving to the front of the patient	5	
The student maintained the pressure on the snare so that the patient could not escape.	5	
The student kept control of the patient until the patient ceased to struggle.	4	
The student released the patient after the procedure was completed	2	
<b>TOTAL POINTS</b>	<b>30</b>	

## AFNR Career Cluster Content Standards

Performance Measurement Levels	Event activities addressing measurements	Related Academic Standards
<b>ABS.01.03 Performance Indicator: Devise and apply management skills to organize and run and AFNR business in an efficient, legal and ethical manner</b>		
ABS.01.03.02.b Assess how local, state, federal, international and industry regulations positively and negatively affect the management of AFNR businesses.	Team activity, written exam	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
ABS.01.03.03.a Identify and observe ethical standards in planning and operating AFNR businesses	Team activity, written exam	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>AS.01.01. Performance Indicator: Evaluate the historical development and implications of animal origin, domestication and distribution on production practices and the environment</b>		
AS.01.01.01.a. Research and summarize the origin, significance, distribution and domestication of different animal species	Written exam	HS-LS4-3
AS.01.01.02.a. Research and summarize major components of animal systems (eg livestock, companion animal, etc)	Identification	HS-LS4-3
<b>AS.01.02. Performance Indicator: Assess and select animal production methods for use in animal systems based upon their effectiveness and impacts</b>		
AS.01.02.01.a. Identify and categorize terms and methods related to animal production	Identification	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3
AS.01.02.02. Calculate costs of marketing versus predicted increases in sales versus predicted	Identification	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3

AS.01.02.03.b. Analyze and evaluate the accuracy and effectiveness of records used in an animal system business	Written exam; practicums, current event	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3
<b>AS.01.03. Performance Indicator: Analyze and apply laws and sustainable practices to animal agriculture from a global perspective</b>		
AS.01.03.01.c. Evaluate the impact of laws pertaining to animal agriculture and assess the compliance of production practices with established regulations.	Written exam, current event	AFNR Career Cluster, Statement 2 AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 1, 4 CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 HS-ETS1-1
AS.01.03.02.b. Analyze the local and global impact of sustainable animal agriculture practices on human and environmental systems	Written exam, current event, team activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 1, 4 CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 HS-ETS1-1
<b>AS.02.01. Performance Indicator: Demonstrate management techniques that ensure animal welfare.</b>		
AS.02.01.01.b. Design programs that assure the welfare of animals and prevent abuse or mistreatment.	Written exam; current event, team activity	HS-ETS1-2
AS.02.01.02.b. Analyze and document animal welfare procedures used to ensure safety and maintain low stress when moving and restraining animals.	Written exam, practicums, current event	HS-ETS1-2
AS.02.01.03.b. Analyze and document animal husbandry practices and their impact on animal welfare.	Written exam, current event	HS-ETS1-2
<b>AS.02.02. Performance Indicator: Analyze procedures to ensure that animal products are safe for consumption.</b>		
AS.02.02.01.b. Utilize tools, technology and equipment to perform animal husbandry and welfare tasks.	Identification	HS-ETS1-2

AS.02.02.02.b. Analyze consumer concerns with animal production practices relative to human health.	Current event, written exam	HS-ETS1-2
AS.02.02.03.b. Analyze and summarize the impact of animal trace-back capabilities on producers and consumers.	Written exam; current event	HS-ETS1-2
<b>AS.03.01. Performance Indicator: Analyze the nutritional needs of animals.</b>		
AS.03.01.01.c. Assess nutritional needs for an individual animal based on its growth stage and production system.	Written exam; current event, team activity	
AS.03.01.02.b. Correlate a species' nutritional needs to feedstuffs that could meet those needs.	Written exam, current event, team activity	
<b>AS.03.02. Performance Indicator: Analyze feed rations and assess if they meet the nutritional needs of animals.</b>		
AS.03.02.01.c. Select appropriate feedstuffs for animals based on a variety of factors (e.g., economics, digestive system and nutritional needs, etc.).	Written exam; current event, team activity	
AS.03.02.02.c. Select and utilize animal feeds based on nutritional requirements, using rations for maximum nutrition and optimal economic production.	Written exam; current event	
AS.03.02.03.b. Compare and contrast methods that utilize feed additives and growth promotants with production practices that do not, (e.g., organic versus conventional production methods).	Written exam, team activity, current event	

**AS.03.03. Performance Indicator: Utilize industry tools to make animal nutrition decisions.**

AS.03.03.01.a. Identify and categorize tools and equipment used to meet animal nutrition needs and ensure an abundant and safe food supply.	Identification	
AS.03.03.02.b. Analyze and apply information from a feed label and feeding directions to feed animals.	Written exam, team activity, current event	
AS.03.03.03.b. Analyze technologies used to provide animal nutrition and summarize their potential benefits and consequences.	Written exam, team activity, current event	

**AS.04.01. Performance Indicator: Evaluate animals for breeding readiness and soundness.**

AS.04.01.01.b. Analyze the functions of major organs in the male and female reproductive systems.	Written exam, team activity, current Event	
AS.04.01.02.b. Assess factors that lead to reproductive maturity.	Written exam, team activity, current event	
AS.04.02.03.b. Evaluate reproductive problems that occur in animals	Written exam, team activity, current event	

