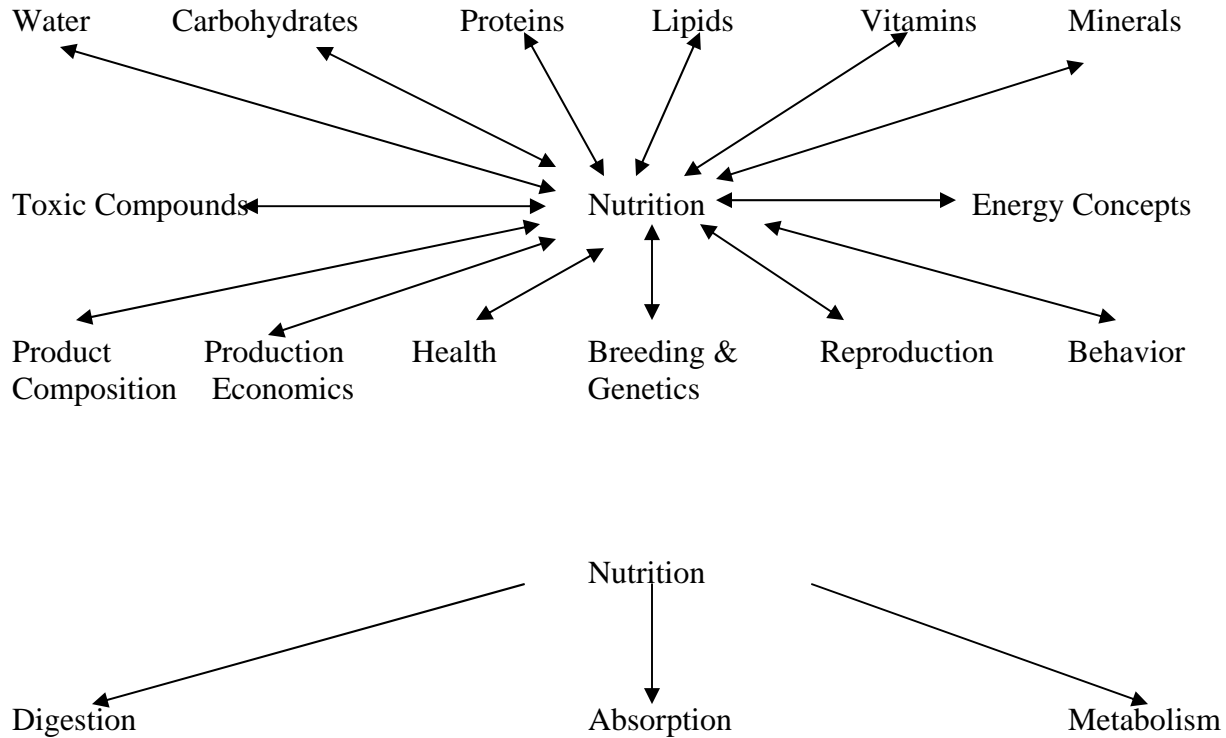


ADVS 3500
PRINCIPLES OF ANIMAL NUTRITION
Fall Semester, 2006

Course Outline, Schedule and Objectives



Course Objectives:

- Acquaint students with the major nutrient groups associated with feeds commonly used by farm animals. Refer to Nutrient Family Tree at the end of this outline.
- Acquaint students with how nutrients are absorbed from the gastro-intestinal tract into the body of animals. Since farm animals have a variety of different gastro-intestinal tract types, gross anatomy will be reviewed.
- Acquaint students with how nutrients can be metabolized once absorbed, i.e., burned for energy, used for synthetic purposes (tissue growth, enzymes, hormones, etc.), or stored for future use.
- Since we will be studying farm animals, particular attention will be given to comparing and contrasting ruminant versus non-ruminant animals.
- Some attention will be given to signs of nutrient deficiency and toxicity.
- Methods commonly used for the routine analysis of animal feeds for nutrient content will be presented with each nutrient group.
- A major objective of the course is to have students complete the course with a good working knowledge of terms and terminology associated with nutrition and applied biochemistry. This will aid students in reading and understanding technical research reports and articles. Occasionally excerpts from such articles will be passed out in class to illustrate the importance of this terminology.
- Along with reproduction, breeding/genetics, health, and production/management, nutrition is one of the major cores in the animal science curriculum. As a consequence, a good working knowledge of nutritional principles is necessary to prepare for the decision-making/problem-solving aspects of the senior management courses and for upper division grazing livestock nutrition, nutritional management, and poisonous plant courses offered in the department.

Instructor:

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E-mail: rdw@cc.usu.edu

B.S. Zoology, Biochemistry Montana State University

M.S. Animal Nutrition Washington State University

PhD Animal Science/Nutrition Utah State University

Office Hours:

Since the class meets MWF at 10:30 a.m. it will be difficult to reach me before that time. I will usually have chores associated with research projects or will be preparing for classes. I will make an effort to be in my office from 11:30 a.m. to 2:30 p.m. on M and W. After 2:30 I often have chores with research projects.

Monday and Wednesday 11:30 a.m. to 2:30 p.m.

