



# Genetics of domestic animals

**ANS 3384C**

## Lecture

**Monday & Wednesday**

9:35 – 10:25 AM

156 ANS

## Lab

**Section 1 (10467)**

**Friday, 9:35 AM – 11:30 AM**

151 ANS

**Section 2 (10468)**

**Friday, 11:45 AM – 1:40 PM**

151 ANS

**Section 3 (22074)**

**Friday, 1:55 PM - 3:50 PM**

151 ANS

## Instructor

**Dr. Raluca Mateescu**

Office: Room 100B, Animal  
Science – Bldg 459

Phone: (352) 392-2367

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## Teaching Assistants

**Graduate:** Kaitlyn Sarlo Davila,  
Gabriel Zayas & Eduardo  
Rodriguez

**Undergraduate:** Kristen Larson,  
Emily Nicole, Diana Ryan,  
Andrew Heffelfinger, Kristian  
Navas, David Rodriguez

## Office Hours

Monday, Wednesday

10:30 – 11am; 100B ANS

**OR** by appointment -- contact  
Dr. Mateescu to set up an  
appointment

## Course Objective

To understand the principles of  
animal breeding and genetics  
and their application in the  
improvement of animals.

### Course Description:

Basic principles of Mendelian, population and quantitative genetics as applied to improvement of domestic animals. Selection, inbreeding and crossbreeding strategies for genetic improvement of livestock.

### Course Objectives

To understand the principles of animal breeding and genetics and their application in the improvement of animals.

By the end of the semester, the student should be able to:

1. Be familiar with the principles of Mendelian inheritance;
2. Understand the principles of recombination, mutation, selection and non-random mating as they apply to the inheritance of simple traits and their effect on populations.
3. Comprehend the different breeding approaches for simple and polygenic traits;
4. Understand the genetic model for quantitative traits;
5. Apply statistics to the characterization of quantitative traits and genetic prediction;
6. Understand the nature and use of heritability and repeatability;
7. Comprehend the factors affecting the rate of genetic change;
8. Be familiar with the mechanisms of large-scale genetic evaluation;
9. Be familiar with mating systems and mating strategies;
10. Understand the concept of hybrid vigor as it relates to systems of crossbreeding;
11. Recognize applications of biotechnology to animal breeding.

### Attendance Policy

All exam information will be covered during the course of the lectures. **Attendance is strongly encouraged and students are responsible for all material covered in lecture.** It is highly recommended that you attend class if you expect to obtain a satisfactory grade. Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

### Text

No formal text is required. Students will be provided handouts, which are current and relevant to topics discussed in class. Optional references include:

Buchanan, Clutter, Northcutt and Pomp. 1993. Animal Breeding: Principles and Applications  
VanVleck, L.D., E.J. Pollak, E.A.B. Oltenacu. 1987. Genetics for the Animal Sciences

### Question Sets

Following each lecture, you will have to review the material covered during the lecture and formulate 2 questions (and include the correct answer). Each question will be worth 2 points and to receive full credit the questions have to be posted on time on Canvas (before midnight the next day), use proper sentence structure, grammar, etc.

### Quizzes

There will be 10 quizzes worth 10 points each. The quizzes will be available online on Canvas and will be taken online – they will be due **Friday before 9:00am**. They will consist of short questions from the lectures covered that particular week. Each quiz will be made available on **Wed. after class** and will remain open until Friday morning. However, you will have a limited time to take it once you start the quiz (10 minutes) – so it is important that you study the lectures before you start to take the quiz. Please try to take these quizzes before Friday and make sure you have a secure internet connection (if you lose the internet connection your quiz will end and you will not be allowed to take it again).

**Problem Sets and Laboratory periods**

The Friday morning periods constitute a two-hour laboratory. There will be 10 problem sets worth 15 points each to be completed during the laboratory period. The Problem Set will be handed out on Friday and the bulk of the work on problem sets should be accomplished during the laboratory period. A Practice Problem set will be first discussed and instructions on how problems are to be approached and solved will be provided in this first part of the laboratory. Students will be allowed to work on the Problem set in groups, and the instructor and TAs will be available for questions and guidance. The completed Problem Sets could be handed out at the end of the laboratory period on Friday, or uploaded on Canvas before 5pm the following Monday.

**Exams**

There will be 5 exams worth 100 points each. The final exam is not comprehensive. The material covered in the exam will be detailed prior to each exam. (*see important dates*)

**Grading Policy**

5 Exams	500 pts	59%
10 Problem Sets	150 pts	18%
10 Quizzes	100 pts	12%
25 Question Sets	<u>100 pts</u>	<u>12%</u>
	<b>850 pts</b>	<b>100%</b>

Letter grades will be assigned based upon the following scale:

<b>A 93-100%</b>	<b>B- 80-82.9%</b>	<b>D+ 67-69.9%</b>
<b>A- 90-92.9%</b>	<b>C+ 77-79.9%</b>	<b>D 63-66.9%-</b>
<b>B+ 87-89.9%</b>	<b>C 73-76.9%</b>	<b>D- 60-62.9%-</b>
<b>B 83-86.9%</b>	<b>C- 70-72.9%</b>	<b>E 60% and Below</b>

The scale may be lowered but will not be raised.

