BIOL 210-01 Principles of Genetics
Spring 2022
Lecture M W F @ 11:00 – 11:50 AM in CBB 101

Instructor:	Dr. Daniel L. Graf	Course web site:	Canvas site at https://www.uwsp.edu/canvas/
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Phone:	715.346.2159 (Biology Office)		
email:	dgraf@uwsp.edu (include "BIOL 210" in subject)	Office Hours:	Tu 10 AM-noon and by appointment

General Course Description. "Structure of genes and mechanisms of genetic inheritance. Relationships of nucleic acids and proteins to expression of genetic information. Quantitative analysis of genetic crosses, gene mapping, and population and evolutionary genetics."

Objectives. The objectives of BIOL 210 are 1) to examine general principles biological inheritance, and 2) to provide the foundation necessary for success in future coursework.

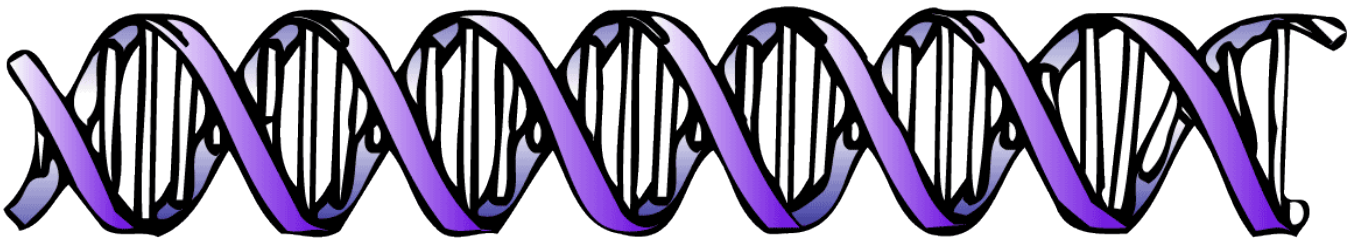
Learning Outcomes. Upon completion of BIOL 210, students will be able to:

1. Explain molecular, cellular, and environmental processes that influence biological inheritance.
2. Describe the structures, physical arrangements, and interactions of nucleic acids, genes, and genomes in biological systems.
3. Recognize the cellular machinery responsible for DNA replication, transcription, translation, and the regulation of gene expression.
4. Apply quantitative reasoning to describe genetic crosses, genetic mapping, and population genetics.

Prerequisites. Course in Introductory Biology (BIOL 101 or BIOL 111 or BIOL 130 or BIOL 160) and introductory chemistry (CHEM 105 or CHEM 117).

Required Materials. *Genetics: Genes, Genomes, and Evolution* (2017), by Meneely, Hoang, Okeke, & Heston. Oxford University Press, Oxford (ISBN 978-0-19-879536-0). This book is available for rent at the bookstore.

Recommended Materials. A dedicated BIOL 210 notebook.



Lectures, Quizzes, and Exams. There will be a total of 270 possible points to earn this semester through lecture quizzes, three problem sets, three midterm exams, and a comprehensive final exam. *Be aware that as campus circumstances change, so might assignment schedules and grading expectations.*

	points	
midterm exams	100	37%
final exam	100	37%
lecture quizzes	60	22%
problem sets	10	4%
TOTAL	**270**	100%

Lecture Quizzes. — 2-point quizzes will take place at the beginning of each lecture period. Questions will be short-answer format and emphasize recent lecture material. We are expecting 39 quizzes, but your nine lowest quizzes (i.e., 3 weeks' worth) will be dropped from the final grade calculation (60 points; 22% of the total points).

Problem Sets. — Three times during the semester, we will have problem sets associated with some of the quantitative aspects of genetics. These are worth 5 points each. Your lowest problem set score will be dropped (10 points; 4%). Scoring will be based on in-class, group exercises.

