ANEQ305 – Functional Large Animal Physiology – Fall 2017

MWF 8:00-8:50 AM  Room 202 Clark A

A. Instructor
Hyungchul Han
024 Animal Sciences
Phone 491-6923  hyungchul.han@colostate.edu
Office hours: By appointment

B. Course Description
Introduction to the basic concepts of farm animal physiology with emphasis on concepts relating to topics relevant to the fields of food animal and equine science.

C. Course Objective
Successful students will acquire fundamental knowledge of animal physiology that allows application of basic physiological principles to in-depth studies in animal and equine science. Specific course objectives are to:

▪ Develop a working knowledge of physiological terminology
▪ Differentiate and study basic physiological systems of farm animals
▪ Integrate and apply physiological principles to farm animal management techniques.

D. Topics
1. Cell organelles and their function
2. Membrane physiology
3. Nervous system
4. Muscle physiology
5. Endocrine system
6. Circulatory system
7. Respiratory system
8. Excretory system
9. Digestive system
10. Reproductive system
11. Immune system

E. Prerequisites:
LIFE 102
CHEM 107 or CHEM 111

F. Textbook:
▪ Animal Physiology from Genes to Organisms by L. Sherwood, H. Klandorf and P. H. Yancey (Required and can be purchased online at http://biology.brookscole.com/animalphys1)
G. Examinations:
- Quiz1 20 points
- Quiz2 20 points
- Quiz3 20 points
- Quiz4 20 points
- Quiz5 20 points
- Exam 1 50 points
- Exam 2 50 points
- Exam 3 50 points
- Exam 4 50 points
- Term paper 50 points
- Final exam 170 points
- Total: 500* points

- The final exam will be comprehensive and is required. Final Exam: December 12, 2017 4:10 PM-6:10 PM.
- Term paper: Electronic AND paper copy due: 5PM, October 31, 2017 to Canvas, submit in the Microsoft word format or compatible form that can be opened by Microsoft Word.
- There will be no make-up exams/quizzes, except for valid absences. Valid absences include: 1) Medical emergency—a written and signed note from a medical doctor is required. 2) Participation in a CSU-sanctioned activity—a letter from the supporting faculty is required PRIOR to the absence.
- Students who miss an exam or quiz and do not have a valid excuse will receive a zero.
- Class attendance is mandatory. Unexcused absence of classes more than 12 classes will receive an F for the course grade.
- It is YOUR RESPONSIBILITY to obtain any information announced in class.
- Cheating/plagiarism on any exam, quiz or assignment will result in removal from the course and assignment of an ‘F’ for the course grade and will be reported to the Conflict Resolution and Student Conduct Services for further review. Additional Sanctions may include suspension or expulsion from the University. Please refer to the University policies on academic dishonesty and classroom behavior in the General Catalog.
- Exam and quiz scores will not be curved.

H. Grading:
- ≤90 <100% (450-500 points) A
- ≤80 <90% (400-449 points) B
- ≤70 <80 % (350-399 points) C
- ≤60 <69 % (300-349 points) D
- < 60% (below 300 points) F
- *Lowest quiz score will be dropped from your grade.
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<td>Organization &amp; terminology</td>
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<td>Cell organelles and their function</td>
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<td>Thyroid, Adrenal &amp; Parathyroid</td>
<td>Chap 7 297-312 &amp; 323-333</td>
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<td>Oct 09</td>
<td>Cardiovascular system - overview</td>
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ANEQ305 Fall 2016 Term Paper Guidelines

Purpose:
The goal of the term paper is to understand physiological phenomenon more in depth. Choice of topic is up to you as long as it directly relates to physiology.
The animals of the topic are limited to farm animals (such as bovine, ovine, equine, swine and poultry).
The format of paper should include introduction of your topic of choice, history of the topic, detailed description about the physiology of topic (such as mechanism, how it works, how it happens, what are the consequences), current status of topic (what do we know about it now), and conclusion (what will happen in the future).

Format
Length: The total length of paper should be minimum FULL 8 pages and maximum 10 pages excluding the reference page. The body of the text may include figures/diagrams/tables, however, they will NOT be counted for the page requirement.

Page format: 12 font, 1.5 line spaced, 1 inch margin in all direction.

Print your legal name on the top right of each page.
Do not include front cover page.
Print double sided if possible.

Due date:
Electronic and paper copy: 5:00 PM October 31, 2016.
Submit hard copy as well as an electronic copy to CANVAS.
Your term paper file name: your family name-given name-ANEQ305-FA16-termpaper
Example: doe-john-ANEQ305FA16-termpaper
Also type this file name on your subject line when you email the file.

