

CURRENT CONCEPTS IN equine nutrition

ANS 6711
FALL 2021

Tues & Thurs
8:30 – 9:20
ANS Rm 102

UNIVERSITY
OF FLORIDA

Research on Equine Nutrition began in the mid 19th century, with evaluation of feeding programs for equids in service to the military and farming, such as the 33-horse hitch pulling a wheat combine harvester pictured here. The first NRC Nutrient Requirements of Horses was published in 1949.



course description

ANS 6711 offers a detailed study of the anatomical, physiological and behavioral factors influencing nutrient requirements and feeding management of horses for maintenance, reproduction, lactation, growth, and work. Topics will include feed analysis and selection, feeding behavior, digestion and utilization of feeds by horses, derivation and application of nutrient requirements, and feeding considerations for different classes of horses. Course activities will integrate the science of nutrition with practical horse management and promote the use of evidence-based solutions to common feeding problems.

learning objectives

- 1) Differentiate the digestive anatomy and digestive physiology unique to equids;
- 2) Evaluate and select appropriate feeds for horses;
- 3) Investigate the basis for current nutrient requirements for horses;
- 4) Design diets and feeding programs that meet the horse's nutritional and psychological needs;
- 5) Analyze feeding-related problems and formulate practical, evidence-based solutions;
- 6) Critically evaluate published material relating to equine nutrition.

prerequisites

Greater success in this course can be achieved if you enter with the following:

- ✓ A course in animal or human nutrition
- ✓ One or more courses in biochemistry, metabolism, and/or physiology
- ✓ Experience formulating rations for horses or other livestock

NOTE: I also teach an undergraduate course in equine nutrition (ANS 3405) this semester. It meets Tuesdays & Thursdays from 11:45 – 12:35 in ANS Room 156. If you need a refresher, you are welcome to sit in on this class.

instructor

Dr. Lori K. Warren

office: Animal Sciences building
Suite 210, Office 210G

phone: (352) 392-1957

mobile: (352) 538-4716

email: LKWarren@ufl.edu

office hours

Tues & Thurs 9:30 – 11:00 a.m.

Or, by appointment

★ **email or CANVAS messaging are the preferred ways to reach me**

what's in this syllabus?

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course format

ANS 6711 will explore both the science of equine nutrition, as well as the application of nutrition to the feeding of horses. The format will consist of blend of traditional lectures along with discussions and activities you will be expected to prepare for outside of class and contribute to during class. Your comprehension of the material will be evaluated through exams, assignments, and a case study project. The course requires reading, group and individual work, simple and algebraic calculations, and effort outside of the classroom. To develop independent-thinking that will serve you beyond this course, you will be asked to research topics not covered in lecture and formulate diets and solve practical feeding problems. You will be expected to seek out reliable sources of information, critically evaluate and interpret equine nutrition research, and form independent, evidence-based solutions & recommendations. To get the most out of this course, come to class, ask questions, and get help before you get too far behind. **Learning is not a spectator sport!**

exams – This course will have **2 exams**, each covering approximately half of the course material. Exam format will consist of multiple choice, short answer, essay, and calculations.

case study project – you will be assigned a case study project that will require you to formulate evidence-based solutions for practical problems in equine nutrition. It will involve searching the scientific literature, interpreting research data, developing feeding programs, and design of research studies to address industry-relevant questions. You will need to put in consistent effort on this project throughout the semester – it is not something that can be done at the last minute! Projects will be assigned in Sept. An **outline** of your approach to addressing each portion of the project will be **due Oct 14**. A **written project report** will be **due Nov 23**. Reports are typically 15-30 pages. You are also expected to prepare a **15-minute presentation** on your solutions. Oral presentations will take place during the **last 3 class periods of the semester**. Further detail will be provided when the projects are assigned.

other assignments – additional smaller assignments may include feed or supplement evaluation, basic nutrition calculations, ration formulation, critique of research or popular press articles, and answering questions from horsemen. Some assignments may be completed individually or in small groups as part of an in-class activity, while other assignments will require independent work outside of class.



Fiber is a key nutrient in equine diets. It provides the majority of the energy needed by the horse and is necessary for maintaining gut health. However, the actual amount of fiber required by the horse is unknown.

course resources

This course has no required textbooks; however, two books are highly recommended (see *References* at right). Additional reference material (eg, journal articles, videos, web links) will be posted to CANVAS or handed out in class. In some cases, I will ask you to review these materials prior to coming to class; in other cases they will serve as supplementary material. This course requires access to scientific literature – contact library support if you need help.

references

- 2 books are recommended:
- Nutrient Requirements of Horses, 6th Rev. Ed. (2007)
 - National Research Council
 - ISBN 978-0-309-10212-4
 - ★ Access free-of-charge at: www.nap.edu/read/11653/chapter/1
 - Equine Applied & Clinical Nutrition (2013) ■ R.J. Geor, P.A. Harris, M Coenen (Eds.) ■ ISBN: 978-0-0720-3422-0 ■ useful if you need additional background or “a place to start” for assignments. Also a nice resource if you intend to work in the field of equine nutrition.

