

ANS 3319C – Reproductive Physiology and Endocrinology in Domestic Animals (Fall 2015)

Instructors:

Dr. John Bromfield (Coordinator) Office Hours: By appointment
Room 122D Dairy Science Bldg.

jbromfield@ufl.edu

Ph: 352-392-1981 Ext 241

Dr. Joel V. Yelich (Coordinator) Office Hours: By appointment
Room 125H Animal Science Bldg.

yelich@ufl.edu

Ph: 352-392-7560



Lectures: Monday, Wednesday, & Friday (Period 4) 10:40 - 11:30 AM, Animal Sciences Room 156.

Labs: Monday or Tuesday; 12:50 – 2:45 (Periods 6 & 7) or 3:00 – 4:50 (Periods 8 & 9).

Course Objectives:

- 1) Familiarize students with the reproductive anatomy, physiology, & endocrinology of male & female domesticated animals including the cow, pig, horse, sheep, cat, dog, bird, and human.
- 2) Introduce and discuss the interrelationships between reproductive hormones produced by the brain and reproductive glands and how they interact to control the reproductive processes of male and female domesticated animals including the cow, pig, horse, sheep, cat, dog, bird, and human.
- 3) Utilize the knowledge learned from Objectives 1 and 2 to introduce and discuss reproductive management practices that optimize reproductive efficiency of domesticated animals and humans.

Textbook: "Pathways to Pregnancy and Parturition" (3rd Edition 2012, P. L. Senger) is required since we will lecture directly from it in addition to extensive use of pictures & diagrams. We will provide copies of lecture notes and they will also be on the web page. There is a copy of the textbook on reserve in the Marston Science Library on main campus. A Lab Notebook will be distributed the first week of class and they will also be posted on the course web page. Students are responsible for reading handouts before lab and bringing handouts to lab.

Grading & Exams:

Your final grade will consist of lecture exams, lecture quizzes, lab exercises, and a comprehensive final exam.

Actual grades on all exercises will be the sum of the points received for correct responses as a percentage of total points possible. Final course grades will be based on the following percentage grade scale:

	B+	≥87 to <90	C+	≥77 to <80	D+	≥67 to <70	E	< 60
A	≥94	B	≥83 to <87	C	≥73 to <77	D	≥63 to <67	
A-	≥90 to <94	B-	≥80 to <83	C-	≥70 to <73	D-	≥60 to <63	

<i>Final Grade Components</i>	<i>% final grade</i>
Three lecture exams (100 pts each) & Four quizzes (25 pts each)	60
Lab grade (50 pts/lab; two lab exams @ 200 pts each)	20
Comprehensive final exam (200 pts)	20

Information regarding University Policy on grade point equivalencies and calculation of grade points is located at (<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>).

Lecture Exam Dates:

Exam 1: Sept 25th (Friday) Exam 2: Oct 23rd (Friday) Exam 3: Nov 20th (Friday) Final Exam: Dec 18 (Friday @ 10:00-12:00 PM)

Exam/Quiz questions will be true/false, multiple choice, matching, short answer, and essay. For short answer and essay questions, a legible, organized, concise and grammatically correct answer will be expected in order to receive full credit; although, partial credit will be given. Outlining answers into pertinent points is acceptable and the suggested method of answering questions, provided that the interrelationships between points are indicated. Lecture exams/quizzes will cover all material presented in the textbook, lecture, as well as take-home messages, and worksheets completed in lab. Quizzes will be taken online through Canvas outside of class. Approximately a weeks' notice will be given as to the date the quizzes will be administered.

Absences: Requirements for class attendance and make-up exams, assignments and other work are consistent with

Make-up work: University policies located at: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

A student missing an exam will be allowed to make up the exam provided that a documented, valid reason for missing it exists (Please see valid excuses in lab section). Whenever possible, these problems should be discussed with the instructor in advance, preferably by email, excuse note, or hand written note. **A missed exam with no valid excuse will be considered as a "0"**.