Midterm Exams. — Every 4-5 weeks (10 lectures), we will have a 50-point exam that covers the material since the previous exam. There will be three total midterm exams, and your lowest exam score will be dropped (100 points; 37%)

Final Exam. — The cumulative final exam is worth 100 points (37%) and will cover material from the entire course.

Grades will be based upon the following percentages of the course total:

		100-93%	A	92-89%	A-
88-87%	B+	86-83%	B	82-79%	B-
78-77%	C+	76-73%	C	72-69%	C-
68-67%	D+	66-59%	D	<59%	F

REQUESTS FOR EXTRA POINTS WILL NOT BE HONORED.

Exam and Quiz Rules. The following rules apply to exam periods as well as quizzes.

- If you arrive late for a quiz or exam, you will not be given extra time. When the rest of the class is finished, you will need to be done.
- If you arrive so late for an exam that anyone else has finished and left, you will not be allowed to take the exam at that time. You may be able to take a make-up exam (see attendance policy below). There are no make-up quizzes.
- All exams and quizzes must be completed in black or blue ink or pencil.
- Only necessary testing materials will be allowed in the testing area (e.g., no phones, no notes)
- There may be multiple forms of exams and quizzes.

Attendance. YOUR COMMITMENT TO YOUR CLASSES IS AMONG THE MOST IMPORTANT THINGS IN YOUR LIFE RIGHT NOW. This is an in-person class, and you are expected to attend all scheduled lecture and exam sessions except for officially excused reasons (e.g., COVID-19 quarantine, too sick to safely attend class).

If you will miss a class to participate in a university-sanctioned event (e.g., athletics), you must notify the instructor in advance and complete the work, including exams, BEFORE the otherwise-scheduled class or due-date. Absences relating to religious beliefs will be accommodated according to UWS 22.03. In either case, Dr. Graf must be notified within the first three weeks of class regarding the specific dates that you will be absent.

Make-Up Exams. You must make every effort to take exams at the scheduled times. MAKE-UP EXAMS WILL BE ALLOWED IN CASES OF EMERGENCY, FOR WHICH YOU MUST PROVIDE WRITTEN DOCUMENTATION. You must make arrangements with Dr. Graf within 24 hours of the exam to schedule a make-up exam.

- **E•mer•gen•cy** |iˈmərjənsē| (noun): *a serious, unexpected, and often dangerous situation requiring immediate action*.
- A good rule of thumb: *If your situation wouldn't cause you to postpone your wedding, then it isn't a good reason to miss a scheduled exam.*

Academic Integrity. Any misrepresentation of your work, including plagiarism, or cheating of any kind will result in a zero (0) for that assignment. Students are encouraged to become familiar with the UWS/UWSP Student Academic Standards and Disciplinary Procedures governing student academic conduct. Information is available on the Dean of Students web site.

Remember: PROF. GRAF IS NOT AS DUMB AS YOU THINK HE IS.

Classroom Conduct. Student and instructor behavior should promote an environment favorable to both teaching and learning. It is disruptive to come late to class, read extra-curricular media in class, or use cell phones (and other electronic devices) during class time. Students that choose to disrespect their classmates and their instructor by disrupting lectures or labs will be asked to leave.

As long as campus policy requires masking, EVERYONE in class MUST properly wear a suitable mask. Masking requirements will be strictly enforced.

Disabilities. Students with disabilities are welcome and encouraged in this class. Students with disabilities should contact the Disability and Assistive Technology Center during the first two weeks of the semester if they wish to request specific accommodations.

