

BIOLOGY 3332 - GENETICS
Spring 2024

TIME: 8:00-8:55am Mon, Wed, & Fri

LOCATION: COB 212

INSTRUCTOR:

Dr. Wei-Chin Ho (who@uttyler.edu)

Office hours: 9:30-11:00am Mon & Wed at HPR 115, or by appointment.

E-MAIL POLICY: When sending an email, please add "**BIOL3332**" at the beginning of the title and clearly indicate your **name** in the first few sentences of the main text. Please note that the instructor may not be able to respond to emails in two working days.

COURSE FORMAT: This lab course is in a **face-to-face** format. Attendance is required in this course. You will find a calendar with the planned program in this syllabus. Please check Canvas frequently for changes and updates.

COURSE DESCRIPTION: This course provides an overview of the principles and concepts of genetics. Major concepts include 1) the nature of genetic materials, 2) how genetic materials replicate and is passed on to the next generation, 3) how genetic materials contains information and dictate the expression of phenotypes, and 4) how genetic materials can change from generation to generation.

COURSE GOALS:

- 1) To understand the concepts of genetics.
- 2) To be able to analyze and solve genetics problems.
- 3) To make connections between genetics, their lives, and other disciplines.

LEARNING OUTCOMES: Upon completion of BIOL 3332, the student should be able to

- 1) define key terms, processes, and principles that are frequently used in genetics and elaborate them with examples.
- 2) perform data analysis to answer genetics questions.
- 3) analyze, evaluate, and categorize novel examples using the terms, processes, and principles in genetics.
- 4) calculate the results, build new models, and formulate new hypotheses based on data from genetic studies.

RECOMMENDED TEXTBOOKS:

There are many good genetics textbooks out there, and I recommend that you get access to a book for in depth readings. For this course, it is **NOT** required that you buy a specific book. The essential materials (lecture slides, videos, animations, online tutorials, practice questions, etc.) can be found through Canvas.

Most of lecture slides are based on the following book (recommended reading):
Concepts of Genetics, 12e, by Klug, Cummings, Spencer, Palladino, & Killian, Pearson, 2018.

Some of the slides are based on the book below:
Genetic Analysis: An Integrated Approach, 3e, by Sanders & Bowman, Pearson, 2018.

COMMUNICATION

Announcements: Announcements are found on Canvas, and depending on your Canvas settings for this class, you will get notified if there is a new one. Please make a point of reading the announcements. This is how I will communicate with the class as a whole when there is important information you need.

Important Note: This syllabus, along with course assignments and due dates, are subject to change. It is your responsibility to check Canvas for corrections or updates to the syllabus. Any changes will be clearly noted in a course announcement.

GRADING:

Two grading plans will be used, and the student’s final percentage will be the higher one.

<i>Plan A</i> Exam1 – 100 pts Exam2 – 100 pts Exam3 – 100 pts Exam4 – 100 pts Final Exam – 150 pts Quizzes – 150 pts Total: 700 pts	<i>Plan B</i> Exam1 – 100 pts Exam2 – 100 pts Exam3 – 100 pts Exam4 – 100 pts Final Exam – 150 pts Quizzes – 150 pts Participation & Practice – 150 pts Total: 850 pts
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Letter grades will be assigned according to the following scale:

- A = above 90%
- B = 80-89%
- C = 70-79%
- D = 60-69%
- F = below 60%

Exams

There will be four exams (each 100 pts) and one cumulative final exam (150 pts).

Make-up Exam Policy

If you are unable to take an exam as scheduled, a make-up exam will be arranged ONLY if the reason is legitimate (illness, sport and religious events, emergencies, etc.), and a written

documentation is provided (doctor's note, etc.). A make-up exam will have to be scheduled no later than one week after the missed exam. Students who fail to make appropriate arrangements will receive zero points for the exam missed. Make-up exams are in the same style as the regular exams but contain different questions.

Quizzes

To help students keep on track of learning and prepare for lectures, there is a quiz on Canvas due before each of the Lectures 02-37. Each quiz is worth 4-5 pts, and there are 150 points in total. The quiz is typically 5-10 multiple-choice questions, including the pre-reading of the lecture and the covered materials in the last one lecture.

The quiz should be student's own work while students are allowed to refer to any non-living resource. Students are NOT allowed to ask help from other people or work as a group together during the quizzes.

