

Course Format:

Lecture: M, W, F
21 August 2017 – 10 December 2017
10:00 – 10:50 AM
Room C248 Clark

Lab: Section 1, TU 8:00 – 10:50 AM
Section 2, TH 8:00 – 10:50 AM
Section 3, TH 12:00 – 2:50 PM
Room 242 ANSI

Professor: John J. Wagner, Ph.D.

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Office hours: M, W, F
11:00 – 11:50 AM
Or by appointment

Lab Coordinator: Karen Sellins, Ph.D.

Office: Room 229 ANSI
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Office hours: By Appointment

Graduate Teaching Assistant: Kevin Ruiz

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Course Objectives:

1. Know the major classes of nutrients and their dietary origin.
2. Understand the chemical nature of nutrients and their relationship to biological functions.
3. Understand how nutrients are digested, absorbed, and metabolized by animals.
4. Understand factors that determine and influence feed intake and animal nutrient requirements.

5. Identify the various feeds commonly fed to livestock and understand where feeds come from and how they are harvested and stored.
6. Understand basic considerations for feeding various classes of animals.
7. Know how to evaluate and balance simple diets for animals.
8. Improve technical writing skills.

Text and Materials:

Basic Animal Nutrition and Feeding (5th edition). W. G. Pond, D. C. Church, K. R. Pond, P. A. Schoknecht. (Required).

Copies are available for short term loan at the library. Specific pages from this text may be assigned as required reading. You will be tested over these specific reading assignments. Students are encouraged to ask Dr. Pond to autograph their text book.

Power point slides, Journal Manuscripts, Extension Fact Sheets, articles appearing in Producer Periodicals, and additional information will be distributed in class or through Canvas. Every effort will be made to post power point slides on Canvas prior to each lecture. Having the slides will not substitute for coming to class. The posted slides are intended to help students take quality notes. Not all of the material discussed in class will be listed on the slides.

Assignments and Activities:

Laboratory

Lab will meet each week including the first week of class. Topics for the various labs are indicated in the schedule within this syllabus. The intent of the laboratory sessions is to enhance the lessons learned from lecture. For each laboratory session there will be a written lab report. Lab reports will be due on Friday at 5 PM the week following each lab session. Organization, spelling, and grammar will count on lab reports.

*******Labs are extremely difficult to make-up*******

Students missing lab sessions without a previously arranged, valid excuse will receive a score of zero for the lab. There will be no make-ups for many of the labs (Especially field trips and the dissection lab). Students missing these labs with a previously arranged valid excuse will have their final grade calculated from

fewer total class points. Students will be held accountable for all material missed during Lab.

Feed Identification, Production, and Storage

There will be a feed identification component to the class. Students will be expected to identify the various feeds fed to livestock and to understand where feed comes from, how feed is harvested or manufactured, and how common feeds are stored. Students are encouraged to develop a system for describing each feed so the student can identify it later. For example, pictures and note cards describing appearance, smell, texture, etc. may help study the feeds. However, such hints may not be used on the exam covering feed identification. The feed identification and source exam will be given during the final lab session and will be worth 100 points. This exam will cover material presented in lectures, labs, and will also cover material presented in Chapters 19 and 20 from the text book. **Read these chapters.**

Quizzes

Announced and unannounced quizzes will take place over the course of the semester. There will be 12 scheduled quizzes (one per week excluding the week of exams). Unannounced quizzes may be given on any day (including during the week of exams). Quizzes can occur at the beginning or the end of the class period. *HINT: Unannounced quizzes will likely take place when class enrollment declines! Since no make-up quizzes are given, students may drop their lowest quiz score from inclusion in the final calculation of grades. Spelling and grammar will count on quizzes. Each quiz will be worth 20 points.

Exams

Testing for this class will consist of two 1-hour **regular exams** given during the semester and a 2-hour **comprehensive final exam** administered during finals week. The format of exams will include a combination of multiple choice, true/false, short answer, and long answer questions. Spelling and grammar will count. In preparation for the quizzes or exams do not ask repeatedly - "Will this topic or that subject be covered on the quiz or exam?" **All material covered in class, laboratory, and reading assignments will be eligible for quiz and exam questions.**

Extra Credit

There will be no opportunities for extra credit during the semester. More constructive uses of time are to **read** the text book, **attend** class and lab regularly, **study** for quizzes and exams, and **participate** in class or lab discussions.

