



EQUINE GENETICS

ANS 4382/6905

2 credits

DESCRIPTION

The art of horse breeding has shaped equine genetics since domestication, yet most horse professionals have little understanding of the fundamentals of the genome. We will examine the underlying mechanisms and inheritance of the diverse traits in the horse and other equids. Concepts covered will include the impact of domestication on the genome, relationships between breeds, coat color, genetic disease and complex traits of performance and behavior.

Instructor:

Dr. Samantha Brooks

Teaching Assistants:

Isabella Lopez and Ana Rojas

Location:

ONLINE!! Partially synchronous.

Session:

Spring 2025

Prerequisites:

ANS3384 or equivalent

Office Hours:

Online zoom meetings available by appointment.

Catalog Description

Our course will examine basic genetics concepts including inheritance, pedigrees, coat color, performance traits, and diseases with a specific focus on examples and current issues as they relate to the horse.

Credits: 2.

Prerequisites: ANS3384 “Genetic Improvement of Farm Animals”, or equivalent.

Objectives

At the conclusion of this course students will have the ability to:

1. Use the principles of inheritance to predict phenotype, based on genotype.
2. Evaluate pedigree records for genetic health as well as marketability.
3. Describe the symptoms and implications of genetic disease in the horse.
4. Understand the complexity of genetic diversity, breeds and registries.
5. Advantageously utilize available genetic tests to plan a breeding program.

Textbook

The textbook is required to do well in this course. The readings listed in the syllabus will help to set up the talks for each topic and provide a handy resource for review.

Title: HORSE GENETICS, THIRD EDITION!!, Authors: BAILEY AND BROOKS, ISBN: 978-1786392589.*

Course Communication

Course materials and messages appear on our Canvas e-Learning site. Assignments and assessments will only be accepted through Canvas. Email can be sent either through the Canvas system, or the standard @ufl.edu system. Please be sure you change your canvas settings so that you receive course announcements daily, not once a week, so that you get messages on time! Keep in mind that while email is fast and simple, you should always use a courteous and professional attitude when communicating with your instructors and fellow students. Please be polite and limit the use of slang and abbreviations. Here is a helpful guide on good email etiquette: <https://writingcommons.org/article/e-mail-guidelines-for-students/>

Course Organization

Our course is divided into six modules (plus a preparatory module “0”) on canvas. You can access these modules via the “modules” link in the menu on the left-hand pane of the course dashboard. *In order to enter a module, you must first complete the prior module!* Within each module you will find pages with assigned readings and instructions for the module, links to narrated slideshows, comprehension quizzes and activities. All quizzes and activities must be turned in by midnight on the due date for that module.

Having trouble with Canvas? Try this [Canvas How-to Video](#).

- For Canvas, Passwords, or any other computer-related technical support contact the UF Computing Help Desk.
 - <https://kb.helpdesk.ufl.edu/FAQs/E-Learning>, helpdesk@ufl.edu, (352) 392-HELP (4357)

Course Credit and Assessments

30%- Activities

There are ten activities throughout the course. These activities will require independent work, as well as collaboration with fellow students via chat and discussion boards. Each activity must be completed before the end of the module in which it is assigned, on FRIDAYS at midnight. Some of these activities can be time consuming, requiring collaboration with classmates or work away from your computer. **DO NOT** choose to wait until the last minute to attempt to complete the activities!

30%- Comprehension Quizzes

We have four comprehension quizzes comprising 5-10 questions each. These quizzes are designed to measure what you have learned in the slideshows and readings. You will have 20-30 minutes per quiz, and two attempts, so don't open the quiz until you are sure you are ready to take it! Quizzes are due at the end of each module, at midnight. Keep in mind that you may have to *complete all the other tasks in the module* before the quiz will unlock!

40%- Exams, one Mid-term and one Final

The mid-term exam occurs in module 3 and the final exam is to be completed at the conclusion of the course in module 6. Each will comprise approximately 40-50 questions in the multiple choice, true/false, and short answer formats. Though not strictly cumulative, concepts on the final will build on material presented early in the semester. Exams will be proctored using HonorLock, which has some unusual requirements, including use of the Google Chrome browser. Please read the [Student Exam Preparation Information \(PDF\)](#) sheet in advance so that you are prepared to take your exams! The correct answers will be revealed 7 days after the exam is due, provided that all students in the course have completed the exam.



Grading Scale

Percentage	Letter	Points
93-100%	A	4.0
90- 92.9%	A-	3.67
87-89.9%	B+	3.33
83-86.9%	B	3.0
80-82.9%	B-	2.67
77-79.9%	C+	2.33
73-76.9%	C	2.0
70-72.9%	C-	1.67
67-69.9%	D+	1.33
63-66.9%	D	1.0
60-62.9%	D-	0.67
<60%	E	0

For additional information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>.