Course Expectations: Lecture and lab attendance are highly correlated with your final grade so it is expected that you attend both on a regular basis. Class and lab are **"No Cell Phone Areas"** so please refrain from using them. Class and lab decorum requires that you act socially professional, treat fellow students with respect, and appreciate their viewpoints and beliefs.

Important Dates:

No classes: Sept. 7 (Labor day), Nov 6 (Homecoming), Nov. 11 (Veterans Day), Nov 25 - 27 (Thanksgiving)

Other significant dates:

18th Sept: Deadline to withdraw and receive a 25% fee refund (W assigned).

23th Nov: Deadline to withdraw without receiving failing grades. Deadline to drop a course by petition without receiving a WF grade.

9th Dec: Last Day of Classes.

12th - 18th Dec: Final Exams.

Academic Honesty: As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity." You are expected to exhibit behavior consistent with this commitment to the UF academic community, and 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."

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates 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. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/SCCR/honorcodes/honorcode.php>.

Disability Issues: The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. 0001 Reid Hall, 392-8565, www.dso.ufl.edu/drc/

Software Use: All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Campus Assistance Resources: Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/ . Counseling Services , Groups and Workshops, Outreach and Consultation, Self-Help Library, Training Programs, Community Provider Database

Career Resource Center, First Floor JWRU, 352-392-1601 www.crc.ufl.edu/

If you are having problems comprehending lecture and (or) lab material or other academic, university, or personal issues that are affecting your academic performance, please feel free to visit with the instructors to address the problem(s). **Please do not wait until the end of the semester to address any difficulties you may be having.**

Lecture Topics

- I) Introduction to reproductive anatomy and physiology
 - A) Female: nomenclature, structures, and functions
 - B) Male: nomenclature, structures, and functions

- II) Reproductive endocrine system
 - A) Endocrine glands
 - B) Hypothalamic and pituitary hormones
 - C) Hypothalamic control of the pituitary
 - D) Gonadal, adrenal, placental, and uterine hormones
 - E) Feedback regulation to control hormone concentrations, secretion, and effects (Male and Female)
 - F) Cellular receptors for hormones

- III) Puberty
 - A) Definition and species comparisons
 - B) Endocrine control in male and female
 - C) Management considerations for onset of puberty

- IV) Sperm production
 - A) Physiology and functional anatomy of sperm
 - B) Spermatogenesis
 - C) Heat stress effects on sperm production
 - D) Semen collection from domesticated animals

- V) Mating behaviors
 - A) Characterization and physiology
 - B) Male and Female

- VI) Estrous cycle
 - A) Hormonal control of the estrous cycle
 - B) Species differences in estrous cycle characteristics
 - C) Principles of estrous synchronization

- VII) Ovulation, fertilization, luteal development, maternal recognition of pregnancy
 - A) Follicle development, oogenesis, ovulation, and Corpus luteum development
 - B) Sperm transport and fertilization
 - C) Maternal recognition of pregnancy

VIII) Embryo development, placental formation, fetal growth and development

- A) Early embryogenesis, fetal growth and development
- B) Placental formation
- C) Hormones of gestation

IX) Parturition

- A) Initiation and hormonal control
- B) Behavioral, and physiological events

X) Postpartum period

- A) Uterine involution
- B) Factors affecting onset of first postpartum estrus
- C) Reproductive performance as affected by postpartum interval

XI) Lactation

- A) Mammary gland development and anatomy
- B) Milk production and milk let down
- C) Importance of colostrum to newborn

XII) Reproductive management

- A) Pregnancy diagnosis (rectal palpation, ultrasonography, pregnancy test kits)
- B) Artificial insemination
- C) Embryo transfer

XIII) Reproductive technologies

- A) Assisted reproductive technologies
- B) Genetic testing
- C) In vitro fertilization

ANS 3319C Lab Information – Fall 2015

Times:

Monday: 12:50 - 2:45 PM (Section 7020)

Monday: 3:00 - 4:55 PM (Section 9347)

Tuesday: 12:50 - 2:45 PM (Section 9350)

Tuesday: 3:00 - 4:55 PM (Section 9358)

Locations: Laboratories will be held at several locations including room 155 Animal Sciences, Dairy Unit, Swine Teaching Unit, Beef Teaching Unit, and Horse Teaching Unit. Please refer to the lab schedule to determine where lab will be each week. A map and (or) directions can be found at the end of this syllabus and the course web page.

