**Ruminant Nutrition (AVS 411/511)**

**Spring Semester, 2020**

**Instructor:** Pedram Rezamand, Ph. D., PAS

Room 215, Ag Science Bldg. Phone: (208) 885-5392 email: rezamand@uidaho.edu

**Lectures:** Tuesdays and Thursdays 2:00 pm to 3:15 pm

**Office Hours:**  Tuesdays and Thursdays 12:30 pm to 1:30 pm (any other time is fine, please send an email in advance).

**Teaching Assistant:** Chia-Yu Tsai (tsai4799@vandals.uidaho.edu) Ag Sci 217C

**Reference:** Class notes, reading materials on the website, power-point slides and optional textbooks.

**Website:** <http://www.webpages.uidaho.edu/ruminant_nutrition/>

**Final Exam:** According to <https://www.uidaho.edu/registrar/classes/finals/spring>, the final exam will be on Wednesday May 13 at 12:45 pm. Please double-check the date/time.

**Recommended textbooks\*:**

***1)*** *The Ruminant Animal: Digestive Physiology and Nutrition.* Church, D. C. 1993.Ed. Prentice Hall, Englewood Cliffs, New Jersey.

***2)*** *Nutritional Ecology of the Ruminant.* 2nd ed. (1994). P. J. Van Soest, Cornell Univ. Press, Ithaca, NY.

***3)*** *The Feeding of Ruminants; Principles and Practice.* Orskov, E. R. 1998. Chalcombe Publications; New Ed edition (1998)

***4)*** *Animal Nutrition.* 1995. McDonald, P. Edward, R. A, Greenhale, J. F. D, Morgan,A. Longman Scientific & Technical; New York: J. Wiley,

**\*** Not required; on reserve at the main library

**Course Objectives:**

 To gain an understanding of: a) Biochemistry of nutrients, b) Anatomy and physiology of digestive system, c) Rumen microbes, d) Microbial and physiological processes involved in degradation, absorption, and metabolism of nutrients, e) Factors affecting feed intake, f) Common feeding methods, and g) Metabolic disorders.

**Course Outline:**

1. Introduction
2. Digestive system
3. Basic biochemistry of nutrients
4. Anatomy and physiology of the ruminant digestive tract
5. Rumen microbiology – bacteria, protozoa, flagellates, and fungi
6. Volatile fatty acids
7. Nutrients and rumen microbes
8. Alteration of rumen fermentation
9. Energy metabolism
10. Rumen fermentation of nitrogenous compounds
11. Rumen metabolism of lipids
12. Factors affecting the ruminal microbial population
13. Voluntary feed intake
14. Vitamins and minerals
15. Metabolic disorders & nutritionally related diseases
16. Feeding methods

**Exams and Grading**

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| --- | --- | --- | --- |
| **Item** | **Date (approximate date)** | **Percent of total-Undergraduates (AVS411)** | **Percent of total –Graduates (AVS511)** |
| *Quiz I* | 3rd week | 50 | 50 |
| Exam I | 1st half of February | 150 | 100 |
| *Quiz II* | 6th week | 50 | 50 |
| Exam II | 1st half of March | 150 | 100 |
| *Quiz III* | 9th week | 50 | 50 |
| Exam III | 1st half of April | 150 | 100 |
| *Quiz IV* | 12th week | 50 | 50 |
| Exam IV  | Finals week | 200 | 150 |
| Assignments | throughout the semester | 60 | 60 |
| Participation | throughout the semester | 90 | 90 |
| Presentation/Term paper | As scheduled | Optional | 200 (100 each) |
| Total |  | 1000 | 1000 |

**A** ≥ 88%; 87.5% ≥ **B** ≥ 79%; 78.5 %≥ **C** ≥70%; 69.5% ≥ **D** ≥ 60%; **F** ≥ 59.5%

**Exam/assignment Composition**

* **AVS411:** multiple-choice questions, short answers, and short essay will compose the quizzes and exams. Points are detailed in the table. Each exam will be on materials discussed prior to that exam with an exception of the final. The final exam will be on the materials covered in the 4th quarter of semester (~75%) as previous three exams; the remaining (~25%) will be on topics which did not draw attention sufficiently in the previous three exams. There are reading materials on the website that would further explain topics discussed in the class. A one-page summary on each topic (reading materials for undergraduate students) will be expected. Because this is a senior/graduate level course, active participation in class discussions is expected. Presentation and term paper (10 points each) is optional. If interested, the topic and instruction will be discussed and finalized by the end of January.
* **AVS511:** multiple-choice questions, short answers, and short essay will compose the quizzes and exams. Points are detailed in the table. Each exam will be on materials discussed prior to that exam with an exception of the final. The final exam will be on the materials covered in the 4th quarter of semester (~75%); the remaining (25%) will be on topics which did not draw attention sufficiently in the previous three exams. There are reading materials on the website that would further explain topics discussed in the class. It is highly expected that these materials would be comprehensively studied. A one-page summary on each topic (reading materials for graduate students) will be expected. Because this is a senior/graduate level course, active participation in class discussions is highly anticipated.

 For presentation and term paper (100 points each), the topic and instruction will be discussed and finalized by the end of January. Briefly, a presentation (~20 min) should be prepared based on an approved topic within the context of this course. Time-table for presentations will be set up once the topic is determined but will be in second half of the semester. A term paper (proposal format) should be prepared on the same topic area. Briefly, it is a 3-4 page proposal (excluding reference list; 12-pt Times New Roman; 1-inch margins; 1.5 spacing) that contains an introduction, a hypothesis, objective(s), experimental design and statistical analysis, and means to conduct the objectives.

**Attendance Policy:**

* Students are expected to attend all lectures; absence will have direct negative impact on final grade. The point is quite simple: attend the lecture, and you will do just fine !
* Each lecture you will have points (~ 3 points/lecture) to gather. If you miss it, you will not earn the points. If it is a University-excused absence, we will do our best to facilitate any missed homework assignment, quizzes, etc.
* There will be opportunities to earn extra points (and offset lost points just in case you lost some points because you missed class) such as attending AVS graduate seminars and other nutrition-related seminars, conferences, and talks. Please communicate with the teaching team so we can work together and set these up for you.

**DISABILITY SUPPORT SERVICES REASONABLE ACCOMMODATIONS:**
Reasonable accommodations are available for students who have documented temporary or permanent disabilities. All accommodations must be approved through Disability Support Services, located in the Idaho Commons Building, Room 306, in order to notify your instructor(s) as soon as possible regarding accommodation(s) needed for the course.

Contact DSS at 208-885‐6307, email dss@uidaho.edu or go to [www.uidaho.edu/dss.](http://uidaho.us6.list-manage1.com/track/click?u=e8b26a2bfdf3335ca7d0c9eef&id=661b270a0e&e=d0376f4cca#_blank)