In-class Participation & Out-class Practice

In-class Participation & Out-class Practice are strongly encouraged in this course. Please note that the design of two-plan grading system is to encourage students for their class participation and attendance and out-class exploration of topics in genetics; this part can only increase student's final grade.

In-class Participation (4 pts * 30 = 120 pts) - Class participation and attendance are strongly recommended in this class. During each lecture, I will use **iClicker** system to record students' attendance and responses to in-class practice questions. Students need to use the app on mobile devices or the web apps in laptops (NOT remotes) to register an iClicker account using their university email and answer in-class practice questions. Students can earn four points if they submit correct answers to more than 70% of in-class questions per lecture, until reaching a maximum of 120 points. There are no make-up points for this part, as a full mark does not require students to attend all lectures.

Out-class Practice (30 pts) – Outside the class, I encourage students to explore the field of genetics with a topic they are interested in and in a deeper manner. To earn these 30 points, students should plan to attend an on-campus genetics-related research seminar or watch a recorded genetics-related research seminar at an online platform (such as YouTube) and then submit a report. The report should list the seminar date, title, and the presenter as well as addresses 1) what new knowledge in genetics was presented in the seminar, 2) what good or bad presentation manners was noticed in the seminar, and 3) how the materials presented in the seminar relate to the society. I will update the known schedule of on-campus seminars and list the links to recorded seminars on Canvas frequently. Using other seminars for these points needs the approval from the instructor first. The due day of the report is the last lecture day.

WHAT IS PLAGIARISM AND HOW CAN IT BE AVOIDED?

Plagiarism may be defined as (1) presenting work, ideas, or phrasing of another, in whole or part, as one's own without giving credit and proper documentation of sources; (2) copying material directly from sources (including electronic media) except when the material is

enclosed in quotation marks and the source is clearly identified; (3) paraphrasing too closely to the original, even when the source is identified; and (4) claiming credit for work in any media (electronic, digital, artistic, etc.) where the student is not the original creator of said work. Work that is plagiarized will receive an automatic grade of "F". If you are unsure about this subject, please take the time to talk to your instructor and /or read this:

<https://www.ox.ac.uk/students/academic/guidance/skills/plagiarism>

You will also be required to turn in all written assignments (lab report assignments) in a Word document on CANVAS which will use UNICHECK to assess your paper for Plagiarism. You will find this on your Canvas page for this lab course; each assignment will be compared to previous student work and the work of your classmates! You will only need to turn in a copy of your assignment via the CANVAS Link.

Use of an AI Generator such as ChatGPT, iA Writer, MidJourney, DALL-E, etc. is explicitly prohibited unless otherwise noted by the instructor. The information derived from these tools is based on previously published materials. Therefore, using these tools without proper citation constitutes plagiarism. Additionally, be aware that the information derived from these tools is often inaccurate or incomplete. It is imperative that all work submitted should be your own. Any assignment that is found to have been plagiarized or to have used unauthorized AI tools may receive a zero and/or be reported for academic misconduct.

Corrupted File Policy: Any student that turns in a corrupted file will be given 24 hours to turn in a file that can be opened successfully by the instructor. Failure to do so will earn a grade of "0" (Zero) for the paper.

LECTURE SCHEDULE (subject to change*):

