Biology 271: Heredity, Fall 2023

Biology 271, 3.0 credits
Tuesday and Thursday 12:30 PM – 1:45 PM (Section 1), 2:00 – 3:15 PM (Section 2)
Room: NEWTON 212
Prerequisites: college level biology course or permission
Note: This class CANNOT be used for credit toward the biology major but can be used for the biology minor!

Instructor

Dr. Hristina Nedelkovska
Office: ISC 257
Email: nedelkovska@geneseo.edu
Office hours: Monday 2:00–3:30, Thursdays 10:30–12:00, and by appointment.
Please take advantage of this, genetics is not easy but I'm HERE to help you!!!

Course Description

Heredity (Biology 271) reviews the principles of human genetics and the many ways in which genetics and biotechnology affect our lives. The topics covered include transmission genetics, cytogenetics, DNA structure and function, biotechnology, population genetics, genetic disorders, mutations, and cancer. Student groups will investigate current topics in genetics and present their work to the class followed by discussion.

Learning Outcomes

At the conclusion of the course:

- Students will be able to explain the fundamental principles of transmission genetics, molecular genetics, and population genetics at the level appropriate for educated, non-biology majors.
- Students will be able to describe the causes, characteristics, and management strategies for common human genetic diseases.
- Students will have practiced problem solving, critical thinking, and communication skills both generally and with respect to genetic problems.
- Students will be able to describe current issues in genetics and biotechnology and explain how they shape society.
- Students will be able to describe the fundamental genetic principles underlying current issues in genetics and biotechnology.

Textbook

Human Genetics: Concepts and Applications, 11th edition (you can also use other editions), by Ricki Lewis (McGraw Hill, ISBN-13: 978-0073525365) is the main text for the course and is available in the bookstore as well as online to rent. There is a case study manual for this text as well, but we will not be using it.

Grading

4 Exams @ 100 points each	60 %
Student Presentation (1 per person)	13 %
Homework	13 %
Questions of the Day/Worksheets	10 %
Reflective Assignment	4 %
	100% total

The following scale will be used to calculate final grades.

A (93-100%)	A- (90-92%)	
B+ (87-89%)	B (83-86%)	B- (80-82%)
C+ (77-79%)	C (73-76%)	C- (70-72%)
D (60-69%)		
E (<60%)		

Exams: There will be four unit exams worth 100 points each and exams will be administered in class! There will NOT be a cumulative final.

***Make up exams will only be administered in special circumstances (e.g. qualified medical excuses). Exams cannot be missed and will not be able to be made up for any other reason including weddings, vacations, or travel.**

***Please note the exam dates for this course. If you have a legitimate scheduling conflict, you must notify me within the first 2 weeks of class. Otherwise, you will have to take exams as scheduled in the syllabus. If you are ill or have another unexpected issue come up, you must have approval for a makeup exam before missing it, otherwise you cannot make up the exam.**

Questions of the Day/Worksheets: I will give a "question of the day" or a worksheet to be completed in class on most days. We will work in groups to complete these questions. These must be submitted for student to get full credit.

Group Presentations: Groups of 2-3 students will investigate one of the topics listed below and present their findings to the class. **Each group will give a 10 minute, illustrated and engaging presentation to the class, and will have 5 minutes to answer questions and lead class discussion on the topic. A one-to-two-page written summary of the topic will be turned in by the group on the day of the presentation.** Make sure you include citations and references both in your summary and presentation (please use reputable sources). The presentation should be illustrated, focused and interesting. In addition to the professor's evaluation there will also be a student evaluation component that will be integrated into the final score for the presentation. The presentation and summary will be worth a total of 50 points. Importantly your peer review of a different group also counts toward your grade and if you fail to complete it on the assigned day you will lose 5 points from your total presentation grade.

Below is a marking guide that will be used to evaluate the group presentations:

Rate each of the following areas on a scale from 1-5
1 = poor 2 = fair 3 = good 4 = very good 5 = excellent

Category	Rating	Comments
CONTENT Content appropriate and accurate, is it in logical order, are sources identified, etc		
ORGANIZATION Presentation easy to follow, divided into appropriate sections, are there good transitions between slides/topics, coherent, flows logically etc		
DELIVERY Speaks clearly, all members were well prepared, did not just read from notes etc		
CREATIVITY Kept audience engaged, used visual aids, original presentation, etc		
GROUP DISCUSSION Led discussion well, interacted with audience, was able to answer questions etc		

Presentation Topics (for presentation dates please refer to class schedule below):

1. Genetic counselor as a profession
2. Genetic testing, GINA
3. Gene patents
4. Genetics in art and literature
5. Preimplantation genetic diagnosis
6. Autism
7. Schizophrenia
8. GMO Foods
9. Recombinant Drugs
10. Gene Therapy
11. Cancer

Homework: Each lecture will be accompanied by a set of homework questions, and these questions are due before the start of the next class. You will submit your HW answers via Brightspace. You will be graded on effort not on accuracy, meaning if you work through the questions, you will receive full credit even if your answer is not correct. An answer key will be provided once the assignment is submitted. Consider this as a low stakes assessment tool, which should prepare you for the exams!

