



SYLLABUS

ANSC 4353: BREEDING AND GENETICS SPRING 2024

Instructor: Negusse F. Kidane, Ph.D.
Section # and CRN: PO1- ANSC 4353- 23787
Office Location: Agriculture and Business bldg. Room # 316 and IGRC #107
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Office Hours: Tuesday and Thursday 1:00 PM – 3:00 PM,
Mode of Instruction: **LECTURE FACE-TO-FACE**

Course Location: **AGRI-BUS-ROOM 111**
Meeting Days & Times: **Tuesday and Thursday 11:00 am to 12:20 pm**

Catalog Description: ANSC 4353 Breeding and Genetics is a 3-semester hour course. This course deals with the basic principles of animal genetics and breeding, and practical application of these principles to improve economic important traits of domestic animals including food producing animals such as cattle, small ruminants, poultry and swine, as well as equines and companion animals that are common in the United States by using different modern breeding techniques including natural mating, artificial insemination, and selection, in more efficient ways. To give students the basic understanding of modern techniques of animal breeding.

Prerequisites: General Animal Sciences
Co-requisites: None:

Required Texts: None; **LECTURE NOTES WILL BE POSTED ON CANVAS FOR REFERENCES**

Recommended book: Understanding Animal Breeding, 2nd Edition, Richard M. Bourdon

Student Learning Outcomes:

	Upon successful completion of this course, students will be able to:	Program Learning Outcome # Alignment	Core Curriculum Outcome Alignment
1	Acquire knowledge on the concepts of breeding and genetics		
2	Understand the differences between genotype and phenotype values or traits in reference to breeding and selection		
3	Acquire information of the importance of germ plasma and their uses in assessing breeding values		
4	Examine the impact of environmental factors or genotypes and phenotype values		
5	Understand the differences between chromosomes, genes,		

	DNA and traits in heritability.		
6	Know the basic concept of natural and artificial selection practice in animal performance		

Course Goals or Overview:

A goal of the course is to help students make informed about the principles of animal breeding genetics to develop an attitude of appreciation and respect for the discipline and its practical application in farms animals that are raised for food, fibre, sport, or/and companionship. To introduce students with the basics of animal breeding and the scientific methods and techniques used in animal breeding. In addition to the content areas presented here, this goal requires critical thinking skills; an assertive self-disciplined, self-starter that questions the powers to be; has general overview knowledge of the science component of farm animal agriculture, and has an appreciation of agriculture in general.

Course Objectives/Accrediting Body (NCATE, ABET, NAAB, etc...) Standards Met: (standards will depend on the course)

To acquaint students with the knowledge of feeding, husbandry practices, breeding and genetics, and the performance of farm animals and other objectives or specialized accrediting agency requirements as needed.

Major Course Requirements

This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course. Note: See Program Outcomes in True Outcomes

Exams – written tests designed to measure knowledge of presented course material

Exercises – written assignments designed to supplement and reinforce course material

Projects – Literature based assignments designed to measure ability to apply presented course material

Class Participation – daily attendance and participation in class discussions

(points will vary according to instructor’s grading system)

Method of Determining Final Course Grade

(Points will vary according to instructor’s grading system)

Course Grade Requirement	Value	Contribution to Final Grade %
Exam 1	20%	20
Exam 2	20%	20
Exam 3	20%	20
Exam 4	30%	30
Exercise, Assignment homework attendance	10%	10
	TOTAL	100

Grading Criteria and Conversion:

A = 90 – 100 pts;

B = 80 – 89 pts;

C = 70 – 79 pts;

D = 60 – 69 pts;

F = 59 pts or below

Note: Exams: There will be two written, one-hour exams and a comprehensive Midterm and Final exams. These exams will consist multiple choices, short answers and essay types. The instructor reserves the right to changes these policies as needed.

Note: Assignments

Detailed description of Major Assignments with information including title, rubrics and due date will be given separately and will also posted on ecourse: [See eCourses online for description]. All assignments Must Be types, Use font size 12.

Course Procedures or Additional Instructor Policies

Task stream

Taskstream is a tool that Prairie View A&M University uses for assessment purposes. At least one of your assignments is **REQUIRED** to be submitted as an "artifact," an item of coursework that serves as evidence that course objectives are met. More information will be provided during the semester, but for general information, you can visit Taskstream via the link in eCourses.

