

Animal Science 3443

Genetics of Livestock



Instructor: Dr. John M. Langdon, II
Email: jlangdon@angelo.edu
Phone: 325-486-6925
Office: Vincent (VIN) 227

Office Hours: If the door is open, come on in. If not, then please email me to set up an appointment, and/or state your question, comment, or concern.

Course Information

Course Description

Application of genetic principles and concepts to livestock breeding. Consideration of breeding objectives, breed characteristics, pedigree relationship, transmission of genes, inbreeding, detection of heterozygotes, use of pedigree and progeny information for selection, hybrid vigor, crossbreeding, genotype-environment interactions, selection criteria, heritability, direct and correlated response to selection, and genetic evaluation and prediction.

Prerequisites

Some foundational bit of understanding, and a strong interest in the application of genetic principles to livestock breeding, with the use of some basic statistics concepts. Some prior course(s) in, or at least some amount of experience in animal breeding, and fundamental statistics would be a great booster to the student's learning experience in this course, but is not necessary, or required upon taking this course.

Student Learning Outcomes

Upon completion of this course, students will be able to better and more clearly understand concepts associated with genetics, in the context of livestock breeding. They will be able to apply these concepts to the better production of both purebred and commercial livestock, upon regularly attending, and fully engaging in this course.

Course Delivery

This is an online course. As there are no "labs" for the online version of this course. All material from the long semester version (the normal lecture-lab format) is covered in lectures which are all accessible in [Blackboard](#).¹

Recommended Text

Understanding Animal Breeding, by Richard M. Bourdon. (Optional/recommended)

Technology Requirements for Content Delivery (back/forth)

To successfully complete this course, students need to be able to get onto Blackboard to check for announcements, view and listen to lectures, receive course material, and view/download/complete/submit assignments, as they are given. Students are to either submit assignments as Word Document, or PDF; and in special approved cases, picture formats, to my email jlangdon@angelo.edu — absolutely no Google Drive shared documents will be accepted, as issues in the past have arisen due to inability to view many of those without permission; and many times, even when permission is “granted”, it does not work.

Communication

Email: jlangdon@angelo.edu

Office Phone: 325-486-6925

Office Room #: Vincent (VIN) 227 (email, or talk with me to set up an appointment)

Blackboard: View for announcements, lectures, content, and assignments.

Grading

Evaluation and Grades

GRADES

Quizzes [30%]

+ Weekly

Exams [70%]

+ Midterm (35%)

+ Required Final (35%)

Grading System

Course grades will depend on completing course requirements and meeting the student learning outcomes.

This course uses the following grading scale:

A = 90.00-100 points

B = 80.00-89.99 points

C = 70.00-79.99 points

D = 60.00-69.99 points

F = 0-59.99 points (Grades are not rounded up)

Assignment and Activity Descriptions

Weekly quizzes (or, “homework”), one midterm, and one required final exam. All assignments are required.

There may even be some “grade enhancement opportunity assignments” off and on throughout the semester.....

LECTURE OUTLINE

- I. Breeds, U. S. livestock production structure: history, present, and future ideas
- II. Genetic relationships, pedigree, gene transmission, inbreeding
- III. Hog color inheritance
- IV. Genetic abnormalities, and progeny testing for recessive genes for traits of simple inheritance
- V. Horse color inheritance, and genetic linkage
- VI. Performance of crossbreds for production important traits: hybrid vigor / heterosis; breeding systems; male and female longevity and productivity
- VII. Relationship covariance averaging
- VIII. Cattle color inheritance
- IX. Genetic prediction for quantitatively inherited traits (expected progeny differences, EPDs)
 - a. Information used in genetic predictions
 - b. Expectations in the progeny due to genetics
 - i. Means
 - ii. Variability
 - c. Precision (standard error / “possible change”) and accuracy of genetic prediction
 - d. Genotype-environment interaction
 - e. Correlated response to selection
- X. Miscellaneous
 - a. Across breed genetic predictions
 - b. Horns in sheep
 - c. Horns in cattle
 - d. Inheritance of the Callipyge condition in sheep
 - e. Linebreeding

General Policies Related to This Course

All students are required to follow the policies and procedures presented in these documents:

- [Angelo State University Student Handbook](#)²
- [Angelo State University Catalog](#)³

Academic Integrity

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.

The College of Science and Engineering adheres to the university's [Statement of Academic Integrity](#).⁴

Accommodations for Students with Disabilities

ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA) and subsequent legislation.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student's responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at ADA@angelo.edu. For more information about the application process and requirements, visit the [Student Disability Services website](#).⁵ The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dr. Dallas Swafford
Director of Student Disability Services
Office of Student Affairs
325-942-2047
dallas.swafford@angelo.edu
Houston Harte University Center, Room 112

Incomplete Grade Policy

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 [Grading Procedures](#)⁶ for more information.

Plagiarism

Plagiarism is a serious topic covered in ASU's [Academic Integrity policy](#)⁷ in the Student Handbook. Plagiarism is the action or practice of taking someone else's work, idea, etc., and passing it off as one's own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality. Resources to help you understand this policy better are available at the [ASU Writing Center](#).⁸

Student Absence for Observance of Religious Holy Days

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 [Student Absence for Observance of Religious Holy Day](#)⁹ for more information.

Title IX at Angelo State University

Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex, which includes pregnancy, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination and unwelcome behavior of a sexual nature. The term includes sexual harassment, nonconsensual sexual contact, nonconsensual sexual intercourse, sexual assault, sexual exploitation, stalking, public indecency, interpersonal violence (domestic violence or dating violence), sexual violence, and any other misconduct based on sex.

You are encouraged to report any incidents involving sexual misconduct to the Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator, Michelle Miller, J.D. You may submit reports in the following manner:

Online: [Incident Reporting Form](#)¹⁰

Face to Face: Mayer Administration Building, Room 210

Phone: 325-942-2022

Email: michelle.miller@angelo.edu

Note, as a faculty member at Angelo State, I am a mandatory reporter and must report incidents involving sexual misconduct to the Title IX Coordinator. Should you wish to speak to someone in confidence about an issue, you may contact the University Counseling Center (325-942-2371), the 24-Hour Crisis Helpline (325-486-6345), or the University Health Clinic (325-942-2171).

For more information about resources related to sexual misconduct, Title IX, or Angelo State's policy please visit the [Title IX website](#).¹¹

Information About COVID-19

Please refer to ASU's [COVID-19 \(Coronavirus\) Updates](#)¹² web page for current information about campus guidelines and safety standards as they relate to the COVID-19 pandemic.

Modifications to the Syllabus

This syllabus, including grade evaluation and course schedule, is subject to modification on potentially short notice based on developing circumstances.

¹ <https://blackboard.angelo.edu/>

² <https://www.angelo.edu/current-students/student-handbook/>

³ <https://www.angelo.edu/academics/catalog/>

⁴ <https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=96>

⁵ <https://www.angelo.edu/current-students/disability-services/>

⁶ <https://www.angelo.edu/content/files/14197-op-1011-grading-procedures>

⁷ <https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=96>

⁸ https://www.angelo.edu/current-students/writing-center/academic_honesty.php

⁹ <https://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of>

¹⁰ <https://www.angelo.edu/incident-form>

¹¹ <https://www.angelo.edu/title-ix>

¹² <https://www.angelo.edu/covid-19/>