



Genetics of domestic animals

ANS 3384C

Fall 2022
All Lectures, Labs and
Exams Online

Instructor

Dr. **Raluca Mateescu**
Office: Room 231B, Animal
Science – Bldg 459
Phone: (352) 392-2367
e-mail: raluca@ufl.edu

Teaching Assistants

To be announced

Student Hours

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 Information

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. Describe the principles of Mendelian inheritance;
2. Apply 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. Describe the genetic model for quantitative traits, apply statistics to the characterization of quantitative traits and genetic prediction;
4. Calculate heritability and repeatability for quantitative traits;
5. Illustrate the factors affecting the rate of genetic change and predict response to selection;
6. Analyze and evaluate the mechanisms of large-scale genetic evaluations;
7. Analyze and evaluate mating systems and mating strategies;
8. Recognize applications of biotechnology to animal breeding.

Text

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

Course Organization and Content

Course Organization

The course is organized in weekly **Modules**. You can access the Modules either through the Home Page (left panel, preferred mode of access), or through the Modules. Each weekly Module will open Monday 12:00 am and will close the following Sunday 11:59pm.

Lectures

Lectures are pre-recorded. Each 50-min lecture is divided into several smaller videos. A handout will be provided for each lecture and you are encouraged to print or download the PDF handouts and follow along and take notes when you watch the lectures, just like you in a regular class.

Lecture Question Sets

For each lecture, you will have to review the material covered and formulate 2 questions and the correct answer. Each question will be worth 2 points, should require short answers and have proper sentence structure, grammar, etc. Formulate questions you would not mind seeing on the quiz or exam! - I will use some of these questions (plus some of my own) for the exam. These questions should cover general and major concepts and definitions presented in the lecture - do not ask for formulas or math problems. Once you post the questions, you will have access to everybody's questions/answers. You can use these as a Study Guide when you prepare for the quizzes and exams!

Quizzes

There will be a quiz following each Lecture. They will consist of short questions: multiple choice, true/false, fill in the blank or short answer. You will have a limited time to take it once you start the

quiz (5 minutes) – so it is important that you study the lecture before you start to take the quiz. 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).

Labs

Each weekly Module will have a lab which will allow you to apply the knowledge gained in the lectures in solving problems. Each Lab will have 2 components:

1. **Practice Problems.** This will be a set of problems which will cover the major concepts and will serve as a guide for how to solve the problems in your problem set assignment.

- Print or download the PDF file
- Watch the individual videos showing how to solve each problem step-by-step. Follow along by writing down the solutions on the handout.

2. **Problem Set.** This will be a set of problems which you are expected to solve on your own. You will need to show your work completely, step-by-step, as in the Practice Problem videos. No points will be awarded for just the final number, even if correct.

Exams

There will be 2 exams. The final exam is not comprehensive. Exams will be delivered on Canvas through Honorlock. This [handout](#) will help you prepare for the online exams proctored by Honorlock. Please download the [Google Chrome browser](#) on your computers/laptops and the basic version of the [CamScanner App](#) (basic version, free) on your phones before the exam. A Practice quiz using Honorlock set up which will be available on Canvas.

Policies

Attendance Policy

Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found [HERE](#). The instructor will be available for students, 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!

It is important to keep up and not fall behind. Get started on the first day of class – watch the lectures, do your homework on time, 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 day after class rather than one day before an exam.**

Grading Policy

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|------------------------|----------------|-------------|
| 26 Lect. Question Sets | 104 pts | 12.6% |
| 26 Quizzes | 260 pts | 31.6% |
| 13 Problem Sets | 260 pts | 31.6% |
| 2 Exams | 200 pts | 24.3% |
| | 564 pts | 100% |

Letter grades will be assigned based upon the following scale. The scale may be lowered but not raised.

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

Policy on Missed Examinations

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with [university policies](#).

Policy on Late Problem Sets

Lab exercises may be handed in late (with no penalty) **only** if it is arranged with the instructor. Otherwise there will be a **5 point penalty** /day.

Use of Formulas During Exams

Students will be exposed to many formulas during this course. However, it is not terribly important that students memorize these formulas. All formulas that will be necessary for completion of a quiz or exam will be provided with the quiz or exam. It is important however that the students know which formulas to use and how to use them.

Your Responsibilities:

1. Be on schedule. Schedule "class times" for yourself. It is important to do the coursework on time each week. You will receive 0 points for work that is turned in late.
2. 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.
3. Be academically honest. Anything you submit must represent *your individual understanding*. Any material you submit must be *in your own words*.

