BSC 304 01E-Genetics

Spring 2024
Texas A&M University at Commerce
MWF 12:00-12:50 PM
STC 122

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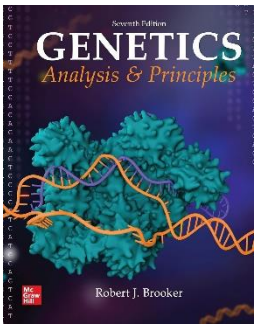
Tel:903-468-3271

Please e-mail me if you have a question. I will try to respond within 24 hours, except for weekends and holidays.

Office Hours: Wednesdays 3:30-4:30 PM, Thursdays 11:30-12:30 PM or by appointment.
I enjoy teaching and talking with you. If you have questions, drop by my office or join the Zoom session (link below) during office hours. If the time does not work for you, feel free to email me, and we can set up a time that does.
Office Hour Zoom link:
https://tamuc.zoom.us/j/7032367457?pwd=RkFQZmtkcm90emNnUGNDL0E0Sjg0UT09
Meeting ID: 703 236 7457
Passcode: OH

COURSE INFORMATION

Textbook(s) Required: Genetics, Analysis & Principles. 2020. 7th edition, Brooker, Robert J., ISBN-13: 978-1260473025, 978-1260240856, or eBook. This book is available for purchase or rental at the TAMUC bookstore and can be bought or rented from various local and online retailers. Readings from the textbook will be announced and follow the course schedule's topic order. In order for you to get the most out of the lecture, it is important that you complete the assigned readings with each lecture since lectures will build on the reading assignment.



Course Description

This course is for biology and pre-professional majors with a good understanding of general biology and general chemistry. The course will provide a rigorous foundation of principles of genetics that act at the molecular, organismal, and population levels, including in

humans. Topics will range from Mendelian and non-Mendelian mechanisms of inheritance, the molecular structure of DNA and chromosomes, DNA replication, gene transcription, gene regulation, genetics of viruses, genetic technologies, and medical genetics.
Prerequisites: BSC 1406, BSC 1407, and Chem 1311, with a minimum grade of C

Student Learning Outcomes

1. understand how genetic information for biological functions is structured and replicated in DNA and chromosomes.
2. understand patterns and processes of Mendelian and non-Mendelian genetic inheritance.
3. analyze a pedigree for genetic patterns.
4. calculate gene relationships based on linkage data.
5. describe gene transcription and mRNA translation leading to the production of proteins influencing biological characteristics and functions.
6. explain the role of DNA replication in important biotechniques such as DNA sequencing and PCR.

Laboratory

You **must** be enrolled in a BSC 304 laboratory section in order to receive credit for the course. The laboratory will account for **25%**of your final grade. ***The laboratory sessions will begin in the SECOND week of classes.*** You will receive a complete schedule, syllabus, and further instructions from your Lab Instructor at the first meeting. All labs meet in STC 324, and the material will be available for download at D2L course site.

COURSE REQUIREMENTS

Minimal Technical Skills Needed

- Proficiency in using the D2L Brightspace Learning Management System in myLEOOnline
- Proficiency in using and access to Microsoft PowerPoint

Instructional Methods

This is a fully in-person course. It is very important to attend all the classes and lab sessions.

Student Responsibilities or Tips for Success in the Course

- ✓ **Checking both D2L and emails for course-related announcements.**
- ✓ Dedicated time to learn course materials.
- ✓ Have the required technology (a computer, a secure and reliable internet connection, and other requirements detailed in this syllabus – please read the "Technology Requirements" section.
- ✓ **Take exams on the exam days.**

The *syllabus/schedule are subject to change.*

- ✓ **Submitting the homework and the assignment before deadlines.**
- ✓ If special accommodation is needed, notify the instructor in advance.

Assessments:

There will be two types of assessments that will contribute to the grade. They are:

1. Graded Homework

Online homework assignments will be posted on the D2L course homepage in the form of "Quizzes". You may use course materials when taking the quizzes; this includes your textbook, lecture notes, and your handwritten notes. You are not allowed to 'google' or otherwise search the web for answers. You should not ask other students for the answers. These assignments are intended to help YOU learn the material. Send me an email if you are locked out or have other computer difficulties that prevent you from completing the assignments on time.

If your computer is having issues or your Wi-Fi is a problem, **remember that there are computers in the library and elsewhere on campus that you can use.** You will have several days to complete these assignments - do not wait until the last 10 minutes to do them!

Note: Graded homework will not be accepted after the Answer Keys have been posted or given out in class!

Non-graded problems-Recommended textbook problems will be assigned throughout the semester. ***You will not be handing these in for credit,*** but you will be expected to do them. Do not ignore these or just read the solutions!

Non-graded reading assignment-Readings from the textbook will be announced and will follow the topic order in the course schedule. To get the most out of the lecture, it is important that you complete the assigned readings before coming to class since lectures will build on the reading assignment.

TIP: Homework problems, graded or non-graded, often appear on exams, sometimes with only minor changes!

