

BIOL 110-01 Principles of Biology I

Fall 2021

Lecture M W F 11:00 – 11:50 AM in SCI D102, all labs in CBB 126

Lab **01L1** Tu 9:00 AM – 11:50 AM

Lab **01L2** Th 9:00 AM – 11:50 AM

Lab **01L3** W 1:00 – 3:50 PM

Lab **01L4** Th 1:00 – 3:50 PM

Lab **01L5** Tu 1:00 – 3:50 PM (Prof. Sipiorski)

Instructor:	Prof. Daniel Graf	Course web	Canvas site at
Office:	CBB 344	site:	https://www.uwsp.edu/canvas/
email:	dgraf@uwsp.edu	Office Hours:	W 9 -11 AM (zoom or in-person)
	("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.

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

The lab manual chapters will be distributed electronically each week via Canvas, and hard copies will be available to borrow and share during lab sessions.

A dedicated notebook for the course is highly recommended.

BIOL 110 Principles of Biology I

Exams, Assignments, and Grading. Your final grade will be based on 358 points. *Be aware that as campus circumstances change, so might assignment schedules and grading expectations.*

Midterm Exams. — There are three, 50-point midterm exams (50 points each). The lowest score of the three will be dropped, so these exams will contribute 100 points to the total (28%). Exams will 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.

BIOL 110	points
3 midterm Exams	100
Final Exam	100
Lecture Quizzes	58
Group Discussions	15
Lab Exercises	50
Lab Quizzes	35
TOTAL	358

Final Exam. — The cumulative final exam is worth 100 points (28%) 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. Any daily quiz points acquired above 58 are “bonus” points (16%).

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 total points, 4%).

Labs. — The remainder of the points will come from labs. Each lab session will have an associated 5-point assignment, and the three lowest-scoring lab assignments will be dropped (50 points, 14%). There will also be a 5-point lab quiz associated with each in-person lab session, again dropping the three lowest scores (35 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 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, lab, 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, and make-up exams must be completed before graded exams are handed back (i.e., by the following Tuesday at 9 AM).

- **E•mer•gen•cy** |i'mɛrjənsē| (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.

While [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 110 Lecture and Lab Schedule

Wk	day	date	#	Lecture	Ch.	pp.	Lab	
1	F	3-Sep	0	Welcome to BIOL 110!			NO LABS	
2	M	6-Sep		LABOR DAY — NO CLASSES			Introduction to Scientific Investigation (online lab)	
	W	8-Sep	1	Evolution, the Themes of Biology, & Scientific Inquiry	1.1-1.4	2-24		
	CHEMISTRY OF LIFE							
	F	10-Sep	2	The Chemical Context of Life	2.1-2.4	28-41		
3	M	13-Sep	3	The Importance of Water & Carbon	3.1-4.3	44-64	Lab Basics: Measurements & Microscopes	
	W	15-Sep	4	Carbohydrates & Lipids	5.1-5.3	66-75		
	F	17-Sep	5	Proteins & Nucleic Acids	5.4-5.6	75-87		
CELLS								
4	M	20-Sep	6	Nucleus, Ribosomes, Mitochondria, & Chloroplasts	6.1-6.4	93-108	Using Microsoft Excel for Quantitative Analyses (online lab)	
	W	22-Sep	7	Endomembrane System & Cytoskeleton	6.5-6.8	109-123		
	F	24-Sep	D1	Discussion 1				
5	M	27-Sep	8	Membrane Structure & Function	7.1-7.5	126-141	Diffusion & Osmosis	
	W	29-Sep	9	Introduction of Metabolism	8.1-8.5	143-161		
	F	1-Oct	10	Cellular Respiration & Fermentation	9.1-9.6	164-184		
6	M	4-Oct	11	Photosynthesis, part 1	10.1-10.5	187-207	Enzymatic Activity	
	W	6-Oct	12	Photosynthesis, part 2				
	F	8-Oct	E1	EXAM 1 (Lectures 1-10 + Discussion 1)				
7	M	11-Oct	13	Cell Communication	11.1-11.5	212-231	Plant Pigments & Photosynthesis	
	W	13-Oct	14	Mitosis & the Cell Cycle	12.1-12.3	234-250		
	GENETICS							
	F	15-Oct	15	Meiosis & Sexual Life Cycles	13.1-13.4	254-267		
8	M	18-Oct	16	Mendel's Laws	14.1-14.2	269-278	Mitosis & Meiosis	
	W	20-Oct	17	More Complex Patterns of Inheritance	14.3-14.4	278-290		
	F	22-Oct	18	The Role of Chromosomes	15.1-15.5	294-311		
9	M	25-Oct	19	Discovery of the Role of DNA	16.1	314-319	Mendelian Genetics	
	W	27-Oct	20	DNA Replication	16.2-16.3	320-332		
	F	29-Oct	D2	Discussion 2				
10	M	1-Nov	21	The Central Dogma of Biology, part 1	17.1-17.5	335-360	DNA replication & the Central Dogma	
	W	3-Nov	22	The Central Dogma of Biology, part 2				
	F	5-Nov	E2	EXAM 2 (Lectures 11-20 + Discussion 2)				
11	M	8-Nov	23	Regulation of Prokaryotic Gene Expression (Operons)	18.1	363-367	Analyzing Coronavirus Infection Data in WI (online lab)	
	W	10-Nov	24	Regulation of Eukaryotic Gene Expression	18.2-18.5	368-392		
	F	12-Nov	25	Viruses	19.1-19.3	396-411		
12	M	15-Nov	26	PCR, Electrophoresis, & DNA Sequencing	20.1-20.2	413-426	Microbiology & Molecular Techniques (part 1)	
	W	17-Nov	27	Transgenic Plants and other GMOs	20.3-20.4	431-437		
	F	19-Nov	D3	Discussion 3	38.3	834-838		
13	M	22-Nov	28	Prokaryotic vs. Eukaryotic Genomes	21.1-21.6	440-462	NO LABS	
	MECHANISMS OF EVOLUTION							
	W	24-Nov	29	Theory of Special Creation	22.1	466-469		
	F	26-Nov	THANKSGIVING — NO CLASSES					
14	M	29-Nov	30	Theory of Natural Selection	22.2-22.3	469-482	Microbiology & Molecular Techniques (part 2)	
	W	1-Dec	31	Evolution of Populations	23.1-23.4	484-502		
	F	3-Dec	E3	Exam 3 (Lectures 21-29 + Discussion 3)				
15	M	6-Dec	32	Origin of Species	24.1-24.4	504-521	Modeling Evolution	
	W	8-Dec	33	Early Evolutionary History of Life	25.1-25.6	523-547		
	F	10-Dec	34	Synthesis & Review				
16	Th	16-Dec	FE	FINAL EXAM 2:45-4:45 PM				