Objectives:

- 1) To provide “hands-on” experience in dissecting and describing the gross anatomy of the hypothalamic/pituitary and reproductive systems of male and female farm animals.
- 2) To develop limited skills and understanding of the basic principles of collection, evaluation, extension, and freezing of semen from farm animals.
- 3) To introduce the concept of early embryonic development and provide hands-on experience dissecting pregnant reproductive tracts from the bovine and porcine.
- 4) To develop limited skills and understanding of estrous synchronization, artificial insemination, embryo collection, embryo freezing, reproductive ultrasonography, and pregnancy diagnosis in the bovine, porcine, and equine species.

Grading: Lab is worth 20% of your final course grade. Each lab is worth 50 points consisting of attendance (25 pts) and a weekly take-home message (25 pts), which are due at the start of each lab. You must be physically present in lab and hand in the take-home message to receive full credit. There will also be a mid-term practicum and final lab exam worth 200 points each. **Your low lab grade during the semester, excluding the lab practicum and final exam, will be dropped from your final lab grade. If you have 3 or more unexcused lab absences (after the drop) you will receive an “E” for the course.**

Activities: The primary objectives of lab are to provide hands-on activities with live animals, dissection of tissues harvested from deceased animals, and operating laboratory and technical equipment frequently used in reproductive biology. Throughout the semester, you will work with live cattle, pigs, and horses. Although domesticated, these animals are not “tame” like pets and they must be handled accordingly. All farm animals can be dangerous and cause injury to either themselves and (or) people if handled incorrectly. Although horses are typically gentle, they too can be dangerous to the uninitiated. Therefore, it is our responsibility to provide a safe teaching environment for livestock and students by using different restraining devices commonly used in animal production. Lab activities will also include dissection of tissues including the cow and sheep brain, female and male reproductive tracts, and other tissues obtained from the abattoir. You will be required to dissect and study these tissues in lab. The utilization of live animals and dissection of tissues are central to effective learning and enhancement of your lab experience. ***For whatever reason(s) you feel you are unable to work with live animals and animal tissue used for***

dissection, and (or) participate in any lab activities you need to contact Dr. Yelich at the start of the semester to discuss these issues.

Lab Policies: There will be no make-up labs during the semester. Any lab missed for reasons other than those listed below will not be excused and a grade of “0” will be recorded for the both lab and take-home message. You have to attend lab and hand-in your take home message in order to receive full credit for lab. **All requests to be excused from a lab must be submitted to Dr. Yelich either in writing or requested by email. This policy will be strictly enforced.**

Excused absences include:

