

**ANSI 4423
HORSE SCIENCE
SPRING 2009**

Instructor: Dr. Steven Cooper

Office: 109b Animal Science Bldg.

Phone: 744-6065

Office Hours: Tuesday and Thursday, 9-12 or by appointment

Lecture Meets: Tuesday and Thursday, 7:30-8:45 a.m., ANSI 124

Lab Meets: Every other Tuesday (See Lab Schedule)-- 1:30 to 5:20 p.m.

Teaching Assistant: Sarah Kawcak

Office: 210 POUL, 744-8874

COURSE OBJECTIVES

1. Based on information provided in lecture, students will gain insight into the size, scope and economic impact of the horse industry on a local, state and national level as well as the opportunities and needs of the industry.
2. From material presented in lecture and lab, students will develop a scientific approach to the care and management of individual horses and horse herds and be able to formulate a complete health program.
3. From material presented in lecture and lab, students will be able to determine the nutritional needs of different classes of horses and develop a scientific approach to meeting those needs based on the digestive physiology and behavioral characteristics of horses.
4. Based on material presented in lecture and lab, students will be able to evaluate both natural and artificial breeding programs based on the management and labor requirements of each system and be able to identify the advantages and limitations of each.
5. Based on the principles of exercise physiology, students will be able to formulate a training program for horses beginning their yearling year and continuing through the advanced stages of training that will maximize the horses athletic potential.

To meet the objectives previously stated, the following is a tentative course outline. This schedule is subject to change in order to accommodate guest lectures or improve the content or continuity of the course.

LECTURES

<u>Date</u>		<u>Topic</u>	
January	13	Course Introduction	
	15	The Horse Industry	
	20	Equine Breeding and Genetics	
	22	Equine Breeding and Genetics (cont'd)	
	27	Equine Marketing & Sales	
	29	Equine Marketing & Sales (cont'd)	
	February	3	Equine Law
5		Equine Law	
10		Equine Business Management	
12		EXAM I	
17		Equine Reproduction – Mare & Foal Management	
19		Equine Reproduction – The Mare	
24		Equine Reproduction - Estrous Cycle Manipulation	
26		Equine Reproduction - Breeding Program Management	
March		3	Equine Reproduction - Breeding Farm Management
		5	Equine Reproduction - The Stallion
	10	Equine Reproduction - The Stallion (cont'd)	
	12	EXAM II	
	17	Spring Break	
	19	Spring Break	
	24	Equine Nutrition – Ingestive Behavior & Pasture Management	

	26	Equine Nutrition – Gastrophysiology & Feeding Management
	31	Equine Nutrition – Nutrient Requirements of Horses
April	2	Equine Nutrition – Nutrient Requirements of Horses
	7	Equine Nutrition – Feed Evaluation & Ration Formulation
	9	Equine Nutrition – Feed Evaluation & Ration Formulation
	13	RESEARCH PAPER DUE
	14	FIELD TRIP (\$15 fee)
	16	Equine Nutrition – Nutraceuticals & Feed Additives
	21	EXAM III
	23	Physiological Components of Exercise
	28	Exercise Performance Enhancement
	30	Metabolic Disorders Related to Exercise
May	5	FINAL EXAM --- 8:00 – 9:50 a.m.

LABS

DO NOT SCHEDULE ANYTHING BETWEEN 1:30-5:30

January	13	Facilities Tour, Lab Orientation, Group Assignments
	27	Freeze Branding, Vaccination and Deworming Programs, Floating Teeth
February	10	Breeding Farm Management
	24	Foaling Management
March	10	Anatomy, Palpation, Ultrasound, Artificial Insemination
	31	Stallion Collection, Semen Evaluation, Extenders, Semen Calculations
April	14	FIELD TRIP
	28	Lab Practicum

Lecture Manuals: Required, available on-line at www.oc.okstate.edu

Semester Projects:

I. Research Paper

A) General

This project will require students to prepare a research paper on one of the following four topics. Students will draw for topics.

- 1) Breeding and Genetics
- 2) Reproductive Physiology
- 3) Nutrition
- 4) Exercise Physiology

Once a topic has been drawn, students will need to refine the subject matter.

Paper is due: Monday, April 13 by 5:00.

Papers will be submitted electronically to: steven.cooper@okstate.edu

For example:

- 1) Nutrition
 - a) Nutrient Requirements
 - i) Energy
 - (1) Energy Systems
 - (2) Energy Sources
 - (3) Energy Requirements

B) Format and Style

- 1) Prepared in MS Word
- 2) 10 page minimum
- 3) 12 pt font
- 4) Double spaced
- 5) 1" margins
- 6) Minimum of 10 references
- 7) Must follow J. Anim. Sci. style and format (<http://jas.fass.org/cgi/content/full/86/1/DC2>)

C) Literature Cited

- 1) Must follow J. Anim. Sci. format
- 2) References must be from the following sources:
 - a) **Refereed journal articles** (other journals may apply)
J. Reprod. and Fertil. J. Nutrition
Endocrinology J. Appl. Phys.
Theriogenology J. Equine Vet. Sci.
J. Animal Sci. Equine Vet. J.
 - b) **Scientific texts** (other texts may apply)
Equine Sports Medicine and Surgery. 2004. Hinchcliff, Kaneps and Geor.
Equine Clinical Nutrition. 1995. Lewis.
Nutrient Requirements of Horses. 2007. National Research Council
Reproductive Biology of the Mare - Basic and Applied Aspects. O.J. Ginther
The Genetics of the Horse. 2000. Bowling and Ruvinsky
 - c) **Scientific Proceedings** (other proceedings may apply)
Equine Science Society
International Conference on Equine Exercise Physiology
American Association of Equine Practitioners
International Symposium on Equine Reproduction
- 3) Unacceptable reference material would include, but not limited to, the following:
 - a) Websites
 - b) Wikipedia
 - c) Magazines/Newspapers
 - d) Web-based articles (i.e. the HORSE)
- 4) Academic Integrity-Plagiarism Statement