Jan	17	W	Lec 01	Course Introduction
	19	F	Lec 02	Mitosis and Meiosis
	22	M	Lec 03	Mendelian Genetics (1)
	24	W	Lec 04	Mendelian Genetics (2)
	26	F	Lec 05	Mendelian Genetics (3)
	29	M	Lec 06	Chromosomal Basis of Genetics & Sex Chromosomes
	31	W	Lec 07	Sex-linked Inheritance
Feb	02	F	Lec 08	Cytoplasmic Inheritance
	05	M		Exam 1 (Lec 01-08)
	07	W	Lec 09	Genetic Linkage & Recombination
	09	F	Lec 10	Genetic Mapping
	12	M	Lec 11	Chromosomal Mutations
	14	W	Lec 12	Extensions of Mendelism (1)
	16	F	Lec 13	Extensions of Mendelism (2)
	19	M	Lec 14	Genetics of Bacteria and Their Viruses
	21	W	Lec 15	Molecular Basis of Genetics
	23	F	Lec 16	Review
	26	M		Exam 2 (Lec 09-16)
	28	W	Lec 17	DNA Replication
Mar	01	F	Lec 18	DNA Mutation
	04	M	Lec 19	Methods of Molecular Genetics
	06	W	Lec 20	DNA Mutation, Repair & Recombination
	08	F	Lec 21	Transcription
	11	M		<i>Spring Break</i>
	13	W		<i>Spring Break</i>
	15	F		<i>Spring Break</i>
	18	M	Lec 22	Genetic Code & Translation
	20	W	Lec 23	Prokaryotic Gene Expression Regulation
	22	F	Lec 24	Review
	25	M		Exam 3 (Lec 17-24)
	27	W	Lec 25	Eukaryotic Gene Expression Regulation
	29	F	Lec 26	Epigenetics & Genetic Imprinting
Apr	01	M	Lec 27	Maternal Effects & Developmental Genetics
	03	W	Lec 28	Transposable Elements
	05	F	Lec 29	Genomics
	08	M	Lec 30	Hardy-Weinberg Principle
	10	W	Lec 31	Violations of Hardy-Weinberg Principle
	12	F	Lec 32	Human Genetics
	15	M		Exam 4 (Lec 25-32)
	17	W	Lec 33	Analysis of Phenotypic Variation

	19	F	Lec 34	Genetic Mapping of Polygenic Traits
	22	M	Lec 35	Medical Genetics (1)
	24	W	Lec 36	Medical Genetics (2)
	26	F	Lec 37	Genetic Modification
				Final Exam (Lec 01-37): 8-10am, May 1 (Wed)

*Please note that this is a tentative schedule. If there are changes, I will communicate through an announcement. The dates for the exams are tentative as well.

Resources to assist you in this course:

- [UT Tyler Student Accessibility and Resource \(SAR\) Office.](#) (provides needed accommodations to students with document needs related to access and learning)
- [UT Tyler Writing Center.](#)
- [The Mathematics Learning Center.](#)
- [UT Tyler PASS Tutoring Center.](#)
- [UT Tyler Supplemental Instruction.](#)
- [Upswing \(24/7 online tutoring\)](#)
- [Robert Muntz Library](#) and [Library Liaison.](#)
- [Canvas 101](#) (learn to use Canvas, proctoring, Unicheck, and other software)
- LIB 422 -- Computer Lab where students can take a proctored exam
- [The Career Success Center.](#)
- [UT Tyler Testing Center.](#)
- [Office of Research & Scholarship Design and Data Analysis Lab.](#)

Resources available to UT Tyler Students:

- [UT Tyler Counseling Center.](#)(available to all students)
- [My SSP App.](#) (24/7 access to Student Support Program counseling through phone or chat and online wellness resources available in a variety of languages)
- [Student Assistance and Advocacy Center.](#)
- [Military and Veterans Success Center.](#)(supports for all of our military-affiliated students)
- [UT Tyler Patriot Food Pantry.](#)
- [UT Tyler Financial Aid and Scholarships.](#)
- [UT Tyler Registrar's Office.](#)
- [Office of International Programs.](#)
- [Title IX Reporting.](#)
- [Patriots Engage.](#) (available to all students. Get engaged at UT Tyler.)

University Policies and Information

Withdrawing from Class - Students, you are allowed to [withdraw](#) (drop) from this course through the [Withdrawal Portal](#). Withdrawing from classes can impact Financial Aid, Scholarships, Veteran Benefits, Exemptions, Waivers, International Student Status, housing, and degree progress. Please read this page, speak with your instructors, consider your options, and speak with your instructor. UT Tyler faculty and staff are here for our students and often can provide additional support options or student assistance. Please read the implications for withdrawing from a course and the instructions on using the Withdrawal portal on the [Registrar's Withdrawal page](#).

Texas law prohibits students who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at other 2-year or 4-year Texas public colleges and universities. Consider the impact withdrawing from this class has on your academic progress and other areas, such as financial implications. We encourage you to consult your advisor(s) and financial aid for additional guidance. CAUTION #1: Withdrawing before census day does not mean you get a full refund. Please see the [Tuition and Fee Refund Schedule](#). CAUTION #2: All international students must check with the [Office of International Programs](#) before withdrawing. All international students are required to enroll full-time for fall and spring terms. CAUTION #3: All UT Tyler Athletes must check with the Athletic Academic Coordinator before withdrawing from a course. CAUTION #4: All veterans or military-affiliated students should consult with the [Military and Veterans Success Center](#).