Point Distribution				
	Points per Item	Total Items	Total Points	Percent of Total
Exams	100	2	200	18.2
Lab reports ¹	20 or 40	13	340	30.9
Quizzes ²	20	12	240	21.8
Feed Identification Exam	120	1	100	10.9
Final Exam	200	1	200	18.2
Total Points ³			1100	100.0

¹ Nine reports at 20 points and 4 reports at 40 points.

² Assumes there will be 12 scheduled and 2 non-scheduled quizzes. Also assumes the lowest 2 quiz scores will be dropped.

³ Total points subject to change based on announced quizzes.

Grading Policies:

Percent	Guaranteed Grade
≥ 90.0	A
87.0 – 89.9	B+
80.0 – 86.9	B
77.0 – 79.9	C+
70.0 – 76.9	C
60.0 – 69.9	D
≤ 59.9	F

COMMENTS:

1. Grades will be posted regularly on Canvas.
2. Percentages will be rounded to the nearest 0.1%.
3. There will be NO curve.
4. It is YOUR responsibility to obtain any information announced or material presented in class.
5. Due dates will be given on all assignments. You will have a minimum of one week for all assignments; therefore, **NO LATE ASSIGNMENTS WILL BE ACCEPTED.**
6. **NO MAKE-UP EXAMS WILL BE ALLOWED**, except for absences that have been **cleared in advance** by Dr. Wagner.

- a. Valid absences include:
 - i. Medical emergency—a written and signed note from a medical doctor is required.
 - ii. Participation in a CSU-sanctioned activity—a letter from the supporting faculty is required **PRIOR** to the absence.
 - b. **Students who miss an exam and do not have a valid excuse will receive a zero.**
7. **NO MAKE-UP QUIZZES WILL BE ALLOWED**, except for absences that have been **cleared in advance** by Dr. Wagner.
 - a. **Students who miss a quiz and do not have a valid excuse will receive a zero.**
 - b. The lowest 2 quiz scores for each student will be dropped prior to calculation of final grades.
 8. Students will have a **one-week** period following the return of any exams, quizzes, or assignments to resolve any questions regarding grading. After that time period, all grades are final. Additionally, if a student expresses concern over the grading of specific questions, the entire exam, quiz, or lab report may be subject to re-grading.
 9. You should retain all graded items until a final course grade is assigned.
 10. Cheating will result in removal from the course and assignment of an 'F' for the course grade.
 11. You **will not** be allowed to use smart phones, tablet devices, or notebook computers as calculators during quizzes and exams. The use of simple 4-function (add, subtract, multiply, and divide) calculators will be allowed and is encouraged.

Important Dates for Lecture and Lab

The schedule of topics listed in the following schedule may shift slightly due to scheduling conflicts and the progress that we make as a class. With the exception of extreme unforeseen problems, the announced quiz and exam schedule will be strictly adhered to.

Day	Date	Lesson	Topic
M	21 Aug	Course Introduction. Lesson 1:	Introductions, Canvas, Syllabus, Readings, Grading. Introduction to Nutrition.
TU/TH	22/24 Aug	Lab 1:	Teaching Lab, Nutrition Labs, and ANSI Computer Lab. Nutrition Lab Tour. Lab

