



**ANIMAL GENETICS**  
**ANS 310.01E**  
Spring 2025  
MWF 9:00-9:50 | AGET 255

**INSTRUCTOR INFORMATION**

Instructor: **Dr. Douglas Eborn**  
Office Location: **AG/ET 233D**  
Office Hours: **MTF 1:00-3:00**  
Office Phone: **903.886.5676**  
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Preferred Form of Communication: **Email**  
Communication Response Time: **48 hours**

**COURSE INFORMATION**

Materials – Textbooks, Readings, Supplementary Readings

Textbook(s) Required: None. All required material will be provided in class  
The course is modeled and primarily based on the following textbook:

- Title: Basic Genetics
- Authors: Robert F. Weaver and Philip W. Hedrick
- Publisher: Wm. C. Brown Publishers; 2nd edition (January 1, 1995)
- ISBN-10: 0697137325
- ISBN-13: 978-0697137326

**Course Description**

*The syllabus/schedule are subject to change.*

**Prerequisites:** ANS 1319 Introduction to Animal Science or  
BSC 1407: Introductory Biology II **AND**  
CHEM 1311 General and Quantitative Chemistry I

An introduction to molecular genetics including Mendelian and population genetics, replication, transcription, and translation. Gene expression and regulation. Use of current genomic methodologies including genotyping and transgenics in animal agriculture.

## **Student Learning Outcomes**

Students successfully completing the course should be able to:

1. Explain and define genetics terms and concepts presented in lecture.
2. Describe chromosomal structure and the biochemical structure of DNA and RNA
3. Describe and explain the processes of replication, transcription, and translation.
4. Recognize the stages of mitosis and meiosis and contrast differences in each
5. Explain the significance of dominance and the difference between complete, incomplete, codominance and epistasis.
6. List the types of gene mutations and explain advantages and disadvantages of gene mutations
7. Describe the different genetic markers including microsatellite, single-nucleotide polymorphisms and their role in livestock production.
8. Describe how animals are genetically modified and their uses today in livestock production.
9. Explain the lab assays and procedures used in genetics including PCR, sequencing, microarrays, whole-genome sequencing

## **COURSE REQUIREMENTS**

### **Minimal Technical Skills Needed**

Students will need to be able to access and use the course online platform for the University, D2L. They may also need to have access and be able to use Microsoft Word, PowerPoint, or comparable programs.

### **Instructional Methods**

Course Material will be provided using the following formats: 1) face to face at the scheduled course time. 2) Lectures will be recorded and posted. 2) Copies of the lecture slides will be posted in PDF format 3) Supplemental material from lecture material may be given as needed as either recorded lectures, videos, and notes.

### **Student Responsibilities or Tips for Success in the Course**

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Students are expected to have learned the material from the previous lecture. That means that students should review and study new material between class periods and be comfortable with the all the previous material before the next class period.

## **COURSE SPECIFIC PROCEDURES/POLICIES**

### **Syllabus Change Policy**

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

### **Grading**

Final grades in this course will be based on the points:

Exams = 450 pts	A ≥ 1035 pts
Quizzes = 300 pts	B = 1034-920 pts
Homework = 300 pts	C = 919-805 pts
Attendance = 100 pts	D = 804-690 pts
	F < 690 pts

### **Assessments**

#### 1. Exams:

- Four exams will be given through the course. The last exam may be a comprehensive final.

Tentative Dates:

- 1) February 7th
  - 2) March 7th
  - 3) April 11th
  - 4) Final: May 7<sup>th</sup> 8:00 A.M.
- Exam formats may include T/F, matching, multiple choice, fill in the blank, and short answer.
  - All students are to take the exams at the time they are scheduled.
  - All students are to take the exams at the time they are scheduled unless you have a great excuse or made prior arrangements with the instructor. If an exam is given at a different time, an alternative makeup exam may be more difficult, not easier, for the student.

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- The student must take responsibility to notify the instructor in a timely matter for consideration and accommodation due to school activities, emergencies, or other circumstances. Validation may be required.
2. Quizzes
- Quizzes will be given **weekly** throughout the semester when no exam is scheduled.
    - Quizzes will be due on each **Friday** of the week.
    - Quizzes will be taken either in class or through D2L in myleonline.com.
    - No late work will be accepted for quizzes!!
    - 10 quiz scores will be counted toward your final grade.
    - Unannounced quizzes may also occur throughout the semester.
3. Homework
- Homework assignments will be given throughout the semester.
    - Late work may be turned by the following class period for 50% reduction
4. Attendance
- More information to follow.
5. Other
- CDE Events
    - Participation may be expected or required
    - April 14<sup>th</sup> and 15<sup>th</sup>