NOTE: All assignments must be submitted on time, formatting should be 12 font, times new Roman and double spaced. DO NOT COPY OR PLAGIARIZE OTHER STUDENTS ASSIGNMENTS ETC. All assignments can be found in your eCourses online. Turn in all assignments as hard copy in class on the due dates. No cell phones and other class disruptions will not be tolerated

**SEMESTER CALENDAR
BREEDING AND GENETICS (ANSC 4353)**

WEEK ONE-WEEK TO SIXTEEN	COURSE CONTENTS
Week ONE UNIT 1	INTRODUCTION: <ul style="list-style-type: none"> • Importance of Domestic Animals • Domestication and Animal breeding • The History of Animal Breeding and Genetics • Animal Breeding in the 20th century • Economic Importance of Domestic Animal • Systems of Animal Production • Classification of Domesticated Animals
WEEK TWO UNITS 2	PRINCIPLES OF GENETICS <ul style="list-style-type: none"> • What Genetics and its purpose • Greggory Mendel and the Principles of Inheritance <ul style="list-style-type: none"> ○ Principle of Dominance ○ Principle of Segregation ○ Principles of Independent Assortment • Genotype and Phenotype • •
UNITS 3	STRUCTURE AND FUNCTION OF CELLS <ul style="list-style-type: none"> • Cell Theory and Miracle of Life • Prokaryotes and Eukaryotes • Cell Components • Biological Functions of Cells • Cell Divisions (Mitosis and Meiosis)
WEEK THREE UNIT 4	GENETIC MATERIALS <ul style="list-style-type: none"> • The Structures of DNA • The Structures of Genes • The Structures of Chromosomes • The structure of RNA
WEEK FOUR UNIT 5	CODONS AND BUILDING PROTEINS <ul style="list-style-type: none"> • Central Dogma • Replication Transcription, Translation and • Genetic Codes for Protein Synthesis <ul style="list-style-type: none"> ○ Types of RNA and their Functions ○ Messenger RNA mRNA ○ Transfer RNA tRNA ○ Ribosomal RNA (rRNA)
WEEK FIVE –WEEK SIX UNIT 6	<p style="text-align: center;">EXAM 1</p> <ul style="list-style-type: none"> • TRAITS, INHERITANCE AND BREEDING • Common Terminologies • Principles of inheritance

	<ul style="list-style-type: none"> • Heritable Traits and Heritability • Selection and Types of Selections • Natural Selection • Selection by Man • Dominant and Recessive Alleles • Punnett Square • Homozygote and Heterozygote • Segregation, Germ Cell/Germ plasma
WEEK SEVEN AND EIGHT UNIT 7	<ul style="list-style-type: none"> • Meiosis/Mitosis • Linkage • Recessive and dominant genes <ul style="list-style-type: none"> • Epistasis • Breed True • End Use
	EXAM 2 MIDTERM EXAM
WEEK NINE AND TEN UNIT 7	<ul style="list-style-type: none"> • Breeding Objectives • Commercial Producers • Seed Stock • Pure Bred • Line Breeding • Population Genetics
WEEK ELEVEN UNIT 8	<ul style="list-style-type: none"> • SELECTION METHOD • Natural and Artificial Selection • Replacement Selection • Selection intensity • Generation interval • Culling
WEEK TWELVE UNIT 8	<ul style="list-style-type: none"> • BREEDING VALUES • Improving Population • Phenotype Selection • Breeding Value • Heritability
	EXAM 3
WEEK THIRTEEN UNIT 9	<ul style="list-style-type: none"> • Fertility • Measuring Performance • Use of Genetic Information • Economic Traits • Common Misconceptions
WEEK FOURTEEN UNIT 10	<ul style="list-style-type: none"> • Mendelian Inheritance • Genetic evaluation • Pathways of selection • Selection practices <ul style="list-style-type: none"> ○ Independent culling levels

	<ul style="list-style-type: none"> ○ Tandem selection ○ Phenotypic selection ● Measurements of genetic selection
WEEK FIFTEEN UNIT 11	BREEDING STRATEGIES <ul style="list-style-type: none"> ● Mating systems and Animal Identification <ul style="list-style-type: none"> ○ Mating according to relationship ○ Mating according to index value ○ Mating between breeds (cross breeding)
	<ul style="list-style-type: none"> ● TYPES OF BREEDING ● Additive and non-additive genetic effects ● Single locus and multiple loci ● Dominance effect ● Phantom group ● Multiple trait models
	- BASIC STATISTICS FOR BREEDING <ul style="list-style-type: none"> ● Statistics Review ● Sample and population ● Normal distribution ● Mean, variance, covariance, correlation
Week Sixteen	Assignment Submission Course Review Question and Answer Sessions
	EXAM 4 (FINAL EXAM)

