

ANSC 22100 Online - Principles of Animal Nutrition

Syllabus

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Course Information

Course title	PRINCIPLES OF ANIMAL NUTRITION
Course Number	ANSC 22100 (previously ANSC 221Y & 221P) This syllabus will work for distance students (CRN's 14185, 41888 and 57089 (summer, spring & fall, respectively) and Summer West Lafayette campus student, CRN 18175)
Course Description	<p>Principles of Animal Nutrition deals with classification and function of nutrients, deficiency symptoms, digestive processes, characterization of feedstuffs, and formulation of diets for domestic animals.</p> <p>Offered for independent study via the WWW as ANSC 22100 and is a 3 (semester hour) credit course.</p> <p>In this single course, we will consider all aspects of nutrition for domestic animals, from fundamentals of nutrition through feeds and feeding. The principles apply to all mammalian and avian species, but will be applied especially to swine, beef cattle, dairy cattle, poultry and horses; dogs and cats will also receive some attention. Feeds most commonly used in this country will be emphasized, but we will also consider feeds and principles of their use important to animals throughout the world. There will be an exposure to computerized ration balancing techniques, in addition to the principles of ration formulation by hand methods.</p> <p>This course is the appropriate "stand-alone" course for those interested in one course in animal nutrition, and the prerequisite for further nutrition courses in the Department of Animal Sciences. It serves to meet the requirement for animal nutrition for application to the Purdue School of Veterinary Medicine (and several other Vet schools, but you should check the school of your interest to be sure).</p>
Caution	<p>Please don't waste your money by registering for the course if you do not intend to finish it. You cannot normally just not complete it and hope it "goes away". I want you to complete the course, and to be successful. I also want you to learn nutrition, sufficiently so that in the future if you have need, you can use it or have the basis from which to learn what you may need.</p> <p>Let me emphasize that further! If you sign up for this course, you cannot just discontinue it and stop, or like any college course for which you register you will receive an incomplete which will eventually revert to an F. Perhaps you might not care if you will never request a Purdue transcript, but you may be asked to provide transcripts and to certify that all transcripts have been provided. You should complete the course if you have registered, and can only drop shortly after registering.</p>

Since the course when taught in lecture format on-campus meets 3 times each week for 15 weeks, one should expect to spend significantly more than 50 hours to complete the course successfully.

Prerequisite(s) Expected sophomore standing, exposure to freshman chemistry. Most students that take this course online to meet Vet School requirements are advanced beyond the sophomore level of college, and "over-prepared" for this course by having had organic chemistry and perhaps biochemistry. This is not required, but makes the course easier and helps assure a high grade. They are also advanced in study skills, 'self-starters', and highly motivated, with their own reasons to do well and finish in a timely fashion.

Instructor Information

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Biography



Dr. Dale M. Forsyth is an Associate Professor in Animal Sciences, with a specialty in swine nutrition. He has taught Introductory Animal Science and Nutrition courses that cover all the livestock species for many years. Dr. Forsyth's experience growing up on an Iowa livestock farm helped generate his interest in a career in animal nutrition. He began his career at Purdue University after completing his Ph. D. degree in Nutrition at Cornell University, working on problems in mineral metabolism in swine. His research program at Purdue has included feedstuff utilization and interactions of iron supplementation with susceptibility to disease. He has had an active interest in computer use in education and applied nutrition. His WWW experience stems from developing a web-presence for the Purdue Department of Animal Sciences in 1995.

Textbooks

Recommended reading

Basic Animal Nutrition and Feeding, W.G. Pond, D.C. Church, K.R. Pond and P.A. Schoknecht, Wiley, Fifth Edition, 2005. Previous editions may be used. Consider this textbook very strongly recommended, if not required (but actually all the answers to exam questions are in my course materials, so you could get along without it, and you can decide).

Principles of Companion Animal Nutrition, John P. McNamara, Pearson Prentice Hall, 2006. This book could be substituted for the recommended text above, if companion animals are the main emphasis. It does not cover everything, but is solid and a nice little book for companion animals.

Policies

Introduction

This course is being offered for independent, self-paced study. It is primarily WWW-based, using a variety of materials, including programmed learning-tutorials, on-line reading material, text book recommended readings, homework exercises, lectures with Powerpoint Presentations given as videos, computer ration balancing programs, email and discussion group contact with the instructor, and traditional off-line written exams.

Since the course when taught in lecture format on-campus meets 3 times each week for 15 weeks, one should expect to spend significantly more than 50 hours to complete the course successfully. Spending 100 to 200 hours study to complete the course would be reasonable, so adjust your expectations accordingly.

The course grade will be based on 3 exams, completed homework, and a capstone-term report.