References:
Term paper must include minimum of 6 refereed journal article references. Minimum of 3 references should be old references for the history of the topic. At least 2 references should include up to date information. Depends on the topic, published book can be used as references. However, minimum of 3 scientific journal articles should be cited.

In text direct quotation is not allowed.

Reference Format
Refer to Journal of Animal Science Instructions for Authors Literature Cited guideline here for style http://www.journalofanimalscience.org/site/misc/JAS-InstructionsToAuthors.pdf
Physiology – Terminology

1. Directional Terms and Planes
   a. Cranial or Anterior is a direction toward the head. The lungs are cranial to the intestines (closer to the head).
   
   b. Caudal or posterior is a direction toward the tail. The intestines are caudal to the lungs (closer to the tail).
   
   c. Dorsal pertains to the back or upper surface of an animal. Often used to indicate the position of one structure of the body relative to another, i.e., nearer the back surface of the body. The kidneys are dorsal to the intestines.
   
   d. Ventral pertains to the undersurface of an animal, and as with dorsal, is often used to indicate the position of one structure relative to another. The intestines are ventral to the kidneys.
   
   e. Medial relates to the middle or center; nearer to the median or midsagittal plane. The heart is medial to the lungs.
   
   f. Lateral is opposite to the meaning of medial, i.e., away from the median plane. The ribs are lateral to the lungs. A lateral radiographic (x-ray) view is one with the animal on its side and the film in the sagittal plane.
   
   g. Proximal, when referring to part of a limb, artery, or nerve, means it is nearest the center of the body or the point of origin.
   
   h. Distal means relatively further from the center of the body. The hoof is distal to the knee.

2. General Terms
   a. Coronary refers to heart
      Example: The coronary arteries are in the heart.
   
   b. Hepatic refers to liver
      Example: The hepatic portal system refers to the vessel between the gut and the liver.
   
   c. Renal refers to kidney
      Example: the renal medulla is the inner area of the kidney.
   
   d. Neuro refers to nerve
      Example: A neurotransmitter is a chemical released from the axon terminal of a neuron.
   
   e. Medulla refers to the inner portion
      Example: The adrenal medulla is the inner portion of the adrenal gland.
   
   f. Cortex refers to outside portion
      Example: The renal cortex is the outer portion of the kidney.
3. **Prefix/Suffix**
   a. **Hypo** -- Less than or lower
      Example: Hypothermia refers to low body temperature.
   b. **Hyper** -- More than or higher.
      Example: Hypertension is high blood pressure.
   c. **Iso** -- Equal to or similar
      Example: Isotonic solutions have an osmolarity equal to normal body fluid.
   d. **Juxta** -- Adjacent to
      Example: The juxtaglomerula apparatus is adjacent to the glomerula of the kidney.
   e. **Macro** -- Large or relatively large
      Example: Macrophages are large tissue–bound phagocytes
   f. **Micro** -- Small or relatively small
      Example: Microvilli are small hair-like projections from the luminal surface in the gut.
   g. **Myo** -- Refers to muscle
      Example: Myocardium in a muscle layer in the heart.
   h. **Cere** -- refers to brain
   i. **Endo** -- From within
      Example: Endometrium is the inner layer of the uterus
   j. **Exo** -- Moves to the outside
      Example: Exocytosis is the process of expelling from the cell to outside the cell.
   k. **Hemo** -- Refers to blood
      Example: Hemodynamics refers to the physics of blood flow
   l. **Intra** -- Within
      Example: Intracellular fluid is within the cell
   m. **Extra** -- Outside
      Example: Extracellular fluid is outside the cell
   n. **Pre** -- before
      Example: Preganglionic fiber is before the ganglion
o. **Post** -- after
   Example: Post synaptic neuron is the neuron after the synapse

p. **Para** -- beside or near
   Example: Paracrine glands have influence in a local (or near) area

q. **--ase** Typically an enzyme
   Example: Lipase is an enzyme that digests lipids.

r. **--genesis** The formation of or synthesis of.
   Example: Gluconeogenesis is the process of forming glucose from other nutrients.

s. **--tropin** Refers to target
   Example: Gonadotropins target and impact the gonads.

t. **Vaso--** Refers to a blood vessel or blood flow
   Example: Vasodilation is the increase in blood vessel diameter

u. **Osteo--** Having to do with bone
   Example: Osteoblasts are bone cells that produce matrix in bone.