Student Support and Success

John B. Coleman Library

The library and its partners have as their mission to provide resources and instructional material in support of the evolving curriculum, as a partner in Prairie View A&M University's mission of teaching, research, and service and to support the University's core values of access and quality, diversity, leadership, relevance, and social responsibility through emphasis on ten key areas of service. It maintains library collections and access both on campus, online, and through local agreements to further the educational goals of students and faculty. <https://www.pvamu.edu/library/> Phone: 936-261-1500

The Learning Curve (Center for Academic Support)

The Learning Curve offers Tutoring via peer tutoring. The services include workshops (i.e., Save My Semester, Recalculate Your Route), seminars (i.e., Tools You Can Use: TI-84), group review sessions (i.e., College Algebra Topic Reviews, GRE Preparation), group study opportunities (i.e., TSIA, HESI, Study Break, Exam Cram), and test-taking strategies (How to take Notes, Study Buddy, 5 Day Study Guide). The Learning Curve is a nationally certified tutoring program through the National Tutoring Association. The peer tutors are trained and certified by the coordinator each semester. Location: J.B. Coleman Library Rm. 207F. Phone: 936-261-1561

The Center for the Oversight and Management of Personalized Academic Student Success (COMPASS)

The Center for the Oversight and Management of Personalized Academic Student Success (COMPASS) is designed to help Prairie View students in their second year and beyond navigate towards graduation by providing the following services: Academic Advisement, Targeted Tutorials for Personalized Learning, Campus-Wide Referrals, and Academic & Social Workshops. Location: J.B. Coleman Library Rm. 306. Phone: 936-261-1040

Writing Center

The Writing Center provides student consultants on all aspects of the writing process and a variety of writing assignments. Writing Center consultations assist students in such areas as prewriting, brainstorming, audience awareness, organization, research, and citation. Students taking on-line courses or courses at the Northwest Houston Center or College of Nursing may consult remotely or by email. Location: Hilliard Hall Rm. 121. Phone: 936-261-3724.

Student Counseling Services

The Student Counseling Services unit offers a range of services and programs to assist students in maximizing their potential for success: short-term individual, couples, and group counseling, as well as crisis intervention, outreach, consultation, and referral services. The staff is licensed by the State of Texas and provides assistance to students who are dealing with academic skills concerns, situational crises, adjustment problems, and emotional difficulties. Information shared with the staff is treated confidentially and in accordance with Texas State Law. Location: Owens-Franklin Health Center Rm. 226. Phone: 936-261-3564

Testing

The Department of Testing administers College Board CLEP examinations, the HESI A2 for pre-nursing majors, LSAT for law school applicants and MPRE for second-year law students, the Experiential Learning Portfolio option, the Texas Success Initiative (TSI) Assessment, which determines college readiness in the state, and exam proctoring, among other service such as SAT and ACT for high school students. Location: Delco Rm. 141. Phone: 936-261-4286

Office of Diagnostic Testing and Disability Services

As a federally mandated educational support unit, the Office of Disability Services serves as the repository for confidential disability files for faculty, staff, and students. For persons with a disability, the Office develops individualized ADA letters of request for accommodations. Other services include: learning style inventories, awareness workshops, accessibility pathways, webinars, computer laboratory with adapted hard and software, adapted furniture, proctoring of non-standardized test administrations, ASL interpreters, ALDs, digital recorders, livescribe, Kurtzweil, and a comprehensive referral network across campus and the broader community. Location: Evans Hall Rm. 317. Phone: 936-261-3585

Veteran Affairs

Veterans Services works with student veterans, current military and military dependents to support their transition to the college environment and continued persistence to graduation. The Office coordinates and certifies benefits for both the G.I. Bill and the Texas Hazlewood Act. Location: Evans Hall Rm. 323. Phone: 936-261-3563

Office for Student Engagement

The Office for Student Engagement delivers comprehensive programs and services designed to meet the co-curricular needs of students. The Office implements inclusive and accessible programs and services that enhance student development through exposure to and participation in diverse and relevant social, cultural, intellectual, recreational, community service, leadership development and campus governance. Location: Memorial Student Center Rm. 221. Phone: 936-261-1340

Career Services

Career Services supports students through professional development, career readiness, and placement and employment assistance. The Office provides one-on-one career coaching, interview preparation, resume and letter writing, and career exploration workshops and seminars. Services are provided for students at the Northwest Houston Center and College of Nursing in the Medical Center twice a month or on a requested basis. Distance Learning students are encouraged to visit the Career Services website for information regarding services provided. Location: Evans Hall Rm. 217. Phone: 936-261-3570

University Rules and Procedures

Disability Statement (Also See Student Handbook):

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with

disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Evans Hall, Room 317, or call 936-261-3585/3.

Academic Misconduct (See Student Handbook):

You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

Forms of Academic Dishonesty:

1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.
2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.
3. Fabrication: use of invented information or falsified research.
4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.