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## TENATIVE SCHEDULE

Date	Day			
1/13/2025	Monday	Introduction to <i>Genetics</i>		
1/15/2025	Wednesday	Introduction to <i>Genetics</i>		
1/17/2025	Friday	Fundamentals of Medelian Genetics		
1/20/2025	Monday	MLK, Jr. Day- Campus Closed	Quiz 1 Due	
1/22/2025	Wednesday	Fundamentals of Medelian Genetics		
1/24/2025	Friday	Extensions and Applications of Mendelian Genetics	Quiz 2 Due	
1/27/2025	Monday	Extensions and Applications of Mendelian Genetics		
1/29/2025	Wednesday	Chromosomes and Heredity		
1/31/2025	Friday	Chromosomes and Heredity	Quiz 3 Due	
2/3/2025	Monday	Genetic Linkage		
2/5/2025	Wednesday	Genetic Linkage		
2/7/2025	Friday	<b>Exam 1</b>		
2/10/2025	Monday	Chemistry of the Gene		
2/12/2025	Wednesday	Chemistry of the Gene		
2/14/2025	Friday	Replication and Recombination of Genes	Quiz 4 Due	
2/17/2025	Monday	Replication and Recombination of Genes		
2/19/2025	Wednesday	Transcription and Its Control in Prokayotes		
2/21/2025	Friday	Transcription and Its Control in Prokayotes	Quiz 5 Due	
2/24/2025	Monday	Eukaryotic Gene Structure and Expression		
2/26/2025	Wednesday	Eukaryotic Gene Structure and Expression		
2/28/2025	Friday	Translation	Quiz 6 Due	
3/3/2025	Monday	Translation		
3/5/2025	Wednesday	Make-up Day		
3/7/2025	Friday	<b>Exam 2</b>		
3/10/2025	Monday	Spring Break		
3/12/2025	Wednesday	Spring Break		
3/14/2025	Friday	Spring Break		
3/17/2025	Monday	Gene Mutation I: DNA Damage and Repair		
3/19/2025	Wednesday	Gene Mutation I: DNA Damage and Repair		
3/21/2025	Friday	Gene Mutation II: Transposable Elements and Cancer	Quiz 7 Due	
3/24/2025	Monday	Gene Mutation II: Transposable Elements and Cancer		
3/26/2025	Wednesday	Genetics of Bacteria and Phages		
3/28/2025	Friday	Genetics of Bacteria and Phages	Quiz 8 Due	
3/31/2025	Monday	Developmental Genetics		
4/2/2025	Wednesday	Developmental Genetics		
4/4/2025	Friday	Gene Cloning and Manipulation	Quiz 9 Due	
4/7/2025	Monday	Gene Cloning and Manipulation		
4/9/2025	Wednesday	Make-up Day		
4/11/2025	Friday	<b>Exam 3</b>		
4/14/2025	Monday	<b>No Class: CDE Events - Dairy Cattle Judging</b>		
4/16/2025	Wednesday	<b>PCR</b>		
4/18/2025	Friday	<b>Sequencing</b>	Quiz 10 Due	
4/21/2025	Monday	<b>DNA Markers/SNPs</b>		
4/23/2025	Wednesday	<b>Gene Editing</b>		
4/25/2025	Friday	<b>Epigenetics</b>	Quiz 11 Due	
4/28/2025	Monday	An Introduction to Population Genetics		
4/30/2025	Wednesday	Extensions and Applications of Population Genetics		
5/2/2025	Friday	Make-up Day	Quiz 12 Due	Last Class Day
5/5/2025	Monday			
5/7/2025	Wednesday	<b>Final Exam: AG/ET 255 8:00 A.M.</b>		
5/9/2025	Friday			

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## TECHNOLOGY REQUIREMENTS

### Browser support

D2L is committed to performing key application testing when new browser versions are released. New and updated functionality is also tested against the latest version of supported browsers. However, due to the frequency of some browser releases, D2L cannot guarantee that each browser version will perform as expected. If you encounter any issues with any of the browser versions listed in the tables below, contact D2L Support, who will determine the best course of action for resolution. Reported issues are prioritized by supported browsers and then maintenance browsers.

Supported browsers are the latest or most recent browser versions that are tested against new versions of D2L products. Customers can report problems and receive support for issues. For an optimal experience, D2L recommends using supported browsers with D2L products.

Maintenance browsers are older browser versions that are not tested extensively against new versions of D2L products. Customers can still report problems and receive support for critical issues; however, D2L does not guarantee all issues will be addressed. A maintenance browser becomes officially unsupported after one year.

Note the following:

- Ensure that your browser has JavaScript and Cookies enabled.
- For desktop systems, you must have Adobe Flash Player 10.1 or greater.
- The Brightspace Support features are now optimized for production environments when using the Google Chrome browser, Apple Safari browser, Microsoft Edge browser, Microsoft Internet Explorer browser, and Mozilla Firefox browsers.