Important Dates

Exam 1: Wed. Oct. 5 (3 hours once you start, available between 6am-11:59pm)

Exam 2: Mon. Dec. 5 (3 hours once you start, available between 6am-11:59pm)

General information

Students Requiring Accommodations

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.

Grades and Grade Points

For information on current UF policies for assigning grade points, follow this [link](#).

Online course evaluation process

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. [Click here for guidance on how to give feedback in a professional and respectful manner](#). Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. [Summaries of course evaluation results are available to students here](#).

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. We, the members of the UF community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

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 Conduct Code specifies a number of behaviors that are in violation of this code and the possible sanctions. [Click here to read the Conduct Code](#). If you have any questions or concerns, please consult with the instructor or TAs in this class.

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.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see [Notification to Students of FERPA Rights](#).

Recordings

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 reparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, 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 the University, or by a guest instructor, as part of a UF course.

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.

Campus Helping Resources

Health and Wellness

U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

Library Support, Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints Campus

On-Line Students Complaints

Lecture Schedule

Note: This schedule is subject to revision as the course progresses.

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| Week 1 <i>Monday, August 22, 2022</i> | Lecture 1: Intro to Anim. Genetics Lecture Questions 1, Quiz 1 Lab 1 | Lecture 2: Revisiting Mendel Lecture Questions 2, Quiz 2 |
| Week 2 <i>Monday, August 29, 2022</i> | Lecture 3: Probabilities Lecture Questions 3, Quiz 3 Lab 2 | Lecture 4: Exceptions to Mendel's ratios Lecture Questions 4, Quiz 4 |
| Week 3 <i>Monday, September 5, 2022</i> | Lecture 5: Epistasis Lecture Questions 5, Quiz 5 Lab 3 | Lecture 6: Hypothesis Testing Lecture Questions 6, Quiz 6 |
| Week 4 <i>Monday, September 12, 2022</i> | Lecture 7: Population Genetics Lecture Questions 7, Quiz 7 Lab 4 | Lecture 8: Mutation and Migration Lecture Questions 8, Quiz 8 |
| Week 5 <i>Monday, September 19, 2022</i> | Lecture 9: Non-random Mating Lecture Questions 9, Quiz 9 Lab 5 | Lecture 10: Selection Natural Lecture Questions 10, Quiz 10 |
| Week 6 <i>Monday, September 26, 2022</i> | Lecture 11: Selection Artificial Lecture Questions 11, Quiz 11 Lab 6 | |
| Week 7 <i>Monday, October 3, 2022</i> | Exam 1 | |
| Week 8 <i>Monday, October 10, 2022</i> | Lecture 12: Quantitative Traits Lecture Questions 12, Quiz 12 Lab 7 | Lecture 13: Covariance and Correlation Lecture Questions 13, Quiz 13 |
| Week 9 <i>Monday, October 17, 2022</i> | Lecture 14: Regression Lecture Questions 14, Quiz 14 Lab 8 | Lecture 15: Heritability Lecture Questions 15, Quiz 15 |
| Week 10 <i>Monday, October 24, 2022</i> | Lecture 16: Repeatability Lecture Questions 16, Quiz 16 Lab 9 | Lecture 17: Relationships Lecture Questions 17, Quiz 17 |
| Week 11 <i>Monday, October 31, 2022</i> | Lecture 18: Selection EBV Lecture Questions 18, Quiz 18 Lab 10 | Lecture 19: Accuracy Lecture Questions 19, Quiz 19 |
| Week 12 <i>Monday, November 7, 2022</i> | Lecture 20: Selection Response Lecture Questions 20, Quiz 20 Lab 11 | Lecture 21: Correlated Response Lecture Questions 21, Quiz 21 |
| Week 13 <i>Monday, November 14, 2022</i> | Lecture 22: Mating Systems Lecture Questions 22, Quiz 22 Lab 12 | Lecture 23: Crossbreeding Lecture Questions 23, Quiz 23 |
| Week 14 <i>Monday, November 21, 2022</i> | Lecture 24: Crossbreeding Lecture Questions 24, Quiz 24 | |
| Week 15 <i>Monday, November 28, 2022</i> | Lecture 25: Captive Breeding Programs Lecture Questions 25, Quiz 25 Lab 13 | Lecture 26: Genomic Selection Lecture Questions 26, Quiz 26 |
| Week 16 <i>Monday, December 5, 2022</i> | Exam 2 | |

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.