2. Exams

There will be five exams during the semester = **Exams 1-4** and the **Final Exam** on the Final Exam day. The exams are **closed-book, in-class, and proctored**. The Final Exam will be cumulative, and taking it is mandatory! The lowest score you earn on **Exams 1-4** will be dropped. I recommend that you take ALL exams so you at least have the chance to practice answering questions on the material, even if you plan to drop that exam. Since you can drop one of Exams 1-4, there will be no make-up exams. The Final Exam may not be dropped.

EXAMS ARE SCHEDULED FOR THE FOLLOWING DATES

Assessment	Date/Time

Homework (9 total)	Various times
Exam 1	Feb. 9 12:00-12:50 PM
Exam 2	Mar. 8 12:00-12:50 PM
Exam 3	Apr. 5 12:00-12:50 PM
Exam 4	Apr. 29 12:00-12:50 PM
Final Exam	May 10 **8:00-10:00 AM**

GRADING

Final grades in this course will be based on the following scale:

	Points Possible	**Percentage of Final Grade**
Exam 1-4 (your 3 highest scores)	100 points each	60%
Final Exam (mandatory)	100 points	20%
Graded Homework	100 points	20%
Total Points Possible	500 points	100%

A = 90%-100%

B = 80%-89%

C = 70%-79%

D = 60%-69%

F = 59% or Below

COURSE OUTLINE / CALENDAR

Week	**Lectures**	**Textbook**	
1 1/10	Syllabus & Intro to Genetics (Lecture 1)	Chapter 1	
2 1/15	Chromosomes & Cell Division (Lectures 2,3)	Chapter 3	HW #1
3 1/22	Meiosis & Gametogenesis (Lectures 4~6) Mendelian Genetics	Chapter 3 Chapter 2	HW #2
4 1/29	Mendelian Genetics (Lectures 7~9) Extension of Mendelian Inheritance	Chapter 2 Chapter 4	HW #3
5 2/5	Extension of Mendelian Inheritance (Lectures 10,11) **Exam 1 (2/9)**	Chapter 4	
6 2/12	Population Genetics (Lectures 12~14) Pedigree Analysis	Chapter 27 Chapter 24	HW #4
7 2/19	Genetic Linkage and Mapping (Lectures 15~17)	Chapter 6	HW #5
8 2/26	Chromosome Variation (Lectures 18~20)	Chapter 8	HW #6

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9 3/4	Chromosome Variation (Lectures 21, 22) **Exam 2 (3/8)**	Chapter 8	
10 3/11	***Spring Break!***		
11 3/18	Molecular Structure of DNA and RNA (Lectures 23~25)	Chapter 9	HW #7
12 3/25	Chromosome and Transposon Structure (Lectures 26~28)	Chapter 10	HW #8
13 4/1	DNA Replication (Lectures 29, 30) **Exam 3 (4/5)**	Chapter 11	
14 4/8	Transcription and RNA Modification (Lectures 31~33)	Chapter 12	HW #9
15 4/15	Transcription and RNA Modification (Lectures 34~36) Translation of mRNA	Chapter 12 Chapter 13	HW #10
16 4/22	Gene Regulation in Eukaryotes/Epigenetics (Lectures 37~39)	Chapter 15/16	
17 4/29	**Exam 4 (4/29)**		
5-10	**FINAL EXAM (May 10, 8:00-10:00 AM)**	Cumulative	

TECHNOLOGY REQUIREMENTS

LMS

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:
https://community.brightspace.com/s/article/Brightspace-Platform-Requirements

LMS Browser Support:
https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

Zoom Video Conferencing Tool
https://inside.tamuc.edu/campuslife/CampusServices/CITESupportCenter/Zoom_Account.aspx?source=universalmenu

ACCESS AND NAVIGATION

The *syllabus/schedule are subject to change.*

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**.**

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.

COMMUNICATION AND 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. Other support options can be found here:

https://community.brightspace.com/support/s/contactsupport

COURSE AND UNIVERSITY 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.

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: https://www.britannica.com/topic/netiquette

TAMUC Attendance

For more information about the attendance policy please visit the Attendance webpage and Procedures 13.99.99.R0.01
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
Undergraduate Student Academic Dishonesty Form

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/documents/13.99.99.R0.03UndergraduateStudentAcademicDishonestyForm.pdf

Graduate Student Academic Dishonesty Form

http://www.tamuc.edu/academics/graduateschool/faculty/GraduateStudentAcademicDishonestyFormold.pdf

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

Students with Disabilities-- ADA Statement

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
Velma K. Waters Library Rm 162
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
Email: studentdisabilityservices@tamuc.edu
Website: Office of Student Disability Resources and Services

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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 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.

A&M-Commerce Supports Students' Mental Health

The Counseling Center at A&M-Commerce, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit **www.tamuc.edu/counsel**

AI use policy [Draft 2, May 25, 2023]

Texas A&M University-Commerce acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

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Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors 'guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

13.99.99.R0.03 Undergraduate Academic Dishonesty

13.99.99.R0.10 Graduate Student Academic Dishonesty