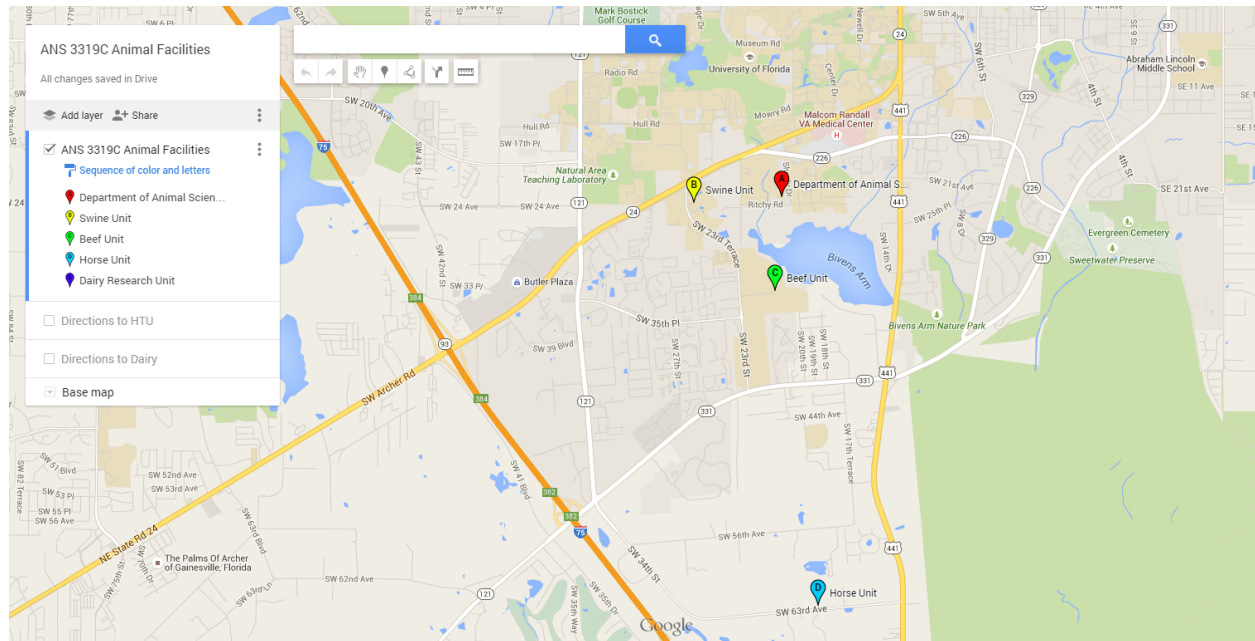
- 1) Absence for a university-approved field trip or activity (must be cleared one week in advance).
- 2) Absence for a death (verification by obituary if requested) or serious illness in family.
- 3) Absence resulting from personal illness (verification consisting of a letter of explanation from hospital or doctor on official letterhead). Please review the excuse note policy of the Student Health Care Center (<http://shcc.ufl.edu/forms-records/excuse-notes/>).

If you need to attend another lab other than your scheduled lab, please contact Dr. Yelich either in person, or by phone/email to request a change of lab and the reason for the change. Failure to do so will result in a “0” grade for that lab. Request to re-grade a take-home message must be made within one week from the date the take-home message is returned in lab. Grade challenges must be submitted in writing, attached to the exam, and returned to the lab instructor.

LAB SCHEDULE – Fall 2015

Lab	Date	Location	Topic
1	31 st Aug & 1st Sept	ANS 155	Female Macro & Microscopic Reproductive Anatomy
2	14th & 15th Sept	ANS 155	Male Macro & Microscopic Reproductive Anatomy
3	21st & 22nd Sept	ANS 155	Brain, Hypothalamic, and Pituitary Anatomy
4	28th & 29th Sept	ANS 155	Quiz Bowl Competition
	5th & 6th Oct	ANS 155	Lab Practicum Exam (Material from first three labs)
5	12th & 13th Oct	Swine Unit	Semen Collection & Artificial Insemination: Porcine
6	19th & 20th Oct	HTU	Semen Collection & Artificial Insemination: Equine
7	26th & 27th Oct	ANS 155	Evaluation of Semen & Semen Cryopreservation
8	2nd & 3rd Nov	ANS 155	In vitro Fertilization, Embryo Freezing, Embryo Transfer
9	16th & 17th Nov	ANS 155	Early Embryonic, Placental, and Fetal Development
10	23rd & 24th Nov	Dairy	Pregnancy Diagnosis by Rectal Palpation Ultrasound Diagnosis: Fetal Sexing, Ovarian Structures
11	30th Nov & 1st Dec	BTU (south)	Estrous Detection & Artificial insemination: Bovine
	7th & 8th Dec	ANS 155	Final Lab Exam

See map [here](#) below for location of all animal units:



Dairy Unit Directions

Proceed down the long drive to the main building, which is at the end of the drive. At this point, the drive forms a circle in front of the main building and there is a sign with a painting of a Holstein in the center of the circle. You are there. **Park your car in the parking lot on the left.** You can wait for the start of class either outside the building directly behind the sign with the Holstein cow on it or in the classroom located inside the building.