CANVAS

- All course materials and communications will be hosted on CANVAS.
- <https://elearning.ufl.edu/>
- Check the **Notifications** settings for your account. Set **Announcements** to **'notify me right away'** to receive timely announcements about the course.
- **CANVAS will contain:**
 - ✓ Announcements
 - ✓ Lecture slides or lecture videos
 - ✓ Articles and web links
 - ✓ Assignments
 - ✓ Exams
 - ✓ Your Grades

course notes

- Course Notes (and any accessory materials) will be posted on CANVAS under the “**Modules**” link.
- Format of notes will be PowerPoint slides, other handouts/diagrams, and articles (all as PDF files).
- Print notes (and relevant handouts) before coming to lecture or bring your laptop/tablet and type on the PDF documents.
- **NOTE:** If notes are not posted by 6:00 p.m. the night before the lecture, then I will provide copies for you in class.

grading policy

grade distribution

Exam 1.....	125 pts
Exam 2.....	125 pts
Assignments.....	125 pts
Case Study Project.....	125 pts

grading scale

A =	90 – 100 %	450–500 pts
B =	80 – 89.9 %	400–449 pts
C =	70 – 79.9 %	350–399 pts
D =	60 – 69.9 %	300–349 pts
E =	less than 60 %	0–299 pts

- +/- letter grades will not be assigned.
- There will be no grading curve.
- Scores on individual assignments and exams, as well as a running tally of your cumulative course grade will be available on CANVAS > Grades.
- You have 1 week after the return of any graded item to resolve questions or disputes. After that, all grades are final.
- Do not wait until the end of the semester to seek help – your success in this course is important!
- For information on current UF policies for assigning grade points, see: <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

attendance, make-up and late work

attendance

Regular attendance is expected, and active participation is necessary for successful completion of this course.

If you know you will be absent from class, please notify the instructor at least two weeks in advance of the expected absence.

If you become ill or have an unforeseen emergency, notify the instructor as soon as you can. Documentation of approved but unexpected absences must be presented within 1 week of the absence in order to receive make-up exams and assignments.

Requirements for class attendance and make-up exams, assignments & other work policies are consistent with UF policies that can be found at: <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>

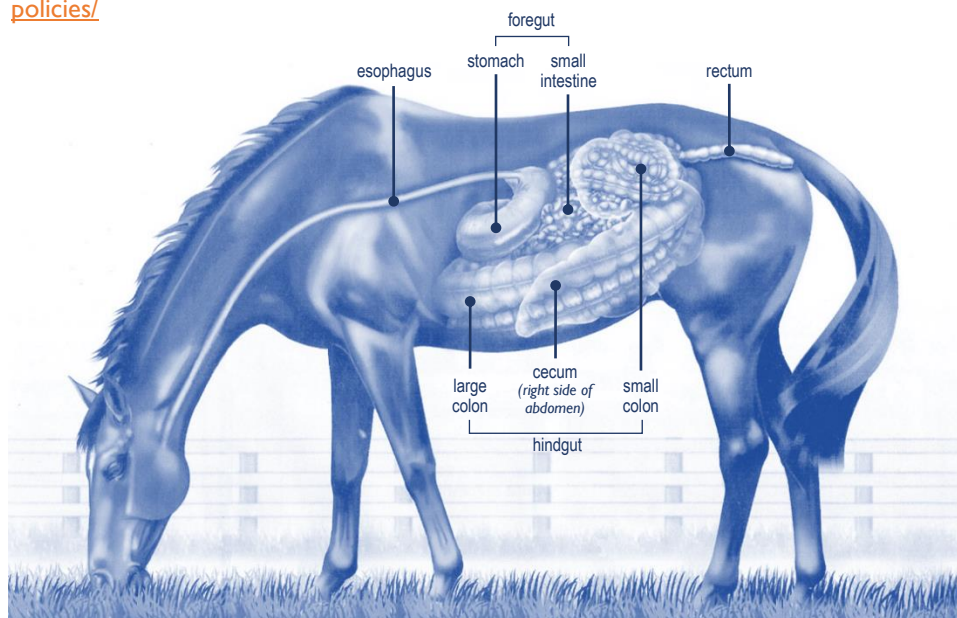
make-up work

The opportunity to make-up missed work will not be offered without a valid excuse. **It is your responsibility to contact the instructor to develop a plan to make up any work you miss.** Makeup work for approved class absences will be accepted with no penalty if completed by the agreed-upon extended deadline.