**AS.04.02. Performance Indicator: Apply scientific principles to select and care for breeding animals.**

AS.04.02.01.a. Summarize genetic inheritance in animals.	Written exam, team activity, current event	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
AS.04.02.02.a. Identify and summarize inheritance and terms related to inheritance in animal breeding (e.g., dominate, co-dominate, recessive, homozygous, heterozygous, etc.).	Written exam, team activity, current event	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
AS.04.02.03.a. Identify and summarize genetic defects that affect animal performance	Written exam, team activity, current event	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3



AS.04.02.04.b. Analyze the care needs for breeding stock in each stage of growth.	Written exam, team activity, current event	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
<b>AS.04.03 Performance Indicator: Apply scientific principles to breed animals.</b>		
AS.04.03.01.a. Identify and categorize natural and artificial breeding methods (e.g., natural breeding, artificial insemination, estrous synchronization, flushing, cloning, etc.).	Written exam, team activity, current event	
AS.04.03.02.b. Demonstrate artificial insemination techniques.	Written exam, team activity, current event	
AS.04.03.03.b. Analyze the processes of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer.	Written exam, team activity, current event	
<b>AS.05.01. Performance Indicator: Design animal housing, equipment and handling facilities for the major systems of animal production.</b>		
AS.05.01.01.a. Differentiate between the types of facilities needed to house and produce animal species safely and efficiently	Written exam, team activity, current event	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
AS.05.01.02.c. Select, use and evaluate equipment, technology and handling procedures to enhance sustainability and production efficiency	Written exam, team activity, current event, Identification	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
<b>AS.05.02. Performance Indicator: Comply with government regulations and safety standards for facilities used in animal production.</b>		
AS.05.02.01.a. Identify and summarize the general standards that must be met in facilities for animal production (e.g., environmental, zoning, construction, etc.).	Written exam, team activity, current event	CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b

AS.05.02.02.a. Distinguish between the types of laws and regulations pertaining to animal systems.	Written exam, team activity, current event	CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b
<b>AS.06.01. Performance Indicator: Classify animals according to taxonomic classification systems and use (e.g. agricultural, companion, etc.).</b>		
AS.06.01.01.b. Explain how animals are classified using a taxonomic classification system.	Written exam; current event	
AS.06.01.02.b. Appraise and evaluate the economic value of animals for various applications in the agriculture industry.	Written exam; current event	
AS.06.01.03.b. Analyze the visual characteristics of an animal or animal product and select correct classification terminology when referring to companion and production animals.	Written exam; current event	
<b>AS.06.02. Performance Indicator: Apply principles of comparative anatomy and physiology to uses within various animal systems.</b>		
AS.06.02.01.b. Analyze the functions of each animal cell structure.	Written exam	HS-LS1-2
AS.06.02.02.b. Analyze the processes of meiosis and mitosis in animal growth, development, health and reproduction	Written exam	HS-LS1-2
AS.06.02.03.b. Compare and contrast animal cells, tissues, organs, body systems types and functions among animal species.	Written exam	HS-LS1-2
<b>AS.06.03. Performance Indicator: Select animals for specific purposes and maximum performance based on anatomy and physiology.</b>		
AS.06.03.01.a. Identify and summarize how an animal's health can be affected by anatomical and physiological disorders.	Written exam	STEM Career Cluster, Statement 5

AS.06.03.02.a. Evaluate an animal against its optimal anatomical and physiological characteristics.	Written exam, identification, current event	STEM Career Cluster, Statement 5
<b>AS.07.01. Performance Indicator: Design programs to prevent animal diseases, parasites and other disorders and ensure animal welfare.</b>		
AS.07.01.01.c. Select and use tools and technology to meet specific animal health management goals	Written exam, identification, current event, practicums	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
AS.07.01.02.c. Determine when an animal health concern needs to be referred to an animal health professional.	Written exam, identification, current event	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
AS.07.01.03.b. Identify and describe common illnesses and disorders of animals based on symptoms and problems caused by wounds, diseases, parasites and physiological disorders.	Written exam, identification, current event	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
AS.07.01.04.b. Research and analyze data to evaluate preventive measures for controlling and limiting the spread of diseases, parasites and disorders among animals	Written exam, identification, current event	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
AS.07.01.05.b. Assess the safety and effectiveness of facilities and equipment used for surgical and nonsurgical veterinary treatments and procedures.	Written exam, identification, current event	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>AS.07.02. Performance Indicator: Analyze biosecurity measures utilized to protect the welfare of animals.</b>		
AS.07.02.01.a. Summarize the importance of biosecurity to the animal industry.	Written exam, identification, current event	
AS.07.02.02.b. Analyze the health risk of different zoonotic diseases to humans and identify prevention methods.	Written exam, identification, current event	

**AS.08.01. Performance Indicator: Design and implement methods to reduce the effects of animal production on the environment.**

