

BIOL 110-01/110-01H Principles of Biology I

Fall 2022

Lecture M W F 2:00 – 2:50 PM	in SCI D102	
Lab 01L1 Tu 8:00 – 10:50 AM	Lab 01L2 W 11:00 AM – 1:50 PM	in CBB 160
Lab 01L3 Th 11:00 AM – 1:50 PM	Lab 01L4H Th 2:00 – 4:50 PM	in CBB 166
Lab 01L5 W 11:00 AM – 1:50 PM (Prof. Whitaker)		

Instructor:	Prof. Daniel Graf	Course web	Canvas site at
Office:	CBB 344	site:	https://www.uwsp.edu/canvas/
email:	dgraf@uwsp.edu	Office Hours:	Tu 2-3 PM, W 9 -10 AM
	("BIOL 110" in subject)		and by appointment

General Course Description. "Fundamental principles of biology, including chemistry of life, cell biology, genetics, and mechanisms of evolution. Principles of cell and molecular biology, from macromolecules to organisms, integrated through an evolutionary framework. Development of scientific skills to form hypotheses, analyze and interpret data, evaluate biological literature, and relate biology to society." This course is the first of a two-course introductory sequence that serves as a prerequisite for upper division Biology courses.

Objectives. The objectives of BIOL 110 are 1) to examine general biological principles, and 2) to provide the foundation necessary for success in future coursework in the biological sciences.

Learning Outcomes. Upon completion of BIOL 110, students will be able to:

1. Apply knowledge of macromolecules and cellular functions to compare basic principles of inheritance and evolutionary change at the molecular, cellular, and organismal levels.
2. Apply the scientific method and techniques to answer biological questions, using formal practices of observation, experimentation, hypothesis testing, quantitative analysis, and mathematical reasoning.
3. Evaluate, synthesize, and communicate biological information from the scientific literature.
4. Recognize the relevance of cell and molecular principles, genetics, and evolution, to social decision-making, their lives, and society.

Required Materials. *Campbell Biology*, 11th edition (2017), by Urry, Cain, Wasserman, Minorsky & Reece. Pearson, New York (ISBN 978-0134093413). This book is available for rent at the bookstore.

The BIOL 110 Lab Manual is purchased with course fees and will be distributed in lab.

Protective lab goggles are required and available for purchase at the bookstore.

A dedicated notebook for the course is highly recommended.

Exams, Assignments, and Grading. Your final grade will be based on 430 points. *Be aware that as campus circumstances change, so might assignment schedules and grading expectations.*

BIOL 110	points
3 midterm Exams	150
Final Exam	100
Lecture Quizzes	60
Group Discussions	15
Lab Exercises	60
Lab Quizzes	45
TOTAL	430

Midterm Exams. — There are three, 50-point midterm exams (50 points each). These exams will contribute 150 points to the total (35%). Exams may include matching, multiple choice, short-answer, and essay type questions. These exams will NOT be cumulative — they will only cover material since the previous exam.

Final Exam. — The cumulative final exam is worth 100 points (23%) and will cover material from the entire course.

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. Your five lowest lecture quizzes will be dropped from the finally tally, for a total of 60 points (14%).

Group Discussions. — We will occasionally suspend lecture to discuss articles or book chapters that supplement textbook material. Readings and associated assignments will be posted on the Canvas website. Your participation will be assessed based on three, 5-point group exercises (15 points, 3%).

Labs. — The remainder of the points will come from labs. Each lab session will have an associated 5-point assignment, and the lowest-scoring lab assignment will be dropped (60 points, 14%). There will also be a 5-point lab quiz associated with each in-person lab session, again dropping the lowest score (45 points, 10%).

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.

Laboratory. YOU MUST DRESS APPROPRIATELY FOR LAB.

- You MUST wear shoes — not sandals, flip-flops, or similar options that do not protect your feet. It is recommended that you wear clothes that you won't mind getting grubby.
- Protective eyewear must be worn when there is a splash risk of chemicals more hazardous than water.
- FAILURE TO COMPLY WILL RESULT IN YOUR REMOVAL FROM LAB UNTIL YOU ARE PROPERLY ATTIRED.

Exam and Quiz Rules. The following apply to exam periods as well as lecture and lab 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, lab, and exam sessions except for officially excused reasons.

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 observances 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, and make-up exams must be completed before graded exams are handed back (i.e., by the following Tuesday at 8 AM).

- **E•mer•gen•cy** |i'mərjənsē| (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 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.

Disabilities. Students with disabilities are welcome and encouraged in this class. Students with disabilities should contact the [Disability Resource Center](#) during the first two weeks of the semester to request their specific necessary accommodations.