Nonacademic Misconduct (See Student Handbook)

The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor's ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. The Dean of Students under nonacademic procedures will adjudicate such incidents.

Sexual Misconduct (See Student Handbook):

Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

Title IX Statement

Prairie View A&M University (PVAMU) is committed to supporting students and complying with the Texas A&M University System non-discrimination policy. It seeks to establish an environment that is free of bias, discrimination, and harassment. If you experience an incident of sex- or gender-based discrimination, including sexual harassment, sexual assault or attempted sexual assault, we encourage you to report it. While you may talk to a faculty member about an incident of misconduct, the faculty member must report the basic facts of your experience to Ms. Alexia Taylor, PVAMU's Title IX Coordinator. If you would like to speak with someone who may be able to afford you privacy or confidentiality, there are individuals who can meet with you. The Title IX Coordinator is designated to handle inquiries regarding non-discrimination policies and can assist you with understanding your options and connect you with on- and off-campus resources. The Title IX Coordinator can be reached by phone at 936-261-2123 or in Suite 013 in the A.I. Thomas Administration Building.

Class Attendance Policy (See Catalog for Full Attendance Policy)

Prairie View A&M University requires regular class attendance. Attending all classes supports full academic development of each learner whether classes are taught with the instructor physically present or via distance learning technologies such as interactive video and/or Internet.

Excessive absenteeism, whether excused or unexcused, may result in a student's course grade being reduced or in assignment of a grade of "F". Absences are accumulated beginning with the first day of class during regular semesters and summer terms. Each faculty member will include the University's attendance policy in each course syllabus.

Student Academic Appeals Process

Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.

TECHNICAL CONSIDERATIONS

Minimum Recommended Hardware and Software:

- Intel PC or Laptop with Windows 7; Mac with OS X; Smartphone or iPad/Tablet with Wi-Fi
- High speed Internet access
- 8 GB Memory
- Hard drive with 320 GB storage space
- 15" monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software
- Keyboard & mouse
- Most current version of Google Chrome, Safari, Internet Explorer or Firefox

Note: Be sure to enable Java & pop-ups in the Web browser preferences

Participants should have a basic proficiency of the following computer skills:

- Sending and receiving email
- A working knowledge of the Internet
- Proficiency in Microsoft Word (or a program convertible to Word)
- Proficiency in the Acrobat PDF Reader
- Basic knowledge of Windows or Mac O.S.

Netiquette (online etiquette):

Students are expected to participate in all discussions and virtual classroom chats as directed. Students are to be respectful and courteous to others on discussions boards. Foul or abusive language will not be tolerated.

Technical Support:

Students should go to <https://mypassword.pvamu.edu/> if they have password issues. The page will provide instructions for resetting passwords and contact information if login issues persist. For other technical questions regarding eCourses, call the Office of Distance Learning at 936-261-3283

Communication Expectations and Standards:

Emails or discussion postings will receive a response from the instructor, usually in less than 48 hours. Urgent emails should be marked as such. Check regularly for responses.

Discussion Requirement:

Online courses often require minimal to no face-to-face meetings. However, conversations about the readings, lectures, materials, and other aspects of the course can take place in a seminar fashion. This will be accomplished by the use of the discussion board. The instructor will determine the exact use of discussion.

It is strongly suggested that students type their discussion postings in a word processing application and save it to their PC or a removable drive before posting to the discussion board. This is important for two reasons: 1) If for some reason your discussion responses are lost in your online course, you will have another copy; 2) Grammatical errors can be greatly minimized by the use of the spell-and-grammar check functions in word processing applications. Once the post(s) have been typed and corrected in the word processing application, it/they should be copied and pasted to the discussion board.

COVID-19 Campus Safety Measures

In accordance with the latest guidelines from the PVAMU Health Services, the following measures are in effect until further notice.

- Students who are ill will be asked to adhere to best practices in public health, such as masking, handwashing, and social distancing, to help reduce the spread of illness across campus.
- Mandatory self-reporting will no longer be required by students. Students will be responsible for communicating with their professors regarding COVID, similarly to any other illness.
- There will be no mandatory isolation. Students who are too ill to engage in classroom activities will be responsible for securing the appropriate documentation to support the absence.
- Students who self-isolate will be responsible for communicating with their professors and securing an excuse from Student Conduct.
- All students will have access to [TimelyCare](#), a telehealth platform that provides virtual medical care 24/7 and by appointment in the Student Health Clinic. Students are encouraged to enroll with TimelyCare at the beginning of the semester, at timelycare.com/pvamu.
- Students will have access to COVID testing in the Student Health Clinic by appointment. Testing is for students who are symptomatic ONLY.