AS.08.01.01.a. Identify and summarize the effects of animal agriculture on the environment (e.g., waste disposal, carbon footprint, air quality, environmental efficiencies, etc.).	Written exam, identification, current event	AFNR Career Cluster – Environmental Service Systems Pathway, Statement 1 HS-LS2-6 HS-LS2-7
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**AS.08.02. Performance Indicator: Evaluate the effects of environmental conditions on animals and create plans to ensure favorable environments for animals.**

AS.08.02.01.a. Research and summarize environmental conditions that impact animals (e.g., weather, sources of water, food resources, etc.).	Written exam, identification, current event	HS.LS4-6
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AS.08.02.01.a. Identify and summarize methods for ensuring optimal environmental conditions for animals.	Written exam, identification, current event	HS.LS4-6
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**CS.01.03. Performance Indicator: Identify public policies and their impact on AFNR systems**

CS.01.03.01.a. Summarize public policies affecting AFNR standards	Team activity, written exam	
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CS.01.03.02.a. Identify influential historical and current public policies that impact AFNR systems	Team activity, written exam	
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**CS.02.02. Performance Indicator: Examine the components of the AFNR systems and their impact on the local, state, national and global society and economy**

CS.02.02.01.b. Assess components within AFNR systems and analyze relationships between systems	Math exam, written exam, team activity	
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**CS.05.01. Performance Indicator: Evaluate the steps and requirements to pursue a career opportunity in each of the AFNR career pathways (eg. Goals, degrees, certifications, resumes, cover letter, portfolios, interviews, etc)**

<p>CS.05.01.01.a. Identify and summarize the steps to pursue a career in an AFNR pathway (eg self-assessment, set goals, etc)</p>	<p>Current event; team activity, practicums</p>	
<p>CS.05.01.02.b. Analyze personal skillset and create a plan for obtaining the required education, training, and experiences to obtain a career in an AFNR pathway</p>	<p>Current event; team activity, practicums</p>	
<p>CS.05.01.03.c. Evaluate, update and improve a set of personal tools to reflect current skills, experiences, education, goals, etc. and complete the processes needed to pursue and obtain a career in an AFNR pathway</p>	<p>Current event, written exam, math applications exam, practicums, identification</p>	

**CS.05.02. Performance Indicator: Examine careers in each of the AFNR Pathways**

<p>CS.05.02.01.b. Assess personal skills and align them with potential career opportunities in AFNR pathways</p>	<p>Practicums</p>	
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**CRP.01.01. Performance Indicator: Model personal responsibility in the workplace and community.**

<p>CRP.01.01.01.a. Define personal responsibility and distinguish how it applies in workplace and community (e.g., make educated choices, listen and follow directions, ask for help when needed, meet expected standards, etc.).</p>	<p>Team event and current event</p>	
<p>CRP.01.01.02.a. Distinguish personal levels of responsibility, which can be applied in the workplace and community.</p>	<p>Team event and current event</p>	

**CRP.01.02 Performance Indicator: Evaluate and consider the near-term and long-term impacts of personal and professional decisions on employers and community before taking action.**

CRP.01.02.01.b. Assess the pros and cons of personal decisions based on their anticipated impact on self and others

Team event and current event

**CRP.01.03. Performance Indicator: Identify and act upon opportunities for professional and civic service at work and in the community.**

CRP.01.03.01.b. Assess available professional service opportunities at work places and in community (e.g., trainings, organizing events, etc.).

Team event, exam and current event

CRP.01.03.02.b. Assess available civic service opportunities at workplaces and in the community (e.g., community events, attend meetings, etc.).

Team event, exam and current event

**CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.**

CRP.04.01.01.b. Analyze use of verbal and non-verbal communication strategies in workplace situations.

Team event, practicums and current event

CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.

Team event and current event

**CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.**

CRP.04.02.01.a. Research and summarize the purpose of different forms of written communication in formal and informal settings (e.g., letters, emails, reports, social media, etc.).

Current event

CRP.04.02.02.b. Apply techniques for ensuring clarity, logic and coherence to edit written communications (e.g., emails, reports, presentations, technical documents, etc.).	Math practicum and current event	
<b>CRP.05.01. Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.</b>		
CRP.05.01.01.b. Analyze how the process of decision making is used in workplace and community situations.	Team event	
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.b. Apply steps for critical thinking to a variety of workplace and community situations.	Current event and team event	
<b>CRP.10.01. Performance Indicator: Identify career opportunities within a career cluster that match personal interests, talents, goals and preferences.</b>		
CRP.10.01.02.b. Analyze skills needed for potential careers and compare and contrast skills needed with personal interests, talents, goals and preferences.	Practicums	
<b>CRP.10.02. Performance Indicator: Examine career advancement requirements (e.g., education, certification, training, etc.) and create goals for continuous growth in a chosen career.</b>		
CRP.10.02.01.b. Analyze the steps to meet career advancement requirements for potential careers.	Practicums	
<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
CRP.12.01.01.b. Formulate action plans to complete team-oriented projects in the workplace and community, including plans for personal contributions.	Team activity	

**CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).**

CRP.12.02.01.b. Assess team dynamics and match strategies to increase team member engagement.

Team activity