



Genetics of domestic animals

ANS 3384C

Fall 2020
All Lectures, Labs and
Exams Online

Instructor

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Teaching Assistants

To be announced

Office 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 12:01 am and will close the following Sunday 11:59pm.

Lectures

Lectures are pre-recorded. The typical 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 include 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 - please 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 - [Student Exam Preparation Information \(PDF\)](#). 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 at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

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!

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

26 Lect. Question Sets	104 pts	22.5%
26 Quizzes	130 pts	28.0%
13 Problem Sets	130 pts	28.0%
2 Exams	100 pts	21.5%
	464 pts	100%

Letter grades will be assigned based upon the following scale:

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

The scale may be lowered but will not be raised.

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 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

Exams

Exam 1: Mon. Oct 12

Exam 2: Mon. Dec 7

General information

Services for Students with Disabilities

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. Students requesting classroom accommodation must first register with the Dean of Students Office.

The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

0001 Reid Hall, 352-392-8565, <https://disability.ufl.edu/>

Grades and Grade Points

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

<https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies> .

Online course evaluation process

Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. Students are expected to provide professional and respectful feedback on the quality of instruction in this course by

completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at: <https://gatorevals.aa.ufl.edu/students> . 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 <https://ufl.bluera.com/ufl/> .

Summaries of course evaluation results are available to students at: <https://gatorevals.aa.ufl.edu/public-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

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/process/student-conduct-honor-code> .

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/
Counseling Services, Groups and Workshops, Outreach and Consultation, Self-Help Library, Wellness Coaching
- U Matter We Care, www.umatter.ufl.edu/
- Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/

Student Complaint Process

Residential Course: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code>

Online Course: <http://www.distance.ufl.edu/student-complaint-process>

Lecture Schedule

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

Week 1 <i>Monday, August 31, 2020</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, September 7, 2020</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 14, 2020</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 21, 2020</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 28, 2020</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, October 5, 2020</i>	Lecture 11: Selection Artificial Lecture Questions 11, Quiz 11 Lab 6	Lecture 12: Quantitative Traits Lecture Questions 12, Quiz 12
Week 7 <i>Monday, October 12, 2020</i>	Exam 1 Lecture 13: Covariance and Correlation Lecture Questions 13, Quiz 13 Lab 7	
Week 8 <i>Monday, October 19, 2020</i>	Lecture 14: Regression Lecture Questions 14, Quiz 14 Lab 8	Lecture 15: Heritability Lecture Questions 15, Quiz 15
Week 9 <i>Monday, October 26, 2020</i>	Lecture 16: Repeatability Lecture Questions 16, Quiz 16 Lab 9	Lecture 17: Relationships Lecture Questions 17, Quiz 17
Week 10 <i>Monday, November 2, 2020</i>	Lecture 18: Selection EBV Lecture Questions 18, Quiz 18 Lab 10	Lecture 19: Accuracy Lecture Questions 19, Quiz 19
Week 11 <i>Monday, November 9, 2020</i>	Lecture 20: Selection Response Lecture Questions 20, Quiz 20 Lab 11	Lecture 21: Correlated Response Lecture Questions 21, Quiz 21
Week 12 <i>Monday, November 16, 2020</i>	Lecture 22: Mating Systems Lecture Questions 22, Quiz 22 Lab 12	Lecture 23: Crossbreeding Lecture Questions 23, Quiz 23
Week 13 <i>Monday, November 23, 2020</i>	Lecture 24: Crossbreeding Lecture Questions 24, Quiz 24	
Week 14 <i>Monday, November 30, 2020</i>	Lecture 25: Captive Breeding Programs Lecture Questions 25, Quiz 25 Lab 13	Lecture 26: Genomic Selection Lecture Questions 26, Quiz 26
Week 15 <i>Monday, December 7, 2020</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.