BIOL 110-01/110-01H Lecture and Lab Schedule

wk	day	date	#	Lecture	Ch.	pp.	Lab
1	M	5-Sep		LABOR DAY — NO CLASSES			NO LAB
	W	7-Sep	0	Welcome to BIOL 110!			
	F	9-Sep	1	Evolution, the Themes of Biology, & Scientific Inquiry	1.1-1.4	2-24	
CHEMISTRY OF LIFE							
2	M	12-Sep	2	The Chemical Context of Life	2.1-2.4	28-41	Introduction to Scientific Investigation (pp. 1-14)
	W	14-Sep	3	The Importance of Water & Carbon	3.1-4.3	44-64	
	F	16-Sep	4	Carbohydrates & Lipids	5.1-5.3	66-75	
3	M	19-Sep	5	Proteins & Nucleic Acids	5.4-5.6	75-87	Lab Basics: Measurements & Microscopes (pp. 15-38)
	CELLS						
	W	21-Sep	6	Nucleus, Ribosomes, Mitochondria, & Chloroplasts	6.1-6.4	93-108	
	F	23-Sep	7	Endomembrane System & Cytoskeleton	6.5-6.8	109-123	
4	M	26-Sep	8	Membrane Structure & Function	7.1-7.5	126-141	Using Microsoft Excel for Quantitative Analyses (online lab) (pp. 39-62)
	W	28-Sep	9	Introduction of Metabolism	8.1-8.5	143-161	
	F	30-Sep	D1	Discussion 1			
5	M	3-Oct	10	Cellular Respiration & Fermentation	9.1-9.6	164-184	Diffusion & Osmosis (pp. 63-76)
	W	5-Oct	R1	Synthesis & Review			
	F	7-Oct	E1	EXAM 1 (Lectures 1-9, Discussion 1)			
6	M	10-Oct	11	Photosynthesis, part 1	10.1-10.5	187-207	Enzymatic Activity of Catalase (pp. 77-88)
	W	12-Oct	12	Photosynthesis, part 2			
	F	14-Oct	13	Cell Communication	11.1-11.5	212-231	
7	M	17-Oct	14	Mitosis & the Cell Cycle	12.1-12.3	234-250	Alcoholic Fermentation (pp. 89-100)
	GENETICS						
	W	19-Oct	15	Meiosis & Sexual Life Cycles	13.1-13.4	254-267	
	F	21-Oct	D2	Discussion 2			
8	M	24-Oct	16	Mendel's Laws of Inheritance	14.1-14.2	269-278	Plant Pigments & Photosynthesis (pp. 101-114)
	W	26-Oct	17	More Complex Patterns of Inheritance	14.3-14.4	278-290	
	F	28-Oct	18	The Chromosomal Basis of Inheritance	15.1-15.5	294-311	
9	M	31-Oct	19	Discovery of the Role of DNA	16.1	314-319	Mitosis & Meiosis (pp. 115-132)
	W	2-Nov	R2	Synthesis & Review			
	F	4-Nov	E2	Exam 2 (Lectures 10-18, Discussion 2)			
10	M	7-Nov	20	DNA Replication	16.2-16.3	320-332	Mendelian Genetics (pp. 133-154)
	W	9-Nov	21	The Central Dogma of Biology, part 1	17.1-17.5	335-360	
	F	11-Nov	22	The Central Dogma of Biology, part 2	17.1-17.5	335-360	
11	M	14-Nov	23	Regulation of Prokaryotic Gene Expression (Operons)	18.1	363-367	DNA replication & the Central Dogma (pp. 155-172)
	W	16-Nov	24	Regulation of Eukaryotic Gene Expression	18.2-18.5	368-392	
	F	18-Nov	D3	Discussion 3			
12	M	21-Nov	25	Viruses	19.1-19.3	396-411	NO LABS
	W	23-Nov	26	PCR, Electrophoresis, & DNA Sequencing	20.1-20.2	413-426	
	F	25-Nov		THANKSGIVING — NO CLASSES			
13	M	28-Nov	27	Prokaryotic vs. Eukaryotic Genomes	21.1-21.6	440-462	Analyzing Coronavirus Infection Data in W1 (online lab) (pp. 189-206)
	W	30-Nov	R3	Synthesis & Review			
	F	2-Dec	E3	Exam 3 (Lectures 19-26, Discussion 3)			
MECHANISMS OF EVOLUTION							
14	M	5-Dec	28	Theory of Natural Selection	22.1-22.3	466-482	Microbiology Techniques (pp. 207-216)
	W	7-Dec	29	Evolution of Populations	23.1-23.4	484-502	
	F	9-Dec	30	Origin of Species	24.1-24.4	504-521	
15	M	12-Dec	31	Early Evolutionary History of Life	25.1-25.6	523-547	Modeling Evolution (pp. 217-230)
	W	14-Dec	R4	Synthesis & Review			
	F	16-Dec	F	COMPREHENSIVE FINAL EXAM 10:15 AM-12:15 PM			