Additional information

This is a SELF-PACED course. YOU set the pace, and other people will not be at the same place as you. YOU arrange with Dr. Forsyth when to send each exam to your proctor, when you are ready to take the exam. You may take longer than one semester to complete the course, but it is advised you do it more concisely. The final exam is cumulative and you must remember what you do early as well as late. It is advised that you do a complete job of learning the material, rather than rushing, and if you do not finish in the semester you begin, an incomplete (I) will be assigned until you complete the course and replace the incomplete with your course grade.

Transcripts & Deadlines

Because of schedules of people involved (mine, the people in Digital Education and in the Registrar's office), the course should be completely finished 2-weeks ahead of a deadline-need for a transcript. Plan ahead. Normally only a few days are required from when you finish to when a transcript can be supplied (if you are replacing an incomplete), but you can not rely on that. **PLAN AHEAD.**

Transcripts are only available at the end of the semester in which you are officially enrolled, or when you finish following that.

You are asked to complete the course by the end of the next semester if you do not finish during the term for which you are enrolled. You may be allowed more by your instructor for special extenuating circumstances, but Purdue University regulations allow no more than one year from the end of the term in which you received the incomplete, or your grade will revert to an F. It is YOUR responsibility to work on and complete the course. Your instructor will not be contacting you, normally, to prompt you to begin nor to continue. Do not fail to complete the course. Withdrawing from the course is only allowed for a short period of time. Take the course seriously and complete it.

Begin the course by viewing the files under Course Information (under the CONTENT tab. ("Start Here" contains University supplied information that may be generally helpful that you can use as you choose). **Particularly pay attention to the file describing the**

organization of material in Brightspace in this course, that describes and helps you find the variety of materials to aid your learning.

The first part of this course contains a body of information which you must learn. As you progress, you should become more independent and broad-minded in your approach to learning. You will be explicitly told what you must know at the beginning, and as you progress that will be less the case, and you should think, instead of just memorize, and learn to use information you have learned with logic, practical experience and common sense to be able to apply the principles to practical animal feeding. The last section of the course includes readings about animal feeding and management to help you be able to do that. The final exam will cover everything, from explicit knowledge of the nutrients, digestion, energy systems, etc., through feeds and ration balancing, to practical feeding of animals.

If you are not familiar with common terms or parameters for the animals considered, you should review those, with materials online in the course available to do that.

Email and discussion group contact with the instructor is expected, and should serve as an avenue for information as well as a monitor on your progress. You should begin the course by reading the section entitled ANSC 221 Organization in BrightSpace, which gives some specific instructions and hints about taking this course on-line using BrightSpace.

Grading & exams

There will be 3 exams: 2 hourly 100 point exams and a 2 hour 200 point comprehensive final. They will be taken "conventionally", on paper. You request the exam be sent to your proctor when you are ready for it and have made arrangements. The proctor will return the exam to the instructor.

There is no homework ahead of exam 1, it is just study the material and prepare for an exam. You'll find the homework, due ahead of exam 2 and again ahead of the final exam, on the Course and Subject Matter page under an icon labeled ASSIGNMENTS (scroll down to find it).

Exam one is largely fill in the blank, with a small amount of definition and short discussion. Exam two has some of that, and also more and longer discussion in addition to diagramming and explaining, and problems (you will need a calculator). The final exam has all of those, and some longer discussion questions, in addition to ration balancing. There are a few but very few multiple choice and matching questions in any of the exams.

There is a required TERM PROJECT, worth 50 points, that you will do at the end of the course following learning ration balancing and doing the readings on animal feeding. It can be done either before or after taking the final exam (most people do it after).

Grades include plus and minus scores according to the following:

A+	96 - 100	C+	76 - 78
A	90 - 96	C	70 - 76

A-	88 - 89.9	C-	68 - 70
B+	86 - 88	D+	66 - 68
B	80 - 86	D	60 - 66
B-	78 - 80	D-	58 - 60
		F	below 58

Objectives – Learning Outcomes

In this course you will:

- Learn the nutrients needed by animals, and the deficiency symptoms resulting from their lack
- Learn the digestive processes of animals of various types, ruminants, nonruminants, and non-ruminant herbivores, to obtain the nutrients.
- Learn how to evaluate feeds for their nutrient content
- Learn about where the nutrients come from (feeds), and what feeds to feed for what purposes and to what animals.
- Learn how to balance rations by various methods appropriate to the species and quantitatively provide the nutrients.
- Learn how to appropriately feed animals of various species according to those species characteristics

Your achievement of these objectives will be evaluated based on quizzes, tests and homework.