**Bonus (extra) Credit**

You may earn a maximum of 50 bonus points in this category. These points will be derived from unannounced short quizzes during lectures and other opportunities to award extra points as appropriate. To receive bonus points, students have to be in the classroom for the entire lecture. **A sign-up sheet will be available before the lecture starts -- if a student is late and doesn't sign the sign-up sheet she/he will not receive any credit, even if they turn in a quiz during lecture.** There will be no "make-up" for extra credit.

The iClicker system will be used in this class for in-class bonus questions. You can use iClicker Reef or iClicker remotes. Click on the following link for more information about this system: <https://at.ufl.edu/service-teams/classrooms/classroom-technology/iclicker-response-system/>. Students can purchase access cards to iClicker Reef or iClicker remotes at the UF Bookstore at a reduced price. iClicker Reef and iClicker remotes can also be purchased [directly from iClicker](#) at full price. You will need to register your remote on Canvas using the iClicker option in the left navigation menu.

**Policy on Missed Examinations**

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

**Policy on Late Problem Sets**

Lab exercises are due on Monday by 5pm. They may be handed in late (with no penalty) **only** if it is arranged with the instructor. Otherwise there will be a **4 point penalty** per day.

**Your Responsibilities:**

1. Show respect in the classroom to your classmates and teacher.
2. Be on schedule. You are expected to have done the assigned reading *before* class or lab.
3. Participate in class.
4. Write coherently – think before you write and read what you wrote afterwards to make sure it makes sense. Test will not be graded for writing, but poorly written answers inevitably receive worse scores than well written ones.
5. Be academically honest. Anything you submit must represent *your individual understanding*. Any material you submit must be *in your own words*.

**Academic Honesty**

On days when a quiz or an exam is completed, students will be required to exhibit behavior that leaves no question about their intent to be honest. For example, **no cell phone, books, papers or other items** will be allowed at students' desks during a class session when a test is administered. Students will be asked to **remove hats or caps** that cover/hide their eyes to ensure that there is no appearance of cheating.

The instructor will be available for students. Please make arrangements to visit at your convenience. If you call and I am not available, leave your name and telephone number or e-mail address and you will be contacted as soon as the message is received. **The best method to reach me is through e-mail. DO NOT WAIT UNTIL EXAMINATION TIME!**

**Please ask questions in class and do not be apprehensive about concepts that might not be clear.** It is important to keep up and not fall behind. Get started on the first day of class – do your homework on time – attend class – get help when you need it – and remember there is no substitute for **DAILY PREPARATION. It is much easier on all of us if you get answers to questions one or two days after class rather than one or two days before an exam.**

**Lecture Schedule** (Note: This schedule is subject to revision as the course progresses.)

Lecture 1	Intro to Anim. Genetics	Lecture 14	Regression
Lecture 2	Revisiting Mendel	Lecture 15	Heritability
Lecture 3	Probabilities	Lecture 16	Heritability & Repeatability
Lecture 4	Exceptions to Mendel's ratios	Lecture 17	Repeated Records
Lecture 5	Epistasis	Lecture 18	Relationships
Lecture 6	Hypothesis Testing	Lecture 19	Selection
Lecture 7	Linkage	Lecture 20	Accuracy
Lecture 8	Population Genetics	Lecture 21	Selection Response
Lecture 9	Mutation and Migration	Lecture 22	Correlated Response
Lecture 10	Non-random Mating	Lecture 23	Adjustment Factors
Lecture 11	Selection	Lecture 24	Mating Systems
Lecture 12	Quantitative Traits	Lecture 25	Crossbreeding
Lecture 13	Covariance and Correlation	Lecture 26	Captive Breeding Programs

*The instructor reserves the right to modify the syllabus during the semester with verbal or written announcements in class. It is the student's responsibility to stay informed of such announcements.*

### Important Dates

#### **No classes on:**

January 20: MLK Day

Feb 29 – March 7: Spring Break

#### **Exams**

Exam 1: Jan 31

Exam 2: Feb. 21

Exam 3: March 20

Exam 4: April 10

Exam 5 (Final): Tue, April 28, 7:30 AM – 9:30 AM

### General information

#### **Services for Students with Disabilities**

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

### Grades and Grade Points

For information on current UF policies for assigning grade points, see

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

### Online course evaluation process

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

### 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

### 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 honor and integrity by abiding by the Honor Code. On all work submitted for credit by students 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 (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

### Campus Helping 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/](http://www.counseling.ufl.edu/cwc/)  
Counseling Services, Groups and Workshops, Outreach and Consultation, Self-Help Library  
Wellness Coaching
- U Matter We Care, [www.umatter.ufl.edu/](http://www.umatter.ufl.edu/)
- Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)

### Student Complaint Process

For information see [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).