Attendance and Make-Up Work

This course requires active participation and discussion with your peers. As such attendance is imperative, even if this attendance is in a virtual, asynchronous space.

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/UGRD/academic-regulations/attendance-policies/>.

If you feel ill, have a fever or experience any other symptoms of infectious disease please do not attend any in-person class session. However, as always, it is **your personal responsibility** to notify the instructor of the necessity of your absence or need for extension of a deadline due to illness, and then to complete the make-up work as soon as it is possible for you to do so. Documentation of other approved but unexpected absences (family emergency etc.) must be presented **within five days** of the absence in order to receive make-up quizzes and assignments. University approved absences for sports and student organizations travel or pre-professional activities must be disclosed at least **two weeks** in advance.

Late assignments without an excused absence will be penalized 25% for the first 24 hours beyond the due date, 50% for 24-48hrs late and will not be accepted thereafter.

In-Class Recording:

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 preparation 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 University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication of any course materials 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 Honor Code and Student Conduct Code.

Our class sessions may be audio visually recorded for use as study materials and for enrolled students who are unable to attend live due to an excused absence. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

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/>.

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>.

To help you navigate finding good quality references, citing sources appropriately and avoiding plagiarism we have partnered with your library to create a resource page specifically for my classes:

<http://guides.uflib.ufl.edu/equinehealth>.

Generative AI in the classroom

Artificial Intelligence is an exciting new approach to computing and changes the way we interact with digital information. There are many constructive ways AI tools can help you excel as a student. For example, you might consider using large language tools like ChatGPT to generate study guide questions, or to explain a concept to you from a new perspective. AI-based translation tools can also be a great help for students for whom English is their second language. However, when employing AI-tools as a student, remember that the honor code and rules regarding plagiarism always take precedence. Turning in AI-generated work for an assignment that was specifically assigned to you, to be written by you, is still cheating, and can be detected. Don't cheat yourself out of your education, use technology to help you learn, but do not attempt to have it do the learning for you.

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.

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/>

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. In addition to the services listed here, you also have access to the new [Whole Gator](#) App to help you quickly find the help you need.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu*
 - *Counseling Services*
 - *Groups and Workshops*
 - *Outreach and Consultation*
 - *Self-Help Library*
 - *Wellness Coaching*
- *U Matter We Care, www.umatter.ufl.edu/*
- *Career Connections Center, First Floor JWRU, 392-1601, <https://career.ufl.edu/>*
- *Student Success Initiative, <http://studentsuccess.ufl.edu>*

Academic Resources

- *E-learning technical support:* Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu.
- *Career Connections Center:* Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.
- *Library Support:* Various ways to receive assistance with respect to using the libraries or finding resources.
- *Teaching Center:* Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.
- *Writing Studio:* 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.
- *Student Complaints-*
Residential Course: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>
Online Course: <https://distance.ufl.edu/state-authorization-status/#student-complaint>

Course Schedule (subject to adjustments for special topics and guest speakers.)

<i>Module</i>	<i>Book Chapters</i>	<i>Topics</i>	<i>Assignments</i>	<i>Due date</i>
Module 0	-	Syllabus and Course Navigation	Getting to Know You Discussion Post	1/17
			Syllabus Quiz	
			Genetics pre-test and web hunt	
Module 1	4-7	Introduction– Basic Mendelian Genetics	DNA sampling and submission	1/31
		The Story of the Horse Genome	Base Color Basics	
		Coat Color Basics	Quiz 1	
Module 2	8 -13	Color Diluting Genes	Dilution Case Studies	2/21
		Spotting Patterns (Tobiano, White, Sabino, Roan)	Spot the Spotting Genes	
		More Patterns (Gray, Overo, Leopard Spotting)	Quiz 2	
Module 3	14-16	Parentage Testing	Who’s the Daddy?	3/5
		Pedigree Analysis	MID-TERM EXAM	3/7
		Genetic Diseases Part I		
Module 4	16, 18 & Article	Genetic Diseases Part II	What’s in a “nick”?	3/28
		Gait, and other interesting things!	Calculating risks	
		Behavior and Conformation	Quiz 3	
Module 5	17, 19 & Article	Performance Genetics	Breed for speed	4/11
		Karyotyping and Chromosomes	The Chromosomes Puzzle	
		Forensics: Guest Speaker	Quiz 4	
Module 6	1-3 & 21,22	Non-Mendelian Inheritance	Find the clone, Who dunnit?	4/23
		Evolution and Domestication	FINAL EXAM	5/2
		Population Genetics and Breeds		