Teaching Assistant:

Jake Owen

Office hours, etc., to be announced

Secretary:

Karma Wood

karmaw@ext.usu.edu

AgSci Room 228

Prerequisites:

ADVS 1200 – Anatomy and Physiology and Chem 1120 – General Chemistry II. Students have “gotten by” in ADVS 3500 without one or both of these courses. However, it’s doubtful that a good understanding of the material is achievable without the background these classes offer. Also, we have to move through the material in this course rather rapidly, so students may not have the time needed to study background material.

Text:

An appropriate textbook for this course has been a problem for quite some time. One major problem is expense. Another problem is finding a text that matches the manner in which I wish to teach this course. Some texts are a little too basic, while others are a little too applied. If any of you wish to purchase a textbook for your personal library or to help you with this class, I can make some suggestions and we can place an order as a class for a reduced price. I will have a couple of commonly used texts on reserve in the library.

Course Website:

The course notes will be on Web CT.

An outline of each lecture will be placed on Web CT. I suggest these be printed out and brought to class to aid in the organization of note taking, etc. Study problems and questions will also be placed on the Web CT.

Testing:

There will be three midterm exams and a final exam. The final exam will not be comprehensive, covering only material from the last ¼ of the semester. Each exam will be worth 150 points. Each exam will be given during the normally scheduled lecture period.

Midterm 1	150 pts.
Midterm 2	150 pts.
Midterm 3	150 pts
Final Exam	<u>150 pts.</u>
Total	600 pts.

Help Sessions:

There will be three, two-hour help sessions scheduled just prior to each exam. The time and place of each of the help sessions will be announced in class. Help session duties will be provided by myself and the class teaching assistant.

Grading:

Since a large amount of material must be covered in a fairly short period of time, I've decided to reduce the grading stress a bit by not giving minus (-) grades. Plus (+) letter grades will be given however. Grading will be based on the percent of the 600 points earned during the semester.

> 90% = A	70-76% = C
87-89% = B+	60-69% = D
80-86% = B	< 60% = F
77-79% = C+	

Physical Impairments:

If a student has any physical disabilities or other problems that will likely require some accommodation by the instructor, these must be made known to the instructor during the first week of the course. Any requests for special considerations relating to attendance, pedagogy, taking of examinations, etc. must be discussed with and approved by the instructor prior to completion of the fifth day of the course. In cooperation with the Disability Resource Center, course materials can be provided in alternative formats – large print, audio and Braille.

Course Lecture and Testing Schedule

DATE	SUBJECT
Aug. 28	Course Introduction
30	Comparative Anatomy of Gastro-Intestinal Tracts of Farm Animals
Sept. 1	G.I. Tracts (continued)
Sept. 4	LABOR DAY ☺
6	Importance of Water as a Nutrient in Farm Animals
8	Water (continued)
11	Carbohydrates: Chemical Structure, Classification, Nomenclature
13	Carbohydrate Chemistry (continued)
15	Routine Analysis of Animal Feeds for Carbohydrate Content
18	Digestion, Absorption of Carbohydrates in Nonruminant Animals
20	Digestion, Absorption of Carbohydrates in Ruminant Animals
22	MIDTERM EXAM #1
25	Digestion, Carbohydrates in Ruminants (continued)
27	Cellular Metabolism of Carbohydrates: Glycolysis

Sep. 29	Cellular Metabolism of Carbohydrates: Krebs (TCA Cycle), Respiratory Chain
Oct. 2	Lipids: Chemical Structure, Classification, Nomenclature
4	Analyzing Animal Feeds for Lipid Content
6	Digestion, Absorption of Lipids in Nonruminant Animals
9	Digestion, Absorption of Lipids in Ruminant Animals
11	Cellular Metabolism of Glycerides and Fatty Acids
13	Practical Aspects of Adding Fats and Oils to the Diets of Farm Animals
16	Proteins: Chemical Structure, Classification, Nomenclature
18	Protein Chemistry (continued)
20	MIDTERM EXAM #2
23	Analyzing Animal Feeds for Protein Content
25	Digestion, Absorption of Proteins in Nonruminant Animals
27	Digestion, Absorption of Proteins in Ruminant Animals
30	Cellular Metabolism of Amino Acids
Nov. 1	Energy Concepts
3	Energy Concepts (continued)
6	Energy Concepts (continued)
8	Calcium/Phosphorus Nutrition
10	Magnesium/Sulfur Nutrition
13	Potassium/Sodium/Chloride Nutrition
15	Zinc/Manganese/Copper Nutrition
17	MIDTERM EXAM #3
20	Iron/Iodine/Selenium Nutrition
22-24	Thanksgiving Break
27	Other Microminerals and Toxic Minerals
29	Vitamin A and D Nutrition
Dec. 1	Vitamin E and K Nutrition
4	Thiamine, Riboflavin, Biotin Nutrition
6	Niacin, Pyridoxine, Folic Acid, Choline Nutrition
8	Pantothenate, B ₁₂ , Ascorbic Acid Nutrition (last day of class)
13	FINAL EXAM 9:30 -11:20 a.m.

NUTRIENT FAMILY TREE