***Homework answer with just a numerical value for an answer will not be accepted for credit. You must show your work to receive credit.**

Reflective Assignment:

This assignment will be given at the end of the semester along with a grading scale that will be associated with the assignment. It will give you a chance to reflect on the course during the semester.

Communication

Everyone is expected to check their email at least twice a day on weekdays, and use email, Brightspace, or other agreed upon methods to communicate with group members. Please make sure to set Brightspace notifications to send you emails with updates. Please also note that we follow the Biology Department practice of replying to your emails within one or two business days after you send the message. We'll typically respond to emails received after 5:00 PM during the next business day. If you do not hear from us within this time frame, please feel free to send us a reminder email.

Grade Review Policy

Grade review requests for assignments are available only within one week of receiving feedback.

Exam Return Time/Make-up Exam Policy

Quality feedback is an important part of your education and takes time. You can typically expect feedback on assignments within approximately one week of submissions, but some larger assignments may take additional time to grade. There may be cases where other students need to take make-up exams or unforeseen circumstances arise, lengthening response times. I will communicate any changes in response times that you can expect.

Typically, the dates of major assessments, including exams are set in the syllabus for each course. It is the expectation of the biology department that students will be prepared and present for exams on the day they are administered; however, it is also an understanding that emergencies may arise that may prevent a student from attending an exam.

To ensure fairness to all students, a student will be allowed to take a make-up exam for a missed test due to an emergency. The student must inform the instructor of the emergency prior to the exam being administered, or as soon as possible if the student is unable prior to the exam. Make-ups will be allowed on a case-by-case basis and must be completed within one week of the date of the original exam. The make-up exam will be similar, but not necessarily identical to the original exam, depending on the timing of the make-up. A student will only be allowed one (1) make-up for a class, per semester; exceptions to this policy may be made by the instructor to accommodate extreme circumstances.

Accessibility

SUNY Geneseo is dedicated to providing an equitable and inclusive educational experience for all students. The Office of Accessibility will coordinate reasonable accommodations for persons with physical, emotional, or cognitive disabilities to ensure equal access to academic programs, activities, and services at Geneseo. Students with letters of accommodation should submit a letter to each faculty member and discuss their needs at the beginning of each semester. Please contact the Office of Accessibility Services for questions related to access and accommodations.
Office of Accessibility Services
Erwin Hall 22
(585) 245-5112
access@geneseo.edu
www.geneseo.edu/accessibility-office

Technology Support

CIT provides a range of technology support resources. For assistance with your computer or mobile device, visit the CIT HelpDesk in Fraser. Geneseo students, faculty and staff have free access to the entire LinkedIn Learning training library (over 7,500 courses, including tutorials for software, digital tools, web development, programming, and design) through Geneseo's site license.

Getting Help with Brightspace

CIT has developed a number of resources that can help you learn how to use our new learning management system, Brightspace. All students are automatically enrolled in "Geneseo's Introduction to Brightspace for Students" course, a course intended to introduce learners to Brightspace and review its basic functionality. Following successful completion of this course, learners will receive a digital certificate of completion that can be provided to faculty members, upon request. There is also the Student Guide for Brightspace at Geneseo self-help article, which includes links to video tutorials for common tasks. For *technical assistance* with Brightspace, please email the Brightspace Support Team. For questions about a course and its content, please contact the instructor directly.

Well-Being

Prioritizing well-being can support the achievement of academic goals and alleviate stress. Eating nutritious foods, getting enough sleep, exercising, avoiding drugs and alcohol, maintaining healthy relationships, and building in time to relax all help promote a healthy lifestyle and general well-being.
The changes brought on by COVID-19 have impacted us all in a number of ways, and will continue to do so at various times and to varying degrees during the upcoming semester. Your health and wellbeing are foundational to your ability to learn, and if you find that you are feeling unwell (physically or mentally) and it is impacting your ability to complete your coursework, please reach out. In a similar way, I will occasionally ask for some patience and flexibility on your part. The pandemic is affecting faculty as well as students and creating demands that would not be present in an ordinary semester. If I am slow responding to an email, if I take some time to grade an assignment, if I am a bit late posting a video lecture, please be patient (and feel free to send me a 'nudge'; I will not be offended). You will never suffer any disadvantage in the course because of delays on my part. Remember that we are all in this together.
Concerns about academic performance, health situations, family health and wellness (including the loss of a loved one), interpersonal relationships and commitments, and other factors can contribute to stress. Students are strongly encouraged to communicate their needs to faculty and staff and seek support if

they are experiencing unmanageable stress or are having difficulties with daily functioning. The Dean of Students (585-245-5706) can assist and provide direction to appropriate campus resources. For more information, see www.geneseo.edu/dean_students.

Mental Health

As a student, you may experience a range of challenges that can impact your mental health and thus impact your learning; common examples include increased anxiety, shifts in mood, strained relationships, difficulties related to substance use, trouble concentrating, and lack of motivation, among many others. These experiences may reduce your ability to participate fully in daily activities and affect your academic performance.
SUNY Geneseo offers free, confidential counseling for students through Student Health and Counseling, and seeking support for your mental health can be key to your success at college. You can learn more about the various mental health services available on campus www.geneseo.edu/health. To request a counseling appointment, please complete the online form through myhealth.geneseo.edu.

