AS 305 Swine Nutrition (1 credit)
South Dakota State University

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Course Description: This course is designed to increase the student’s understanding of the principals involved with developing and implementing a swine feeding program, and is part of the Swine Science Online (SSO) program. In this 1 credit course (equivalent to 15 contact hours), students will learn the fundamentals of feeding pigs, including understanding nutrients, factors affecting nutrient recommendations, feeding systems and management, feed ingredients, and formulation of swine diets.

Course Goals: The goals of this class are for students to understand:
- How the pig’s digestive system works
- Which nutrients are essential and how they are provided to the pig
- Which factors affect the pig’s nutrient requirements
- The overall goal is for the students to be able to critically evaluate a swine feeding program and make it better

Student Learning Outcomes: At the completion of this class, students will be able to design a feeding program for all classes of pigs, will be able to evaluate feed ingredients from an economic and performance standpoint, and will be able to troubleshoot basic nutritional problems commonly observed on a commercial swine farm.

Evaluation Procedures:
- Six 70 point exams 420
- Discussion participation (5 pts/15wk) 75
- Total Points 495

The following grading criteria will be used:

A 100 – 90% 495 – 445 pts
B  <90 – 80%  444 – 396 pts
C  <80 – 70%  395 – 346 pts
D  <70 – 60%  345 – 297 pts
F  <60%      < 297 pts

Discussion
Assignments: Approximately weekly I will assign a topic for discussion, and everyone will have 1 week from the time the topic is provided to respond with at least a 1 paragraph answer.

Tentative Course Outcome:
1. Introduction
   a. Class basics
   b. Define nutrient classes
   c. Factors affecting nutrient recommendations

2. Vitamins & minerals
   a. Options
   b. Limitations
   c. Cost/unit of available nutrient
   d. Premixes, base mixes, supplements and how they are used

3. Water
   a. Quality
   b. Quantity
   c. Interactions
   d. Methods to supply water

EXAM 1

4. Energy sources
   a. Options
   b. Limitations
   c. Cost/unit of available nutrient

5. Proteins & amino acids
   a. Options
   b. Limitations
   c. Cost/unit of available nutrient

Exam 2

6. Nutrient digestion & absorption in the pig
   a. Start at the mouth and end at the anus
   b. Show how & where each nutrient is digested and absorbed
   c. Factors affecting digestion & absorption

7. Nutrient digestion & absorption in the pig – CONTINUED
a. Start at the mouth and end at the anus
b. Show how & where each nutrient is digested and absorbed
c. Factors affecting digestion & absorption

Exam 3

8. Nursery pig nutrition
   a. Phase feeding, budget
   b. Ingredient selection

9. Finishing pig nutrition
   a. Establishing genotype of pig
   b. Phase feeding
   c. Split-sex feeding
   d. Feed budgets
   e. Lean growth curves
   f. Benchmarking/close-outs - overview

10. Sow nutrition
    a. Gestation
    b. Lactation

11. Other breeding herd
    a. Developing gilts
    b. Boars
    c. Cull sows

Exam 4

12. Feed additives
    a. Improvement needed to pay for itself
    b. Antimicrobials
    c. Beta agonists
    d. Enzymes
    e. Flavors
    f. Mycotoxin binders & mold inhibitors

13. Ingredient selection
    a. Nutritional considerations
    b. Non-nutritional considerations
    c. Quality Control
    d. Alternate ingredients
    e. By-Products

14. Feed processing
    a. Particle size reduction
    b. Pelleting
    c. Weighing
    d. Mixing
e. Liquids
f. Quality control

Exam 5

15. “Other”
   a. Nutritional disorders
   b. Feeding systems for swine
   c. Feeder design
   d. Nutritional factors affecting:
      i. Nutrient excretion
      ii. Air quality
      iii. Pork Quality

16. Professional nutritionists comments
   a. Producer
   b. Feed company

Exam 6 – Final