
Agricultural Science 353: Equine Reproduction Practicum
Spring 2007, MWF 10:30 am - 12:20 pm

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Description and Objectives

This course is designed 1) to intensively review the theory of reproduction as applied specifically to the mare and stallion, 2) to familiarize students with the technical aspects of the horse breeding industry, and 3) to allow students to experience and perform practical aspects of equine breeding, including but not limited to the handling and collecting of stallions, the palpating and ultrasounding of mares, and the foaling out of mares. Approximately 1 month will be devoted to the theoretical, with the remainder of the course focused on the practical aspects of horse breeding. Ultimately, the goal is for students to **apply** reproductive physiology to breeding management.

Topics to cover in "theory" section (until approximately late February):

- unique anatomical characteristics of mare relative to other farm animals
- review of estrous cycle
 1. anatomy
 2. endocrinology
 3. timing
 4. hormone profile
 5. behavior
 6. practical implications
- follicular structure
 1. implications for palpating and ultrasounding
- review of seasonality as applied to mare and stallion
- characteristics of early pregnancy
 1. embryo mobility vs. trophoblastic expansion – rationale
 2. MRP in mare
 3. placentation – endometrial cups as precursor to microcotyledons
 4. practical implications
- endocrinology of pregnancy
 1. cascade of events leading to parturition
 2. practical implications
- parturition
 1. watch video of Docs Maybelline
 2. practical implications for foaling attendant
- neonate
 1. early post-partum changes (48 hours post-foaling)
 2. longer-term adaptation to extra-uterine environment (weeks)
 3. failure of passive transfer (FPT)
 4. diseases, including septicemia, pneumonia, neonatal isoerythrolysis (NI), combined immunodeficiency disease (CID), neonatal maladjustment syndrome (NMS)

5. imprint training
 - unique anatomical characteristics of stallion relative to other farm animals
 - stallion behavior
 1. terminology
 2. effects of age and season on reproductive parameters including testosterone concentrations, testicular weight and size, spermatozoa production, reaction time
 3. training the stallion to the phantom: success vs. failure
 4. practical implications, including housing

Topics to cover in “practical” section:

- safety, safety, safety
- record keeping (breeding, foaling, stallion breeding reports, registration applications)
- handling mare and stallion: dos and don’ts, demonstrations
- types of artificial vaginas and their assembly
- the breeding phantom
- semen evaluation using microscope (and hemocytometer) or densimeter for estimating ejaculate concentration and video microscope for assessing motility; calculations including the insemination dose
- calculating a stallion’s book
- collection of semen
- storage and transport of semen, including extenders, seminal plasma problems, conception rates, containers
- insemination techniques, including preparation of mare for insemination (tail wrapping, washing)
- factors affecting success with AI
- impediments to conception
 1. poor perineal conformation (Caslick’s procedure)
 2. poor uterine clearance (oxytocin)

Text

None (handouts, powerpoint will be used).

Course Mechanics

Foaling. I have five mares foaling this year, and 8 people in the class. My intention is that 3 people will be assigned to each mare for the purposes of foaling. You are expected at your mare’s foaling! Please realize that, while I and the TA(s) do everything in my/our power to predict when mares will foal, they do everything in their power to trick me/us – the EFDs below are therefore just a rough guideline. Everyone is welcome to watch any mare foal, but those students assigned to the mare must be present and are the only students allowed stall-side to watch the foaling. It is the students’ responsibility to watch the mare. Once a foal watch is begun, it will continue until the mare foals. I will decide when a watch should begin, with input from those assigned to the mare and from the TA(s). Imprint training with each foal will be done, but in an abbreviated form due to time constraints. I only live 5 minutes from the Farm, so when the mare foals the TA(s) or students call me and I come out to the Farm to make sure everything is okay and to help get the foal and dam situated. Due date calculations and other information follows:

Nickname	Registered name	Last OV	340 d EFD	Adjust EFD	Bred to (owner)	Comments
Hurly	Bonitas Hurricane	4/10/06	3/19/07	3/20/07	Mr Blue Harlan (Cheri Cason)	Nearly impossible to catch in the pasture; her 7 th foal
Starr	Reeds Red Starr	4/26/06	4/04/07	4/04/07	Bay Boys Raven (Newbold)	Maiden foaling; can be a witch at times but much better than used
Clover	Lenas Miss Clover	4/29/06	4/07/07	4/07/07	Leos Royal Bonita (Truman)	Maiden foaling; more laid back than Starr but can be a handful
Guinness	Poco Bonita Monkey	4/28/06	4/06/07	4/11/07	Tanyas Playboy (Truman)	Will be her 6 th foal; foal usually requires some positioning
Cowgirl	So Lately Enchanted	5/12/06 (est.)	4/20/07	4/20/07	Bragg TB stallion	Has foaled several times, but is new to us at Truman

➔ Remember, Midterm Break is March 3-11 and Spring Vacation/Easter is April 9 ◀

Breeding: In addition to imprint training and halter breaking their foal, students are required to palpate and ultrasound their mare (or others) and to maintain records on their mare's breeding. I have final say on foal names, but I encourage clean, serious suggestions from the students assigned to each mare. Once we begin breeding we stay until all mares are bred and the facilities are cleaned. This may run past the posted hours for the course (not usually) and you need to make arrangements if you cannot stay late on a particular day. This course will be fun and educational, but will also be a lot of work. Please dress appropriately for mud, cold, manure and water, semen, and urine.

Examinations and Grading

Theory	25%	Three regular tests, dates will be announced ahead of time
Practice	60%	Grades for the practical portion of the course are based on three components: <ol style="list-style-type: none"> 1. participation and attendance including clean-up and imprint training of your assigned foal (40%) – this year I will require students to log their time as a measure of participation 2. presence at <u>and</u> participation in your mares' foaling (40%) which includes checking on your mare on a daily basis until parturition and seeking input from me and/or the TAs – again, I will require students to log their time 3. scenarios, worksheets and quizzes as prelude to and practice for the final (20%)
Final	15%	Final will require that students integrate theory and practice. Thursday, May 3, 9:30-11:20 am

Overall course grades will be assigned using the following scale:

90 - 100	A
80 - 89	B
70 - 79	C
60 - 69	D
Below 60	F

Policy on absences and missed work

1. Excuses for unauthorized absences will not be accepted.
2. An authorized absence does not excuse the student from any missed work.
3. Permission for making up any missed work will be granted only for authorized absences arranged in advance of the absence or in the case of sickness, injury, or death in the family. In these cases, it is the responsibility of the student to notify the professor as soon as is possible. In the case of absence due to sickness, the student must present verification of the illness from the Student Health Center or family doctor.
4. Work missed due to unauthorized absence cannot be made up and a grade of zero will be recorded. Work missed due to an authorized absence must be made up or will be assigned a grade of zero.

Academic Dishonesty

Students are expected to do their own academic work. Any student involved in cheating on an examination or in any other form of academic dishonesty will be subject to disciplinary action, including suspension or expulsion from the class, the student's academic program, or the university.