late work

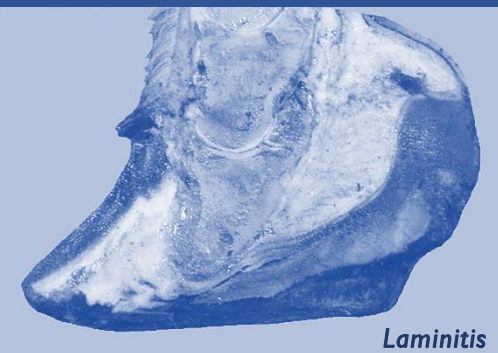
It is expected that ALL assignments will be submitted on time. Without a valid absence, assignments turned in late will receive the following penalty:

- 0.1 – 24 hrs late = – 25%**
- 24 – 48 hrs late = – 50%**
- >48 hrs late = NOT accepted**



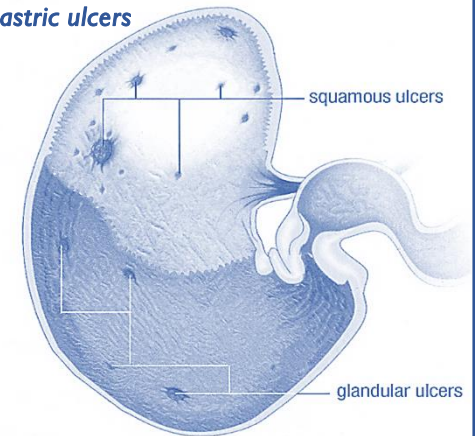
At **100 feet long with a 50 gallon capacity**, the horse's gastrointestinal tract is massive! Like a human, the horse is a monogastric animal. However, the horse's "hindgut" makes up two-thirds of its digestive system and enables them to be a grass-eating herbivore.

Diet modification is key to managing several equine clinical diseases



Laminitis

Gastric ulcers



Cushing's and other metabolic diseases



covid-19 resources

- Mask-wearing policies in this course will follow current UF policies.
- COVID-19 testing is available both on and off campus. Click here to view [testing locations and schedules](#).
- Click here for information on or to schedule a [COVID-19 vaccination](#).
- **If you are sick, stay home** and self-quarantine. Visit the [UF Health Screen, Test & Protect website](#) about next steps. Call your primary care provider if you are ill and need immediate care.
- Visit <https://coronavirus.ufl.edu/> for up-to-date information on COVID-19 and UF policies.

UF policies

academic honesty – UF students are bound by the Honor Pledge which states: “We the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity by abiding by the Honor Code.” On all work submitted for credit at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code specifies a number of behaviors that are in violation of this code and the possible sanctions (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>).

It is assumed that you will complete all work independently unless the instructor provides explicit permission for you to collaborate on course assignments, quizzes, or exams. Furthermore, you are obligated to report any academic misconduct to appropriate personnel.

It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action.

services for students with disabilities – Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Disability Resource Center ■ 352-392-8565 ■ <https://disability.ufl.edu/>

in-class recording – Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only **allowable purposes** are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. **Students may not publish recorded lectures without the written consent of the instructor.**

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by UF, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code.

36,000 calories per day are required to support intense exercise training & competition, like that of 2021 Olympic eventing gold medalist “Amande de B’neville.”



online course evaluation process

Student assessment of instruction is an important part of efforts to improve teaching & learning. At the end of the semester, you are expected to provide feedback on the quality of instruction in this course using a standard set of university & college criteria. Guidance on how to give feedback in a professional & respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. You will be notified when the evaluation period opens and can complete your evaluations using the link in emails you receive from GatorEvals, or in CANVAS (click on *GatorEvals* in the course menu), or at <https://ufl.bluera.com/ufl/>. Summary results of evaluations are available at <https://gatorevals.aa.ufl.edu/public-results>.

UF resources

health and wellness

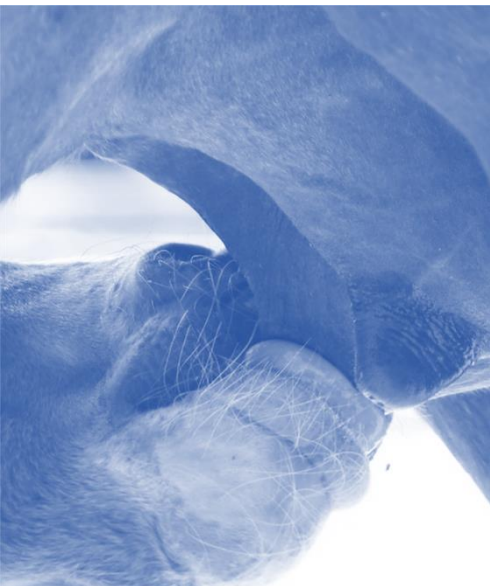
- **U Matter, We Care** ■ if you or a friend is in distress, call (352) 392-1575 or email umatter@ufl.edu ■ <http://www.umatter.ufl.edu/>
- **counselling & wellness center** ■ crisis and non-crisis counseling services ■ <https://counseling.ufl.edu/> ■ (352) 392-1575
- **student health care center** ■ (352) 392-1161 ■ <https://shcc.ufl.edu/>

