ANSC 324 - Applied Animal Nutrition
Final Exam Review

• Be able to calculate apparent digestibility, and apparent and true ileal
digestibility.
• Be able to compare and contrast the use of plant versus animal proteins in
companion animal diets.
• Be able to convert between differing units of measure.
• Be able to define a nutrient and the different classes of nutrients.
• Be able to describe how proteins are digested and absorbed, including enzymes
involved.
• Be able to describe the components of proximate analysis, and be able to
calculate each component, given the proper information.
• Be able to describe the concept of a limiting amino acid.
• Be able to describe the concept of an “Ideal Protein”.
• Be able to relate amino acids requirements on a basis relative to Lys, and be
able to relate Lys level to ME level.
• Be able to describe the differences between gross energy, digestible energy,
metabolizable energy, and net energy. Also, be able to calculate DE and ME
from GE if the proper information is provided.
• Be able to describe the objectives of diet formulation, and why ingredients must
be blended together.
• Be able to describe the potential antagonistic effects of certain amino acids (i.e.
Lys & Arg, Leu, Val, &Ile)

• Be able to describe the principles of diet formulation. In particular understand
how diets can be formulated on a limiting amino acid basis, and the role of
synthetic amino acids in such diet formulations.
• Be able to describe why certain quantities of nonessential amino acids are
“required” in the diet, but no requirement is given in the NRC.
• Be able to describe why ileal amino acid digestibility values are advantageous for
diet formulation.
• Be able to describe your groups diets and the rationale behind the diets that you
formulated
• Be able to differentiate between the 4 compartments of the rumen.
• Be able to discuss management factors in feedlots.
• Be able to discuss N needs of the ruminants relative to amino acids needs of the nonruminant.
• Be able to explain how a pig's immune system changes during the first 5-6 weeks postpartum. Understand the importance of colostrum, and when active immunity begins to build.
• Be able to explain how particle size affects nutrient digestibility, and why it is not advisable to grind swine rations too small.
• Be able to explain the benefits of split-sex and phase feeding.
• Be able to explain the effects of energy balance on reproductive performance.
• Be able to explain the relationship between body condition score and tissue composition.
• Be able to formulate a diet by hand.
• Be able to formulate mineral and vitamin premixes.
• Be able to interpret amino acid requirements such as methionine, methionine + cystine, glycine/serine, phenylalanine, phenylalanine + tyrosine, and what these specific relationships are.
• Be able to provide examples of things that alter an animal's nutrient requirements (i.e. genetics, injury, diseases, etc.)
• Be able to read and understand nutrient requirement tables.
• Be able to state your hypothesis, and provide some justification for that hypothesis.
• How are ruminants able to conserve N in the body?
• How do we have to approach diet formulation differently for ruminants relative to amino acid needs of the animal?
• Know the benefits of adding fiber to the diet of sows and what should be considered when evaluating the use of fiber in sow diets.
• Understand how ambient temperature affects feed intake and performance. Know which feed ingredients are more beneficial in a warm environment and which are more beneficial in a cold environment.
• Understand how genetics, herd health, the environment, maturity, and sex of an animal affect nutrient requirements.
• Understand how nutritional requirements change with age and stage of production. Be able to explain how this relates to diet formulation.
• Understand the ingredient and nutrient inputs required for computerized diet formulation, and how to apply constraints to ingredients and nutrients. Know how to set upper and lower limits for nutrients and ingredients, and how to fix something in the diet at a given level.
• Understand the principles of SEW and why the nutritional needs of SEW pigs are crucial. In addition, know some of the specialty ingredients that are used in SEW diets.

• Understand the principles of swine diet formulation. In particular understand how diets can be formulated on a limiting amino acid basis, and the role of synthetic amino acids in such diet formulations.

• What are some different considerations when formulated a feline diet versus a canine diet?

• What are the anatomical differences between the ruminant and non-ruminant GI tract?

• What are the major functions of each compartment?

• What are the potential sources of N entering the rumen?

• What are the primary differences between energy substrates used by ruminants and nonruminants?

• What factors will require adjustment of nutrient requirements in feedlot cattle?

• What information is required on a pet food label?

• What information must be provided in the “Guaranteed Analysis”?

• What is AAFCO?

• What is extruding?

• What nutrient requirements do we need to consider when formulating a TMR for feedlot cattle?

• Why is it important to buffer the pH of the rumen?

• Have a general understanding of companion animal nutrition. What are some of the myths, and is their data to support or refute these claims?

• What types of ingredients are used in pet food nutrition? How are these similar and how do they differ from livestock feed ingredients?

• What special concerns are their in regards to geriatric pet nutrition?

• Have a general understanding of pet food labeling.

• How does the equine digestive system differ from other livestock species?

• What concerns should we have when changing the diet of horses?

• What is colic? What is founder?
• What dietary manipulations can be done to decrease the potential environmental impact of animal production?
• What were some of your classmates' results from the chick project?