Sul Ross State University
ANSC 4316/5331
Ruminant Nutrition
Spring 2021

Instructor: Dr. Jamie Boyd
Office: RAS 103A
Phone: 432-837-8413
Email: Jamie.boyd@sulross.edu
Office hours: MWF 9-12 or by appointment
Class Period: TH 8-9:15am
Location: RAS 135

Course description: Physiology and chemistry of digestion, absorption and metabolism of nutrients in ruminants; nutrient functions, requirements, utilization and the effects of nutrient deficiencies and toxicities. An emphasis will be placed on ruminant specific metabolism and the net energy system.

Required Text: The Ruminant Animal, Digestive Physiology & Nutrition, edited by D.C. Church, copyright 1988, Prentice Hall Inc., ISBN 0-88133-740-4.

Purpose of the course: This course is designed to reinforce and expand student knowledge of basic biological, biochemical, and physiological concepts relative to the principles of ruminant nutrition and their application in animal agriculture.

Student learning outcomes: Students will learn the fundamentals of ruminant digestive physiology and be able to understand how this influences nutrient utilization. Students will also learn how nutrients are metabolized to support bodily functions.

Departmental Projected Learning Outcomes:

a) Recognize and be able to utilize animal breeds from a variety of domestic species.
b) Comprehend the role of nutrition in the production of food animals.
c) Understand the processes involved in producing meat products from a variety of domestic food animals.
d) Select breeding animals using genetic information.

Assessment measures: Students will demonstrate a satisfactory level of competency, critical thinking, and knowledge of digestive physiology of ruminants, the functions, requirements, and utilization of nutrients, and the effects of deficiencies and toxicities of nutrients by achieving a score of 60% or higher on examinations, writing assignments, and homework.

Recommendations for Success: In order to succeed in this class, I recommend that you dedicate at a minimum **two hours of study time per class hour** each week. The material covered in this course cannot be learned adequately in only a couple days, it is cumulative and each day's material will build on the previous day. I strongly encourage you to come to class with any questions and ask them. I am also available outside of class if you have further questions in person or via email.

Methods of instruction: This course consists of lecture sessions to provide the basic concepts related to animal nutrition. The course is writing intensive, which means that a large component of the final grade will come from writing activities distributed throughout the semester.

Attendance policy: It is your responsibility to attend class sessions. I do not provide copies of missed lecture material. There will be no make-up quizzes without **prior** approval.

Accommodations: Students who believe that they may need accommodation in this course are encouraged to contact Mary Schwartze at the Counseling and Accessibility Services Office: Ferguson Hall 112 (432-837-8203) as soon as possible to ensure that such accommodations are implemented in a timely fashion.

Academic integrity: Students are expected to submit original work without unauthorized assistance. Academic dishonesty, which includes cheating, unauthorized collaboration, plagiarism, fabrication, multiple submissions, and aiding and abetting, will result in a grade of 0 on the work in question. Subsequent instances of academic dishonesty may result in more serious sanctions.

Examinations and grading: The grade you earn is your responsibility! **There will be no extra-credit opportunities.** Your course grade will be based on the following components:

Exams and Quizzes: There will be six quizzes administered throughout the semester. The seventh quiz is a cumulative final exam. There will be no make-up quizzes without prior approval or a valid doctor's excuse. You must talk to me "live." Voice or email messages are not considered valid excuses.

Journal Articles Presentations: The journal article assignment requires each student to write a one page typed summary of a current journal article that pertains to the lecture material that is being discussed at that time in class. The student will present their paper on power point (10-minute presentation/ 5-minute discussion). The number and schedule of paper presentations may change, as the final enrollment of the class is determined. The paper and presentation must reference the article and briefly describe the research and its pertinence to ruminant nutrition. The objective of the writing assignment is to introduce new material into the course and stimulate discussion. Each student will be required to ask at least one discussion question per presentation. The journal article must be approved prior to the presentation. A list of current journal articles will be made available to the class.

Other Considerations: Exams may include multiple choice, fill in the blank, short answer, and matching questions. Cell phones and programmable calculators are not permitted during exams or quizzes. Due dates for all assignments will be announced in class. **Late assignments will be accepted for 5 days following the initial due date and time with a 20% penalty per day late**

Points available:

5 Quizzes (top 4 at 50 points each)	200 points
Writing/Presentation assignments at 50 points each (20-paper, 30-presentation)	150 points
Discussion questions	50 points
Final Exam	200 points
Total	**600 points**

* I reserve the right to give an unannounced quiz at any time during the semester.

Grading scale:

A = 90-100%
B = 80-89.99%
C = 70-79.99%
D = 60-69.99%
F = 59.99% or below

Schedule of class sessions: This information should be treated as an outline. There may be some alterations in the sequence of topics.

Date	**Lecture (Chapter)**	**Chapter**
Jan 19	Introduction and Syllabus	
Jan 24-26	Ruminant GI tract: Gross Anatomy	(1, 2)
31-Feb 2	Anatomy/Histology	
Feb 7	Rumen Function	
9	Quiz 1	
14	Growth and Development	(3)
16	Paper Presentations 1	
21-23	Motility	(4)
28	Quiz 2	
Mar 2	Nutrient Digestion/Absorption	(5)
7	Nutrient Digestion/Absorption	(5)
9	Intake and Energy Balance	
14 -16	Spring Break	
21	Intake and Energy Balance	
23	Quiz 3	
28	Saliva and Digestive Secretions	(6)
30	Gastrointestinal Hormones and Peptides	
April 4	Paper Presentations 2	
6	Quiz 4	
11	Rumen Fermentation	(7, 8)
13	Protein Digestion and Metabolism	(12)
18	Carbohydrate Digestion and Metabolism	(14)
20	Paper Presentations 3	
26	Lipid Digestion and Metabolism	(15)
27	Quiz 5	
2	Nutritional and Metabolic Disorders	(23)
4	Review	

Final Exam TBA

Instructor's bibliography:

Basic Animal Nutrition and Feeding. Pond, Church, Pond, and Schoknecht. 2005. 5th edition. Wiley.
Comparative Animal Nutrition and Metabolism. Cheeke and Dierenfeld. 2010. CABI.
The Ruminant Animal, Digestive Physiology & Nutrition, edited by D.C. Church, copyright 1988, Prentice Hall Inc.