### Desktop Support

Browser	Supported Browser Version(s)	Maintenance Browser Version(s)
Microsoft® Edge	Latest	N/A
Microsoft® Internet Explorer®	N/A	11
Mozilla® Firefox®	Latest, ESR	N/A

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Browser	Supported Browser Version(s)	Maintenance Browser Version(s)
Google® Chrome™	Latest	N/A
Apple® Safari®	Latest	N/A

### Tablet and Mobile Support

Device	Operating System	Browser	Supported Browser Version(s)
Android™	Android 4.4+	Chrome	Latest
Apple	iOS®	Safari, Chrome	The current major version of iOS (the latest minor or <b>point</b> release of that major version) and the previous major version of iOS (the latest minor or <b>point</b> release of that major version). For example, as of June 7, 2017, D2L supports iOS 10.3.2 and iOS 9.3.5, but not iOS 10.2.1, 9.0.2, or any other version.  Chrome: Latest version for the iOS browser.
Windows	Windows 10	Edge, Chrome, Firefox	Latest of all browsers, and Firefox ESR.

- You will need regular access to a computer with a broadband Internet connection. The minimum computer requirements are:
  - 512 MB of RAM, 1 GB or more preferred
  - Broadband connection required courses are heavily video intensive
  - Video display capable of high-color 16-bit display 1024 x 768 or higher resolution
- You must have a:
  - Sound card, which is usually integrated into your desktop or laptop computer
  - Speakers or headphones.

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- \*For courses utilizing video-conferencing tools and/or an online proctoring solution, a webcam and microphone are required.
- Both versions of Java (32 bit and 64 bit) must be installed and up to date on your machine. At a minimum Java 7, update 51, is required to support the learning management system. The most current version of Java can be downloaded at: [JAVA web site http://www.java.com/en/download/manual.jsp](http://www.java.com/en/download/manual.jsp)
- Current anti-virus software must be installed and kept up to date.

Running the browser check will ensure your internet browser is supported.

Pop-ups are allowed.

JavaScript is enabled.

Cookies are enabled.

- You will need some additional free software (plug-ins) for enhanced web browsing. Ensure that you download the free versions of the following software:
  - [Adobe Reader https://get.adobe.com/reader/](https://get.adobe.com/reader/)
  - [Adobe Flash Player \(version 17 or later\) https://get.adobe.com/flashplayer/](https://get.adobe.com/flashplayer/)
  - [Adobe Shockwave Player https://get.adobe.com/shockwave/](https://get.adobe.com/shockwave/)
  - [Apple Quick Time http://www.apple.com/quicktime/download/](http://www.apple.com/quicktime/download/)
- At a minimum, you must have Microsoft Office 2013, 2010, 2007 or Open Office. Microsoft Office is the standard office productivity software utilized by faculty, students, and staff. Microsoft Word is the standard word processing software, Microsoft Excel is the standard spreadsheet software, and Microsoft PowerPoint is the standard presentation software. Copying and pasting, along with attaching/uploading documents for assignment submission, will also be required. If you do not have Microsoft Office, you can check with the bookstore to see if they have any student copies.

## **ACCESS AND NAVIGATION**

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or [helpdesk@tamuc.edu](mailto:helpdesk@tamuc.edu).

**Note:** Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

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# COMMUNICATION AND SUPPORT

## Brightspace Support

### Need Help?

### Student Support

If you have any questions or are having difficulties with the course material, please contact your Instructor.

### Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778 or click on the **Live Chat** or click on the words “[click here](#)” to submit an issue via email.



### System Maintenance

Please note that on the 4th Sunday of each month there will be System Maintenance which means the system will not be available 12 pm-6 am CST.

### Interaction with Instructor Statement

Typical response time will be within 24 hours but all emails will receive a response within 48 hours during the work week. Emails sent over the weekend may not receive a response until the beginning of the week.

## University Specific Procedures

### Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the [Student Guidebook](http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx).

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: [Netiquette](http://www.albion.com/netiquette/corerules.html)

### TAMUC Attendance

For more information about the attendance policy please visit the [Attendance](#) webpage and [Procedure 13.99.99.R0.01](#).

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<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

## **Academic Integrity**

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

[Graduate Student Academic Dishonesty 13.99.99.R0.10](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

## **ADA Statement**

### **Students with Disabilities**

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 have a disability requiring an accommodation, please contact:

### **Office of Student Disability Resources and Services**

Texas A&M University-Commerce

Gee Library- Room 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: [studentdisabilityservices@tamuc.edu](mailto:studentdisabilityservices@tamuc.edu)

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

### **Nondiscrimination Notice**

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or

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veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

## **Campus Concealed Carry Statement**

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

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