- **GatorWell health promotion** ■ optimal well-being, academic coaching ■ (352) 273-4450 ■ gatorwell.ufsa.ufl.edu
- **campus police department** ■ 392-1111 ■ dial 9-1-1 for emergencies

academic resources

- **e-learning technical support** ■ (352) 392-4357 ■ helpdesk@ufl.edu ■ <https://helpdesk.ufl.edu/>
- **career connections center** Reitz Union ■ <https://career.ufl.edu/> (352) 392-1601 ■ career guidance

- **library support** ■ receive assistance with using libraries or finding resources ■ <https://uflib.ufl.edu/find/ask/>
- **teaching center** ■ help with general study skills and tutoring services ■ <https://teachingcenter.ufl.edu/>
- **writing studio** ■ help brainstorming, formatting, & writing papers ■ (352) 846-1138 ■ writing.ufl.edu/writing-studio
- **student complaints** ■ to file a complaint, click here to visit the [Student Honor Code and Student Conduct Code website](#) for more information.



4 - 5 gallons of milk are consumed by the foal each day. But at 2 months of age, milk no longer meets his nutrient requirements

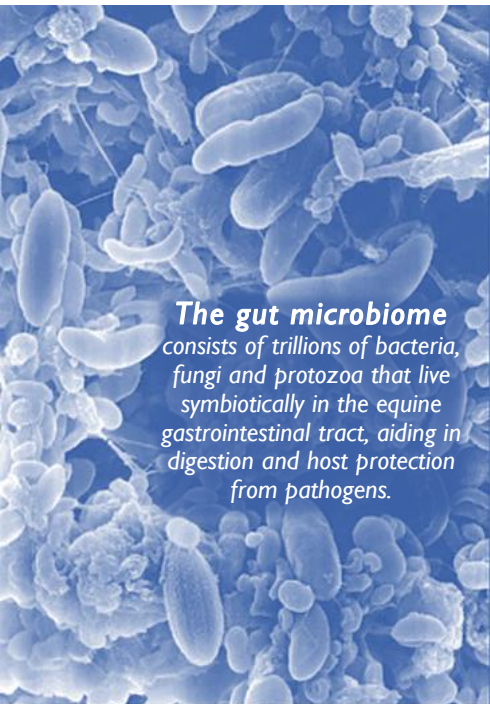
important dates

project due

- oct 14 (outline)
- nov 23 (report)
- nov 30 – dec 7 (presentations)

exams

- oct 7
- dec 16



The gut microbiome consists of trillions of bacteria, fungi and protozoa that live symbiotically in the equine gastrointestinal tract, aiding in digestion and host protection from pathogens.

course schedule*

date	lecture topic
tues – aug 24	course intro / anatomy of equine GI tract
thurs – aug 26	feed analysis
tues – aug 31	feed selection
thurs – sept 2	feed selection
tues – sept 7	feed selection
thurs – sept 9	feed selection
tues – sept 14	feed manufacturing
thurs – sept 16	digestion and absorption
tues – sept 21	digestion and absorption
thurs – sept 23	digestion and absorption
tues – sept 28	digestion and absorption
thurs – sept 30	digestion and absorption
tues – oct 5	feeding behavior
thurs – oct 7	EXAM I
tues – oct 12	Using the NRC
thurs – oct 14	review of ration balancing
tues – oct 19	Maintenance requirements
thurs – oct 21	feeding performance horses
tues – oct 26	feeding performance horses
thurs – oct 28	feeding performance horses
tues – nov 2	feeding broodmares
thurs – nov 4	feeding broodmares
tues – nov 9	feeding broodmares
thurs – nov 11	<i>VETERAN'S DAY – no class</i>
tues – nov 16	feeding growing horses
thurs – nov 18	feeding growing horses
tues – nov 23	feeding growing horses
thurs – nov 25	<i>THANKSGIVING – no class</i>
tues – nov 30	project – oral presentations
thurs – dec 2	project – oral presentations
tues – dec 7	project – oral presentations
thurs – dec 16	EXAM 2 – 7:30-9:30am – Room 102

* Lecture topics and Exam/Assignment due dates are subject to change. If any changes are made, you will receive at least 1 week notice.