Attendance and Public Health

In the context of the COVID-19 pandemic, it is vital that we all do what we can to protect the health and safety of each other. If you are experiencing symptoms associated with COVID on a day that class meets in-person, do not attend. Remember that it is better to stay home if you are not feeling well than to attend class and risk spreading illness to others. Throughout the semester, please be proactive in communicating about absences and contact the Dean of Students if you expect to be out for an extended period of time.

Academic Integrity and Plagiarism

I take plagiarism and other forms of academic dishonesty seriously. At its most basic, that means you are responsible for doing your own work. You may not reuse work from other classes, use the work of another person, plagiarize, or use artificial intelligence to help with or generate assignments.

I enforce Geneseo's plagiarism policy. You can find more information about the policy here: Geneseo's Academic Dishonesty Policy. [You might add additional resources about academic integrity in your discipline here, and/or Fraser Library guides on academic integrity and plagiarism.]

Unintentional plagiarism. While the first thing most people think of when they hear the word plagiarism is cheating, you can plagiarize without intending to. Some students plagiarize because they have trouble with paraphrasing or fail to give credit to their sources of information, especially when they search online instead of utilizing assigned material. I believe this class will help you develop and/ or strengthen the skills you need to avoid unintentional plagiarism. I am happy to help you if you have questions or are struggling with this. Come talk to me during office hours or by appointment if you have questions or want help. Ultimately, you are responsible for avoiding plagiarism, but there are many resources and ways to get help.

AI, like Chat-GPT. You must do your own work, which means that you should not utilize tools like Chat-GPT for any aspect of our course work. Such use is a form of academic dishonesty. Use of such tools is not only cheating, it will also cheat you of the opportunity to learn and develop your own skills. While AI will undoubtedly play important roles in our future society, you will be better able to utilize AI if you have developed your own critical thinking, writing, and analytical skills by doing your own work. If you have any questions about this, please ask.

Show your work. Upon request, I expect you to be able to show your work or process for completing assignments. This means, you should keep notes, brainstorming sheets, drafts, outlines, and any other work that you created in the process of writing a paper or completing an assignment.

*** Please be aware that there may be a need to alter the schedule and or mode of instructions due to the nature of the COVID-19 pandemic. If this is the case, I will try to provide as smooth transition as possible since YOUR success in this course is a priority!

*** Schedule is subject to change

Date	Subject	Required Reading
Aug. 29	Intro + DNA and Chromosomes Structure	
Aug. 31	DNA and Chromosomes Structure	Ch. 9.1, 9.2, 13.1, 13.2
Sept. 5	DNA Replication, PCR	Ch. 9.3, 19.2
Sept. 7	Mitosis, Stem Cells	Ch. 2
Sept. 12	Transcription Genetic Counselor 20 (396-98)	Ch. 10
Sept. 14	Translation	Ch. 10
Sept. 19	Jeopardy/Review Genetic Testing 1 (1,12,14), 20 (398-401)	
Sept. 21	**Exam 1 Ch. 2, 9, 10, 13.1-13.2, 19.2**	
Sept. 26	Meiosis	Ch. 3.1-3.3
Sept. 28	ARTS, Gene Expression PGD 21 (422-426)	Ch. 11, 21.3
Oct. 3	Human Development	Ch. 3.4-3.6
Oct. 5	Chromosomal Abnormalities Gene Therapy 20 (395, 402-410)	Ch. 13.3-13.5
Oct. 10	**NO CLASSES** **FALL BREAK**	
Oct. 12	Mendel	Ch. 4
Oct. 17	Mendel	Ch. 4
Oct. 19	Jeopardy/Review Genetics Art and Literature	
Oct. 24	**Exam 2 Ch. 3, 4, 11, 13.3-13.5, 21.3**	
Oct. 26	Beyond Mendel's Laws	Ch. 5
Oct. 31	Beyond Mendel's Laws Schizophrenia 8 (162-164)	Ch. 5
Nov. 2	Solving Linkage Problems Autism 8 (154, 159-160)	Ch. 5.4
Nov. 7	Sex	Ch. 6
Nov. 9	Multifactorial Traits	Ch. 7
Nov. 14	Jeopardy/Review GMO Foods 1 (12-13)	
Nov. 16	**Exam 3 Ch. 5, 6, 7**	
Nov. 21	Genetic Technologies Gene Patents 19 (378-380)	Ch. 19
Nov. 23	**NO CLASSES** **THANKSGIVING BREAK**	
Nov. 28	Genomics Recombinant Drugs 19 (358-88)	Ch.22
Nov. 30	Allele Frequencies	Ch. 14
Dec. 5	Gene Mutations	Ch. 12
Dec. 7	Cancer Cancer	Ch. 18
FINAL EXAM	**Exam 4 Ch. 19, 22, 14, 12, 18**	**Section 1: Dec 19 12:00-2:30 PM** **Section 2: Dec 18 12:00-2:30 PM**