Plagiarism may be defined as the act of using another's words or ideas as one's own and may include any of the following practices: (1) direct copying from any source without citation, (2) direct copying from any source without quotation marks (even if footnotes are used), (3) paraphrasing the argument of another author or student without citation, or (4) presenting purchased research as one's own. Violations of academic integrity may subject you to disciplinary action including the following: receiving a failing grade on an assignment, examination, or course; receiving a notation of a violation of academic integrity on your transcript; or being suspended from the University. You have the right to appeal the charge. For further information, please visit: <http://academicintegrity.okstate.edu> or contact the Office of Academic Affairs, 101 Whitehurst, (405) 744-5627.

D) Research Topics (examples)

- 1) Breeding and Genetics
 - a. Heritability Estimates – Conformation, Performance traits
 - b. Genetic Disorders – HYPP, HERDA, CID, NI, OLWS.
 - c. Equine Genomics – Horse Genome Mapping
 - d. Breeding Programs – Cross-breeding, Line-breeding, Inbreeding
- 2) Reproductive Physiology
 - a. Mare- Estrous cycle manipulation, Superovulation
 - b. Stallion – Frozen vs. Cooled Semen, Sexed semen
 - c. Reproductive Technologies – Cloning, IVF, ET, ICSI, Oocyte transfer
 - d. Reproductive Diseases – CEM, EVA, EHV, MRLS
- 3) Nutrition
 - a. Nutrient Requirements – Protein, Energy, Minerals
 - b. Nutraceuticals/Feed Additives
 - c. Energy Metabolism – Glycemic responses, Insulin sensitivity, Energy density
 - d. Feeding Management – CHO overload, Effects on Digestibility
 - e. Grazing Management – Forage utilization, Grazing patterns
 - f. Nutrient Toxicity
- 4) Exercise Physiology
 - a. Muscle Disorders – Glycogen Branching Enzyme Deficiency (GBED), Polysaccharide Storage Myopathy (PSSM), Exertional Rhabdomyolysis (ER)
 - b. Energy Metabolism – Sources, Requirements, Digestion & Utilization
 - c. Fluid & Electrolyte Balance
 - d. Acid-Base Balance
 - e. Biomechanics – Locomotion, Force-Plate Analysis
 - f. Physiologic Conditions – Equine Pulmonary Hemorrhage (EPH)

Homework

Assignments are due at the beginning of class. Assignments turned in after class starts will not be accepted.

These assignments will consist of questions and case-study scenarios designed to test your ability to research scientific material and apply knowledge learned in previous courses as well as current lectures.

These assignments will be evaluated for content and, if acceptable, students will receive credit. If they are not correctly prepared, students will not receive credit for that particular assignment. The material will be discussed in class in lecture format or as a review of the paper itself.

Mare Project

This project will be conducted on a **volunteer** basis and will not affect your grade in the course. However, I expect you to approach this assignment with professionalism and dedication. This is an excellent opportunity for students to gain more practical experience in livestock production and is a valuable learning tool for anyone who plans on being involved in equine production in the future.

Each group will be assigned one mare and will be responsible for foaling her out. The group leader will be in charge of working out a foaling schedule for the group to follow. Mare project data sheets will be given to the group leaders to be filled out by the group during the course of the foaling process. Mares will be kept in the foaling trap prior to parturition so that the group can monitor her progress. Once the mare initiates parturition, **Tim (farm manager)** and the teaching assistant should be notified immediately. The group will be responsible for watching the mare prior to parturition (including spring break) and will care for the mare and foal post-partum (i.e. nursing, medical treatments, IgG test, rebreeding, etc.).

Exams: There will be 4 exams administered during the semester. All students will take all examinations on the announced dates. No make-up exams will be given except in case of sickness, death in the family or other emergency. In those cases, students must notify the instructor prior to the scheduled exam and present requested verification. If make-up exam cannot be taken prior to exam being returned, then the grade on the final will take the place of the missing exam grade, assuming there was a valid excuse for not making up the exam. Exams will cover all material covered in class and lab as well as out of class assignments.

Grading:	3 major exams	45%
	Research Paper	15%
	Homework	15%
	Lab Practicum	10%
	Final Exam	<u>15%</u>
		100%

Letter grades will be assigned according to the following standards:

- A= 90% or above
- B= 80-89%
- C= 70-79%
- D= 60-69%
- F= 59% or below

Extra Credit: If for some reason the grade on Exam I, II or III is below the class average, students may write one referenced paper on a topic mutually agreed upon by the student and the instructor. The paper will be 10 type written pages, doubled spaced, 12 pt. font, 1 inch margins, with a minimum of 10 references. If satisfactory, the grade for that exam may be raised to the class average.

IMPORTANT POINTS TO REMEMBER:

1. You are expected to participate in class discussion.

Lecture outline will be provided.

2. ANSI 3433, 3443, and 3653 are prerequisites for this class.

Should have taken these classes or be concurrently enrolled.

Expected to have a working knowledge in these disciplines.

3. Exams will test your ability to apply knowledge to practical scenarios.

Exams will consist of case study type questions in which you will be expected to analyze a situation and provide clear, concise and scientifically based answers in short answer/essay format.

The tests will not allow you to simply memorize and regurgitate the material.

4. Any information covered in class and lab, whether handed out, written on board and/or discussed, will be covered on the exams.

Take good notes.

Participate in class discussion.

Attend class regularly.

5. NO hats/caps and NO cell phones in class.