Checklist for Beginning, Working, and Finishing the course	
Register	Make sure you are registered with Purdue, as a non-degree seeking student in distance education. Please contact the personnel at Distance Education at Purdue, email = ssreg@purdue.edu if you have need of help with registration issues.
Proctor	<p>Establish your proctor and send the proctor forms and Name/Address/Info form. (Email is preferred, but Fax, email attachment or regular US mail will do). Acceptable proctors are listed on the proctor forms.</p> <p>For the instructor's convenience, it is helpful if you name your proctor form file and your name/info file starting with your last name, comma, space, first name. (Like this: Forsyth, Dale proctor form.docx).</p> <p>Also, when you request an exam it is helpful if you include your proctor's email address in the request (even though I have it recorded).</p>
Profile info	<p>Go to the Discussion Board, click on <u>Student Profile Information</u> and enter your information. Click on CREATE THREAD. Enter your Last Name, First Name. Make sure the text editor is on to add images. Type your statement and add pictures. I recommend you click NO for Open in New Window. Put your name in for Alt Text. You can set a small size for the picture by entering a number (like 100) in the width OR height column (not both or it will distort). Submit, and you can then resize the image in the text editor.</p> <p>For similar directions online look in Entering Student Profile Information, on the Course Information page.</p>
Read Syllabus	Read this Syllabus CAREFULLY (<i>I'm sorry it's long and a little redundant</i>)
Read Course Information	Read the Course Information page items. Learn how to use BrightSpace Learn
Study the material	Independently study the course material, in Course Content. Most students probably now use the LECTURES as the main source for their study, but also use the other materials. Begin in section 1 (of 3 sections). Master the material and then request exam 1 be sent to your proctor. Be aware of all the materials, including the learning modules, tutorials, audios, flash and ppt presentations (called 'Lectures'), textbook readings, links and any other materials. At the first some materials have redundant information, use what is useful to you. Use the various materials available to you to master the subject matter, using the study guide at the end of the section as a guide for the depth to know the material. (Study guides are also in a folder in Additional Study Materials).
Request exams, do homework	When ready, request an exam be sent to your proctor about 4 days or more before you plan to take it. It will normally be emailed to your proctor, (but fax or regular mail can be used if necessary). It is wise then to check that it arrived, before your scheduled exam time. You

	<p>should do the homework exercises #1, 2 and 3 and get back keys ahead of taking exam 2, and do the ration balancing homeworks and get keys before taking the final exam. Numbers 1-3 are combined on the same key so it helps if those are submitted together. Exams are conventional, written on paper exams. Please mark darkly using black pen (pencil does not copy well) so the transmitted copies are legible. Exam 1 is largely fill in the blank and very short definition/description; exam 2 includes more diagramming, discussion and calculations; exam 3 has all of that plus matching, longer discussion questions and ration balancing. There are practice exams on BrightSpace (not necessarily the same format as your exam.)</p>
Do the term project	<p>The term project is a 50 point capstone project which you should do AFTER doing ration balancing and the readings on feeding for the final exam. You may do it before or after the final exam, but the course is not complete until it is submitted. Information about it can be found under ASSIGNMENTS.</p>
Do the course evaluation	<p>At the end of the course please do the course evaluation. You will have access to it when your final exam score is posted and it is under Quizzes and Tests. The responses are anonymous but the instructor can tell if it has been completed or not.</p>
Monitor your grades	<p>Your grades will be posted in the grade book for you to monitor and review. You will be sent an email message, after an exam has been graded explaining what you missed. The message MAY come to your Purdue email account, so either monitor that or arrange forwarding to your preferred account. (See "email" below in additional advice). If too much time elapses, email the instructor (because items sometimes get overlooked in the volume of email received).</p>
Transcript	<p>At the end of the semester in which you are officially registered, or after that a few days following the submission of your grade, a transcript will be available from the Purdue Registrar's office. See http://www.purdue.edu/registrar/Students/Transcripts.html for information.</p>

Finish the course

You are allowed until the end of the following semester to the one in which you register, by the instructor, to complete this course. If more time is needed, an extension may be granted upon petition. It MUST be completed according to Purdue University regulations no later than one year after receiving an incomplete. If the course is not completed (as in any college course), the grade will eventually become an F. You cannot just quit, or ignore it and hope it goes away. Although you may not need the credits from Purdue, a Purdue transcript with that grade will exist, and that could hurt you in the future. Therefore, finish the course.

Additional Advice

This course may be different from other online courses; it is not arranged as a "do this segment" course, except that it is broken into 3 parts according to the exams. You are to master the subject of nutrition, not only do certain things, but the study guides will help you to do that. (Different people come to the course with different backgrounds, so some

already know lots of the basics, based on their chemistry, biology and biochemistry experiences, and some have to learn everything fresh).