BIOL 210-01 Principles of Genetics Lecture Schedule, Spring 2022

Wk	Date	Day	#	Lecture	Chapter (pp.)
1	24-Jan	M	0	Welcome to BIOL 210!	Prologue (1-12)
	26-Jan	W	1	Evolution, Genomes, & Genetics	1.1-1.4 (13–25)
	28-Jan	F	2	Structure & Function of DNA	2.1-2.2 (28–42)
2	31-Jan	M	3	The Central Dogma of Biology	2.3-2.6 (42–66)
	2-Feb	W	4	Evolution & Genome Variation	3.1 (72–87)
	4-Feb	F	5	Genome Size & Organization	3.2 (87–98)
3	7-Feb	M	6	Genome Content & Biological Diversity	3.3-3.5 (98-106)
	9-Feb	W	7	DNA Replication	4.1-4.3 (129–153)
	11-Feb	F	8	Mutation	4.4-4.6 (153–168)
4	14-Feb	M	9	The Rules of Mendelian Inheritance	5.1-5.2 (189–197)
	16-Feb	W	10	Applying the Rules of Mendelian Inheritance	5.3-5.7 (197–212)
	18-Feb	F	11	Synthesis & Review	Prologue & 1-5 (1-212)
5	21-Feb	M	12	Mitosis & the Cell Cycle	6.1-6.2 (219–229)
	23-Feb	W	13	Meiosis & Recombination	6.3 (229–246)
	25-Feb	F	**E1**	**Exam 1 (Lectures 1-11, Chapters 1-5)**	
6	28-Feb	M	14	Gametogenesis, Fertilization & Meiosis	6.4-6.7 (246–259)
	2-Mar	W	15	Sex Linkage	7.1-7.2 (264–274)
	4-Mar	F	*PS1*	*Problem Set 1 Group Exercises*	
7	7-Mar	M	16	X Chromosomes & Sex Determination	7.3-7.6 (274–299)
	9-Mar	W	17	Interactions Among Alleles & Genes	8.1-8.3 (308–321)
	11-Mar	F	18	Interactions Among Genes & the Environment	8.4-8.7 (321–334)
8	14-Mar	M	19	Linkage	9.1-9.2 (341–359)
	16-Mar	W	20	Genetic Maps	9.3-9.5 (359–376)
	18-Mar	F	21	Synthesis & Review	6-9 (219-376)
	21-Mar to 25-Mar SPRING BREAK — No Classes				
9	28-Mar	M	22	Mapping Human Genes	10.1-10.4 (383–401)
	30-Mar	W	23	Complex Traits	10.5-10.8 (401–413)
	1-Apr	F	**E2**	**Exam 2 (Lectures 12-21, Problem Set 1, Chapters 6-9)**	
10	4-Apr	M	24	Transformation, Conjugation & Transduction	11.1-11.4 (419–441)
	6-Apr	W	25	Viruses, Transposable Elements & CRISPR	11.5-11.8 (441–459)
	8-Apr	F	*PS2*	*Problem Set 2 Group Exercises*	
11	11-Apr	M	26	Initiation of Transcription	12.1-12.2 (464–472)
	13-Apr	W	27	Regulation of Transcription Initiation	12.3-12.4 (472-495)
	15-Apr	F	28	Elongaton & Termination of Transcription	12.5-12.6 (495–511)
12	18-Apr	M	29	Translation	13.1-13.3 (517–532)
	20-Apr	W	30	The Genetic Code	13.4-13.6 (532–549)
	22-Apr	F	31	Synthesis & Review	10-13 (383-549)
13	25-Apr	M	32	Bacterial Operons	14.1-14.2 (555–576)
	27-Apr	W	33	Eukaryotic Gene Regulation	14.3-14.4 (576–590)
	29-Apr	F	**E3**	**Exam 3 (Lectures 22-31, Problem Set 2, Chapters 10-13)**	
14	2-May	M	34	Population Genetics	16.1-16.2 (642–652)
	4-May	W	35	Selection	16.5 (670–687)
	6-May	F	*PS3*	*Problem Set 3 Group Exercises*	
15	9-May	M	36	Other Factors Affecting Populations Genetics	16.3-16.4 (652–670), 16.6-16.7 (687–691)
	11-May	W	37	Community Genetics	17.1-17.6 (698-723)
	13-May	F	38	Synthesis & Review	Prologue & 1-17 (1-723)
16	16-May	M	**FE**	**Comprehensive Final Exam 8-10 AM**	