			safety and Hazardous Waste. Lab report 1 assigned.
W	23 Aug	Lesson 2:	Feed Ingredients.
F	25 Aug	Lesson 2:	Feed Ingredients (Continued). Quiz 1.
M	28 Aug	Lesson 3:	Feed Analysis.
TU/TH	29/31 Aug	Lab 2:	Teaching Lab. Feed Ingredients and tags. Grain grading. Dry matter determination. Lab report 2 assigned.
W	30 Aug	Lesson 4:	Digestive Anatomy and Function.
F	01 Sep	Lesson 4:	Digestive Anatomy and Function (Continued). Quiz 2. Lab 1 report due.
M	04 Sep	Labor Day	No classes.
TU/TH	05/07 Sep	Lab 3:	Teaching Lab. Digestive Anatomy and Function. Lab report 3 assigned.
W	06 Sep	Lesson 5:	Digestion, Absorption, and Metabolism.
F	08 Sep	Lesson 6:	Enzymes and Hormonal Control. Quiz 3. Lab report 2 due.
M	11 Sep	Lesson 7:	Water.
TU/TH	12/14 Sep	Lab 4:	Travel by van to ARDEC. Feed Sampling, Storage, Processing, and Mixer Tests. Lab report 4 assigned.
W	13 Sep	Lesson 8:	Carbohydrates. Roughages versus Concentrates.
F	15 Sep	Lesson 8:	Carbohydrates (Continued). Digestion, Absorption, and Metabolism. Quiz 4. Lab report 3 due.
M	18 Sep	Lesson 8:	Carbohydrates (Continued). Digestion, Absorption, and Metabolism.
TU/TH	19/21 Sep	Lab 5:	Agfinity Feed mill tour. Eaton, CO. Lab report 5 assigned.
W	20 Sep	Lesson 9:	Protein. Amino Acids vs Non-protein nitrogen.
F	22 Sep	Lesson 9:	Protein (Continued). Digestion, Absorption, and Metabolism. Quiz 5. Lab report 4 due.
M	25 Sep	Lesson 9:	Protein (Continued). Digestion, Absorption, and Metabolism.
TU/TH	26/28 Sep	Lab 6:	Teaching Lab and travel by van to ARDEC. In situ rumen degradability Lab. Lab report 6 assigned.
W	27 Sep	Lesson 10:	Lipids.
F	29 Sep	Exam 1	Covers Lessons 1 – 9 and Labs 1 – 5. Lab report 5 due.
M	02 Oct	Lesson 10:	Lipids (Continued). Digestion, Absorption, and Metabolism.

TU/TH	03/05 Oct	Lab 7:	Location TBD. Dry matter – Moisture Conversions. Lab report 7 assigned.
W	04 Oct	Lesson 11:	Energetics and energy requirements.
F	06 Oct	Lesson 11:	Energetics and energy requirements (Continued). Quiz 6. Lab report 6 due.
M	09 Oct	Lesson 12:	Feed Intake.
TU/TH	10/12 Oct	Lab 8:	Location TBD. Introduction to Diet Formulation. Lab report 8 assigned.
W	11 Oct	Lesson 13:	Minerals. Macro-minerals.
F	13 Oct	Lesson 13:	Minerals (Continued). Trace minerals. Quiz 7. Lab report 7 due.
M	16 Oct	Lesson 13:	Minerals (Continued). Digestion, Absorption, and Metabolism.
TU/TH	17/19 Oct	Lab 8:	Location TBD. Introduction to Diet Formulation (Continued).
W	18 Oct	Lesson 14:	Vitamins. Fat soluble vitamins.
F	20 Oct	Lesson 14:	Vitamins (Continued). Water Soluble Vitamins. Quiz 8.
M	23 Oct	Lesson 15:	Beef Cow/Calf Nutrition.
TU/TH	24/26 Oct	Lab 9:	ANSI Computer Lab. Diet Formulation. OSU Cow-cu-lator Computer Program. Lab report 9 assigned.
W	25 Oct	Lesson 15:	Beef Cow/Calf Nutrition (Continued).
F	27 Oct	Lesson 16:	Feedlot Nutrition. Quiz 9. Lab report 8 due.
M	30 Oct	Lesson 16:	Feedlot Nutrition (Continued).
TU/TH	31 Oct/02 Nov	Lab 10:	Cactus Hill Ranch beef and lamb feedlot tour. Lab report 10 assigned.
W	01 Nov	Lesson 17:	Sheep Nutrition.
F	03 Nov	Lesson 17:	Sheep Nutrition (Continued). Quiz 10. Lab report 9 due.
M	06 Nov	Lesson 18:	Goat Nutrition.
TU/TH	07/09 Nov	Lab 11:	ANSI Computer Lab. Diet Formulation. OSU Balancer Computer Program. Lab report 11 assigned.
W	08 Nov	Lesson 19:	Horse Nutrition.
F	10 Nov	Lesson 19:	Horse Nutrition (Continued). Quiz 11. Lab report 10 due.
M	13 Nov	Lesson 20:	Dairy Nutrition.
TU/TH	14/16 Nov	Lab 12:	ANSI Computer Lab. Diet Formulation. NRC Horse Diet Computer Program. Lab report 12 assigned.
W	15 Nov	Lesson 20:	Dairy Nutrition (Continued).
F	17 Nov	Exam 2	Covers Lessons 10 – 19 and Labs 6 – 12.

