BIOL 271 – Heredity – Winter 2025

Instructor: Dr. Logan W. Cole – E-mail: lcole@geneseo.edu – Phone number: 585-813-6923

Class time: Asynchronous Location: Remote

Office hours: Tuesdays at 4:00 PM - 5:00 PM eastern time

Prerequisite: A college-level biology course or permission

Course description: For the non-major or Biology minor who is interested in the genetics of humans and the impact of genetics on human life. Topics such as human genetic disorders, social genetics, race and speciation, mutations, and agricultural genetics are discussed throughout the course. May not be used toward the major. (3 credit hours)

Required textbook: *Human Genetics* by Lewis (2024) 14th edition, McGraw Hill.

Date	Day	Chapters	Module	Topics	Deadline
12/27	F	1, 2, 3	1	Intro, genes, cells, development	
12/30	M	4, 5	2	Mendelian and non-Mendelian traits	Question set 1
12/31	T	6, 7, 8	3	Sex and genetics, complex traits	
1/1	W	New Year's Day (no classes)			
1/2	Th				Question set 2
1/3	F	**Problem set 1 on chapters 1 - 8**			
1/6	M	9, 10, 11	4	DNA, RNA, proteins, gene expression	Paper topics
1/7	T	12, 13, 14	5	Mutation, chromosomes, genomes	
1/8	W	15, 16	6	Population genetics	Question set 3
1/9	Th	17, 18	7	Evolution, genealogy, forensics	
1/10	F				Question set 4
1/13	M	**Problem set 2 on chapters 9 - 18**			
1/14	T	19, 20	8	Genetics and genomics of health	Rough draft
1/15	W	21, 22, 23	9	Genetic technology	Question set 5
1/16	Th				Question set 6
1/17	F	**Problem set 3 on chapters 19 - 23 and final paper due**			

REVIEW QUESTION SETS AND ALL COMPONENTS OF THE RESEARCH PAPER ARE DUE AT NOON (EASTERN TIME) ON THEIR DUE DATE

REVIEW QUESTION SETS

After you read the material (the notes and the corresponding chapter), you will be posed some questions to review the material. These sets will comprise 24% of your grade for this course (24% - 4% for each set of review questions). Individual questions will be graded on the basis of good-faith completion and I will provide extensive feedback for these review questions. So, if you do not address the question or part of your question in your response, you will lose credit.

PROBLEM SETS

These problems sets will comprise the plurality of your grade for this course (45% - 15% for each problem set). These will be graded on correctness. These sets will require a lot of time and will have a relatively short window (one day) for completion. Problems sets will be released 11:59 PM the day before they are scheduled and they will be due at 11:59 PM on the day they

are due on the syllabus – there will be twenty-four hours to complete these problem sets. **These are the highest stakes assignments of this course – make time for them.**

RESEARCH PAPER

A research paper will be a major part of the grade for this class (21%). The paper will be a review of some topic in the field of heredity or genetics that is at least seven pages in length.

PARTICIPATION

I will pose questions on the discussion board and you will respond – this grade (10% of your course grade) will be based upon good-faith participation on the discussion board, which includes responses in complete sentences that address the question asked. As an online course, it is also important that you respond to emails in a timely manner – stay apprised of your email while this course is running – this will also be considered.

COURSE GRADE BREAKDOWN

QUESTION SETS (6 sets x 4 points per set)	24%
PROBLEM SETS (3 sets x 15 points per set)	45%
RESEARCH PAPER	21%
PARTICIPATION	10%

LATE WORK AND MAKE-UP POLICY

Unexcused late problem sets will be accepted with an initial 20% deduction in points. If the problem set is more than a day late, there will be a 50% deduction (late work can be 'made up' until January 17th with a 50% deduction).

Unexcused late review question sets will be accepted with an initial 10% deduction in points. If the problem set is between one and two days late, there will be a 30% deduction. If it is more than two days late, there will be a 50% deduction.