Final Exam Policy: Final examinations are administered as scheduled. If unusual circumstances require that special arrangements be made for an individual student or class, the Dean of the appropriate college, after consultation with the faculty member involved, may authorize an exception to the schedule. Faculty members must maintain student final examination papers for a minimum of three months following the examination date.

Incomplete Grade Policy: If a student, because of extenuating circumstances, is unable to complete all of the requirements for a course by the end of the semester, then the instructor may recommend an Incomplete (I) for the course. The "I" may be assigned in place of a grade only when all of the following conditions are met: (a) the student has been making satisfactory progress in the course; (b) the student is unable to complete all coursework or final exam due to unusual circumstances that are beyond personal control and are acceptable to the instructor, and (c) the student presents these reasons before the time that the final grade roster is due. The semester credit hours for an Incomplete will not be used to calculate the grade point average.

The student and the instructor must submit an Incomplete Form detailing the work required and the time by which the work must be completed to their respective department chair or college dean for approval. The time limit established must not exceed one year. Should the student fail to meet all of the work for the course within the time limit, then the instructor may assign zeros to the unfinished work, compute the course average for the student, and assign the appropriate grade. If a grade has yet to be assigned within one year, then the Incomplete

will be changed to an F, or NC. If the course was initially taken under the CR/NC grading basis, this may adversely affect the student's academic standing.

Grade Appeal Policy: Disputes regarding grades must be initiated within sixty (60) days from the date of receiving the final course grade by filing a Grade Appeal Form with the instructor who assigned the grade; this is separate from the Application for Appeal form submitted to the Student Appeals Committee, which does not rule on grade disputes as described in this policy. If the student is not satisfied with the decision, the student may appeal in writing to the Chairperson of the department from which the grade was issued. In situations where there is an allegation of capricious grading, discrimination, or unlawful actions, appeals may go beyond the Chairperson to the Dean of the college from which the grade was issued, with that decision being final. The Grade Appeal form is found in the [Registrar's Form Library](#).

Disability/Accessibility Services: In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA), the University of Texas at Tyler offers accommodations to students with learning, physical, and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or a history of modifications or accommodations in a previous educational environment, you are encouraged to visit <https://hood.accessiblelearning.com/UTTyler> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with the Assistant Director Student Accessibility and Resources/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <https://www.uttyler.edu/disability-services>, the SAR office located in the University Center, # 3150, or call 903.566.7079."

Military Affiliated Students: UT Tyler honors the service and sacrifices of our military-affiliated students. If you are a student who is a veteran, on active duty, in the reserves or National Guard, or a military spouse or dependent, please stay in contact with your faculty member if any aspect of your present or prior service or family situation makes it difficult for you to fulfill the requirements of a course or creates disruption in your academic progress. It is important to make your faculty members aware of any complications as far in advance as possible. Your faculty member is willing to work with you and, if needed, put you in contact with university staff who are trained to assist you. The [Military and Veterans Success Center](#) (MVSC) has campus resources for military-affiliated students. The MVSC can be reached at MVSC@uttyler.edu or via phone at 903.565.5972.

Academic Honesty and Academic Misconduct: The UT Tyler community comes together to pledge that "Honor and integrity will not allow me to lie, cheat, or steal, nor to accept the actions of those who do." Therefore, we enforce the [Student Conduct and Discipline policy](#) in the Student Manual Of Operating Procedures (Section 8).

Family Educational Rights and Privacy Act (FERPA): UT Tyler follows the Family Educational Rights and Privacy Act (FERPA) as noted in [University Policy 5.2.3](#). The course instructor will follow all requirements to protect your confidential information.

Absence for Official University Events or Activities: This course follows the practices related to approved absences as noted by the Student Manual of Operating Procedures ([Sec. 1 -501](#)).

Absence for Religious Holidays: This course follows the practices related to [Excused Absences for Religious Holy Days as noted in the Catalog](#).

Campus Carry: We respect the right and privacy of students who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.uttyler.edu/about/campus-carry/index.php> .