First read this syllabus and you might want to print that off for future reference, although you can always access it. The MAIN thing you should do is listen to LECTURES and to follow the Learning Modules (segments 1, 2 and 3). There are a couple different ways to access those, but if you click on Course and Subject Matter then there are 3 places to click corresponding to the 1st 1/3, 2nd 1/3 and last 1/3 of the course. Follow down through those.

As you begin the course recognize some of the materials, especially at the beginning, are redundant. Use what is useful to you. For sure you should follow the learning modules that break the course into 3 parts, corresponding to exams (mostly) and/or use the LECTURES. Tutorials, powerpoints I have used in class and their flash equivalents, or videos, that are narrated, online quizzes and audio are merely other resources in case they are useful for you. Tutorials may be good but in places are incomplete. Use the FAQ files. Correspond with me as you like. Request an exam when you are ready, several days ahead of when you plan to take it. Good luck with the course.

About printing or taking notes. I think jotting some notes as you go is a good idea, and some people build flash cards to help memorize some of the "memory lists". For example, you must memorize some sugars, some fatty acids, the 10 essential amino acids, and some similar things. In the vitamins and minerals sections especially there are a lot of relationships to keep straight, and notes, my 'summaries', and flash cards will help with that. Some people like to print off a lot of material, but it wasn't designed for that, and I wouldn't do it that way. The tutorials especially are meant to be online, interactive, resources, not a 'print resource'. Use your textbook, but don't try to memorize everything in it. Instead, use it to fill in and get clarity on the things I cover in the learning modules. Use the study guide as the guide for what you HAVE to know for tests. The online quizzes and exams are just for your practice, so use them as you like.

For the 1st exam it is just study the material until you're ready and then take the test. For the 2nd exam you should do the 3 homework exercises first, send to me and get back keys before taking the exam. Likewise there is more homework (ration balancing) to do before the 3rd (final) exam.

You can do the term project after taking the final exam if you want. Wait at least until you have finished ration balancing and done some of the readings on feeding.

Homework and description of the term project can be found under an item labeled ASSIGNMENTS on the Course and Subject Matter page, and also under ASSIGNMENTS in the left-hand menu.

Use the FAQ files, but don't let that prevent you from inquiring from your instructor. Since the discussion group is not used much, send an email to Dr. Forsyth if you do place an entry there.

About Email: You were given a Purdue email account when you registered. You can set forwarding through your MyPurdue account (but ITaP discourages you from doing that). For help search itap.purdue.edu for Email information under Connections & Accounts, and if necessary send email to itap@purdue.edu for help. Please use an email account to me that will persist, if you have one, rather than one from your school that will expire when you graduate, so you can be gotten in touch with in the future. You must use your Purdue email account for official communications from the University, so monitor it.

About RECOMMENDATIONS: Please do not ask the instructor for a recommendation for Veterinary School application. Those application forms ask for things that the instructor will not know and cannot fill out for a recommendation for someone that has taken a distance education course, and for which there is no personal knowledge. That type of recommendation, even if good for this course, cannot help you in your application.

Course Outline

- Introductions, Introduction to course, Expectations
- History of Nutrition; Composition of Plants (animal food) vs. Animals
- Nutrient Classes
- Water
- Carbohydrates, (definitions, classifications, functions, deficiencies, etc.)
- Fat, (definitions, classifications, functions, deficiencies, etc.)
- Proteins, (definitions, classifications, functions, deficiencies, etc.)
- Vitamins, GENERAL; Vitamins A, D, E, K (definitions, classifications, functions, deficiencies, etc.)
- B-Vitamins, (definitions, classifications, functions, deficiencies, etc.)
- Minerals, Introduction; Required; Toxic
- Macro Minerals
- Trace Minerals
- Ultra Trace Minerals
- Non-nutritive feed additives, growth promotants
- EXAM 1
- Digestive anatomy and secretions, physiology; pigs, birds
- Ruminant and Herbivore anatomy and function. Fermentation.
- Feedstuff analysis and evaluation.
- Energetics. TDN, GE, DE, ME, Net E. Value of Protein (BV, NPU, N Dig., N Reten.)
- Feed classification
- Concentrates: cereal grains, by-product feeds.
- Concentrates: protein feeds, miscellaneous.
- EXAM 2
- Balancing rations: Principles, Non-ruminant applications. Method applied to some ruminant rations.
- Forages: Grasses, Legumes, Residue feeds
- Forage Intake and Factors affecting Dry Matter Intake (i.e., Feed Consumption)
- Forages: harvest forms; pasture, hay, silage.
- Ration balancing with Forages
- Balancing rations with the aid of Computers
- Feeding Swine and Poultry
- Feeding Beef Cattle
- Feeding Dairy Cattle
- Feeding Sheep
- Feeding Horses
- Feeding Dogs and Cats
- Special things about the nutrition of other pets.
- FINAL EXAM