Late work with the maximum penalty (50% deduction in points) can be "made up" until January 17th.

LEARNING OUTCOMES

At the end of this course, students should be able to:

- Explain the fundamental principles of transmission genetics, molecular genetics, and population genetics at the level appropriate for educated, non-biology majors.
- Describe the causes, characteristics, consequences, and management strategies for common human genetic diseases.
- Practiced problem solving, critical thinking, and communication skills with respect to genetic problems.
- Describe and discuss current issues in genetics and biotechnology, and their relationships to fundamental genetic principles.

The fields of genetics and heredity are broadly relevant to all other basic areas of biology, including molecular biology, biochemistry, evolutionary biology, and, increasingly, ecology, as

well as applied areas like medicine, public health, and agriculture. This course seeks to explain the principles of heredity at a fundamental level such that they can be applied to other fields. This course cannot be used as credit for the biology major but can be used as credit for the biology minor and may be useful to those in psychology, neuroscience, and sociomedical studies.

REQUIRED TEXT

This course will use the fourteenth edition of *Human Genetics* by Lewis. Course notes will correspond to this text though will emphasize what I think is important. I have also added some material that will provide more understanding of how genetics is applied in modern scientific literature. Review questions (and my feedback) will also reflect these emphases. All these components (online discussion, course notes, textbook readings, literature assignments, review questions, and problem sets) constitute the multiple ways of thinking that are conducive to a more complete understanding of genetics and heredity. It will be difficult to do well in this course if you do not give all of these components attention.

REQUIRED MATERIALS

1. Computer and reliable internet access.
2. Access to the Brightspace site for this course – check it frequently
3. Software
    a. Microsoft Office including Excel, Powerpoint, and Word (free download for Geneseo students)
    b. Adobe Acrobat (free download for Geneseo students) or similar PDF reader
4. The aforementioned required textbook: *Human Genetics* by Lewis

Privacy information for Geneseo web applications can be found here. Privacy statements for Microsoft Office and Adobe Acrobat can be found here and here, respectively.

ADDITIONAL SUPPORT AND ACCOMODATIONS

I am pleased to help you with any issues you have understanding the material for the course. I will be very responsive to emails – I should be able to respond in a day (usually much sooner) and if I don't, please send me a reminder because I probably just missed it. You can also come to my office hours online. If you cannot make those office hours but want to directly ask me some questions or get support in real time, we can also arrange an appointment to meet via Zoom or by telephone.

This course will honor all legally required accommodations for persons with disabilities, attendance on religious holidays, and leaves of absence for those on duty.

ACCESSIBILITY

All course materials are available on Brightspace and I've tried to make them accessible; if there are any difficulties accessing any materials (including the need for different formats), please let me know as soon as possible and I will do my best to find a solution.

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 documented physical, emotional, or cognitive disabilities, as well as medical conditions related to pregnancy or parenting. Students with approved accommodations may submit a

semester request to renew their academic accommodations. More information on the process for requesting academic accommodations is on the Office of Accessibility Services website. You can also contact the Office of Accessibility Services for questions related to access and accommodation: they are located at Erwin Hall 22 or contacted by telephone at (585) 245-5112 or by email at access@geneseo.edu.

STATEMENT OF EQUITY AND OPEN COMMUNICATION

We recognize that each class we teach is composed of diverse populations and are aware of and attentive to inequities of experience based on social identities including but not limited to race, class, assigned gender, gender identity, sexuality, geographical background, language background, religion, disability, age, and nationality. This classroom operates on a model of equity and partnership, in which we expect and appreciate diverse perspectives and ideas. If anyone is experiencing exclusion, intentional or unintentional aggression, silencing, or any other form of oppression, I encourage open communication with myself and/or the class as a whole.

USE OF GENERATIVE AI

Any use of generative AI on an assignment response will result in no credit. Using generative AI constitutes plagiarism and I reserve the right to enforce the college's policy on plagiarism if generative AI is used to complete assignments.