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
Location:
ONLINE!!
Session:
Summer B
Prerequisites:
ANS3384 or equivalent
Office Hours:
Online zoom meetings available by appointment.

Catalog Description

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

We highly recommend the textbook for this course. The readings listed in the syllabus will help to setup the talks for each topic and provide a handy resource for review.

Title: HORSE GENETICS, SECOND EDITION, ISBN: 9781845936754, Authors: BAILEY AND BROOKS

 NEW THIRD EDITION!!, ISBN: 978-1786392589.* The readings are annotated in the syllabus for the second edition, but you can easily use the brand-new third edition for class (and, it has better photographs!)

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 use of slang and abbreviations.

Course Organization

Our six-week course is divided in to six modules (plus a preparatory module "0") on canvas. You can access these modules by the "modules" link in the menu on the left-hand pane of the course dashboard. *In order to access a module you must 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 <u>FRIDAY</u> of 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 *FRIDAY* at midnight EST. 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 slideshow 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, *FRIDAY* at midnight EST.

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/ugrad/current/regulations/info/grades.aspx

Attendance and Make-Up Work

This course requires active participation, independently completed activities and online discussion with your peers. As such, skillful time management and good organization is imperative for success.

University policies for class attendance and make-up exams, assignments and other work can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

It is your personal responsibility to obtain information presented in each module and to ensure that your assignments are completed before the due date. Documentation of approved absences (personal illness, family emergency etc.) must be presented within **three** business days of your return in order to make-up quizzes and assignments. University approved absences for sports and student organizations must be disclosed at least **two weeks** in advance. Unexcused late assignments will be penalized 25% for the first 24 hours beyond the due date, 50% for 24-48hrs late, and will not be accepted thereafter.

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. These evaluations are conducted online at https://evaluations.ufl.edu.

Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results.

Academic Integrity and Plagiarism:

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.

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, www.dso.ufl.edu/drc/

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/**

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

Module	Date	Book Chapters	Topics	Assignments
0		-	Syllabus and Course Navigation	Getting to Know You Discussion Post
				Syllabus Quiz
				Genetics pre-test and web hunt
Week 1		1-4	Introduction– Basic Mendelian Genetics	DNA sampling and submission
			The Story of the Horse Genome	Base Color Basics
			Coat Color Basics	Quiz 1
Week 2		5-9	Color Diluting Genes	Dilution Case Studies
			Spotting Patterns (Tobiano, White, Sabino, Roan)	Spot the Spotting Genes
			More Patterns (Gray, Overo, Leopard Spotting)	Quiz 2
Week 3		10-12&15	Parentage Testing	Who's the Daddy?
			Pedigree Analysis	MID-TERM EXAM
			Genetic Diseases Part I	
Week 4		20 & Article	Genetic Diseases Part II	What's in a "nick"?
			Gait, and other interesting things!	Calculating risks
			Behavior and Conformation	Quiz 3
Week 5		13-14 & 16 + Article	Performance Genetics	Breed for speed
			Karyotyping and Chromosomes	The Chromosomes Puzzle
			Forensics Guest Speaker	Quiz 4
Week 6		17, 18 & 20	Non-Mendelian Inheritance	Find the clone, Who dunnit?
			Evolution and Domestication	FINAL EXAM
			Population Genetics and Breeds	