			Lab report 11 due.
Sa – Su	18 – 26 Nov	Fall Break	No classes.
M	27 Nov	Lesson 21:	Metabolic Disease and Nutrition.
TU/TH	28/30 Nov	Lab 13:	Dairy Tour. Travel by van to Dairy Farm. Lab report 13 assigned.
W	29 Nov	Lesson 22:	Swine Nutrition. Quiz 12. Lab report 12 due.
F	01 Dec	Lesson 22:	Swine Nutrition (Continued)
M	04 Dec	Lesson 23:	Feed Additives.
TU/TH	05/07 Dec	Feed ID Exam	Course evaluation.
W	06 Dec	Lesson 24:	Poultry Nutrition.
F	08 Dec	Lesson 25:	Companion Animal (Dog and Cat) Nutrition. Lab 13 due.
TH	14 Dec, 4:10 – 6:10 PM	Final Exam	Comprehensive, Lessons 1 – 25 and Labs 1 – 13.
TU	19 Dec		Final Grades Due
W	20 Dec		Final Grades Available on RamWeb

Recommended readings to supplement for lecture and lab. From Pond, Church, Pond, and Schoknecht (5th Edition).		
Lesson Number:	Topic:	Chapter:
1.	Introduction to Nutrition.	1 and 2
2.	Feed Ingredients.	17, 18, 19, and 20
3.	Feed Analysis.	3 and 5
4.	Digestive Anatomy.	4
5.	Digestion, Absorption, and Metabolism.	4
6.	Enzymes and Hormonal Control.	4 and 16
7.	Water.	6
8.	Carbohydrates.	7
9.	Protein.	9
10.	Lipids.	8
11.	Energetics.	10
12.	Feed Intake.	17
13.	Minerals.	11, 12, and 13
14.	Vitamins.	14 and 15
15.	Beef Cow/Calf Nutrition.	22
16.	Feedlot Cattle Nutrition.	22
17.	Sheep Nutrition.	24
18.	Goat Nutrition.	24
19.	Horse Nutrition.	27
20.	Dairy Cattle Nutrition.	23
21.	Metabolic Disease and Nutrition.	11, 13, 22, 23, and 24
22.	Swine Nutrition.	25
23.	Feed Additives.	19
24.	Poultry Nutrition.	26
25.	Companion Animal Nutrition.	28
Lab Number:		
Lab 1:	Nutrition Lab Tour.	3 and 5
Lab 2:	Feed Ingredients and DM determination.	17, 18, 19, and 20
Lab 3:	Digestive Anatomy and Function.	4
Lab 4:	Feed Sampling, Storage, Processing, and Mixer Tests.	17, 18, 19, and 20
Lab 5:	In situ Rumen Degradability.	3 and 5
Lab 6:	Agfinity Feedmill Tour, Eaton, CO.	17, 18, 19, and 20
Lab 7:	Dry matter – Moisture Conversions.	3
Lab 8:	Introduction to Diet Formulation.	21
Lab 9:	OSU Cow-cu-lator Computer Program.	22
Lab 10:	Cactus Hill beef and lamb feedlot tour.	22

Lab 11:	OSU Balancer Computer Program.	22
Lab 12:	NRC Horse Diet Computer Program.	27
Lab 13:	Dairy Tour.	23

Academic Integrity

CSU policy on academic integrity, found in the Student Rights and Responsibilities section of the University General Catalog (<http://www.catalog.colostate.edu>), applies to this course. All incidents of academic dishonesty (e.g., cheating, plagiarism, unauthorized possession or distribution of academic materials, falsification, facilitation of cases of academic dishonesty, etc.) may result in a failing grade on the relevant assignment, exam or for the course. Furthermore, all incidents of academic dishonesty will be reported to the Office of Conflict Resolution and Student Conduct Services. Students sign assignments and tests to declare that the work was completed independently and without unauthorized aid. This represents student commitment to honorable and trustworthy behavior, in the spirit of the Honor Pledge. It is permissible for you to share class notes, study in groups, and review assignments and tests from previous years.