I. **OVERVIEW**

The following information will appear in the 2012 - 2013 catalog

ANSC 214 Livestock Feeding and Nutrition 3 Units

The fundamentals of digestion and absorption in both ruminants and non ruminants are discussed. The nutritive value of feeds as they relate to the formulation of livestock rations will be emphasized, including by-product feeding.

Field trips are required. (A-F Only) Lecture /Lab

Transfer: (CSU, UC)

II. **LEARNING CONTEXT**

Given the following learning context, the student who satisfactorily completes this course should be able to achieve the goals specified in Section III, Desired Learning:

A. **COURSE CONTENT**

1. **Required Content:**

   a. Concepts of nutrition
      i. Historical advancements
      ii. Animal nutrition and its role in society

   b. Feed analysis and source
      i. Protein
      ii. Carbohydrates
      iii. Fats
      iv. Vitamins
      v. Minerals
      vi. Water

   c. Animal growth, composition and variability
      i. Water
      ii. Energy
         a. Carbohydrates
         b. Fats
         c. Proteins
         d. Inorganic elements
d. The gastrointestinal tract
   i. Types of G.I.T.
      a. Ruminant
      b. Monogastric
      c. Modified monogastric
      d. Non-functional ruminant
   ii. The role of G.I. secretions in the digestive process
   iii. Digestion and absorption
   iv. Transport of nutrients after catabolism
   v. Fecal and urinary excretions

e. Nutrient metabolism
   i. Water
   ii. Carbohydrates
   iii. Lipids
   iv. Proteins and A.A.
   v. Inorganic minerals
      a. Macro or primary elements
      b. Micro or trace elements
      c. Toxic elements and symptoms
   vi. Vitamins
      a. Fat soluble
      b. Water soluble

f. Applied nutrition
   i. Feeding standards and productivity
   ii. Feedstuffs
   iii. Preparation and processing
   iv. Ration formulations
   v. Non-caloric performance enhancers
g. Feeding practices
   i. Beef cattle
   ii. Dairy cattle
   iii. Sheep
   iv. Swine
   v. Horses

h. Ration formulation
   i. Daily nutrient balancing - NRC
   ii. Least cost ration formulation

2. **Required Lab Content:**

   a. Feedstuff Identification and Composition
      i. Physical appearance
      ii. Classification by nutritional value
         a. Carbonaceous
         b. Nitrogenous
         c. Mineral
         d. Vitamins

   b. The Gastrointestinal Tract
      i. Types of G.I.T.
         a. Ruminant
         b. Monogastric
         c. Modified monogastric
         d. Non-functional ruminant
      ii. The role of G.I. secretions in the digestive process
      iii. Digestion and absorption
      iv. Transport of nutrients after catabolism
      v. Fecal and urinary excretions

   c. Applied nutrition
i. Feeding standards and productivity
ii. Feedstuffs
iii. Preparation and processing
iv. Ration formulations
v. Non-caloric performance enhancers
d. Feeding practices
   i. Beef cattle
   ii. Dairy cattle
   iii. Sheep
   iv. Swine
   v. Horses
e. Ration Formulation
   i. Daily nutrient balancing - NRC
   ii. Least cost ration formulation

B. HOURS AND UNITS

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<th>INST METHOD</th>
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3 Units

C. METHODS OF INSTRUCTION (TYPICAL)

Instructors of the course might conduct the course using the following method:

1. Lecture and discussion
2. Demonstration
3. Use of audio-visual materials
4. Field trips and individual visitation assignments.
5. Assigned readings.
6. Assign written assignments, drawings, and lab reports.
7. Assign laboratory activities.

D. ASSIGNMENTS (TYPICAL)

1. EVIDENCE OF APPROPRIATE WORKLOAD FOR COURSE UNITS
Time spent on coursework in addition to hours of instruction (lecture hours)

a. Weekly written laboratory reports.

b. Study for weekly quizzes.

c. Preparation of a written report, and development of PowerPoint presentation for livestock feed trial.

d. Study for midterm, comprehensive final exam and laboratory final.

2. EVIDENCE OF CRITICAL THINKING
Assignments require the appropriate level of critical thinking

a. Students will design, develop and carry out a feed trial using the scientific method, then will analyze data and present a report using PowerPoint format.

b. Identify 40 - 50 livestock feeds and give a typical ration that each ingredient might be used in.

c. Analyze a feed ingredient tag, explain the guaranteed analysis and identify the species that the ration would be fed to.

E. TEXTS AND OTHER READINGS (TYPICAL)

1. Other: Instructor generated handouts

III. DESIRED LEARNING

A. COURSE GOAL
As a result of satisfactory completion of this course, the student should be prepared to:

explain common principles and practices used in livestock feeding, discuss major categories of nutrients and their function in growth, maintenance and reproduction, identify common feed ingredients and discuss current issues in the field of animal nutrition.

B. STUDENT LEARNING GOALS
Mastery of the following learning goals will enable the student to achieve the overall course goal.

1. Required Learning Goals
Upon satisfactory completion of this course, the student will be able to:

a. Identify the role of livestock feeding and its part in human nutrition.

b. Identify career requirements and potential opportunities leading to successful employment.

c. Identify cultural inputs that have shaped the livestock nutrition industry.

d. Apply changing nutritional requirements based upon animal physiological development.

e. Discuss differences in digestive anatomy that contrast feeding practices.

f. Demonstrate and describe animal behavior as it relates to feeding practices.

g. Explain in a verbal and written format the role of nutrition in animal health and ultimately food safety.

h. Collect and calculate data used in ration formulation.

i. Define and recall biological and inorganic factors that impact the feeding and nutrition industry.
2. **Lab Learning Goals**  
*Upon satisfactory completion of the lab portion of this course, the student will be able to:*

a. Recognize 40-50 common feed ingredients used in livestock and poultry feed formulations and identify the nutritional importance of each.

b. Compare and contrast ruminant and nonruminant digestive systems using actual specimens.

c. Discuss various types of feeding systems used in livestock feeding operations, and identify advantages and disadvantages of each.

d. Explain the basic layout, logistics and functional parts of a small feed mill operation.

e. Use the Pearson Square method to balance a feed ration.

f. Balance a feed ration using a computer application.

g. Explain the major differences in feed ingredients used for ruminants, swine and poultry.

h. Conduct a poultry or swine feed trial applying the scientific method and prepare report for class presentation.

IV. **METHODS OF ASSESSMENT (TYPICAL)**

A. **FORMATIVE ASSESSMENT**

1. Quizzes and exams on lecture material

2. Weekly written laboratory reports

3. Problem-solving exercises

4. Student participation in lecture and lab activity

B. **SUMMATIVE ASSESSMENT**

1. Comprehensive final exam

2. Laboratory practical final exam