BIOL 110-01 Principles of Biology I
Fall 2019
Lecture T Th F @ 8:00 – 8:50 AM in CBB 135
Lab T @ 9:00 AM – 11:50 AM in CBB 126

Instructor:	Dr. Daniel L. Graf	Course web site:	Canvas site at https://www.uwsp.edu/canvas/
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email:	dgraf@uwsp.edu (include "BIOL 110" in subject)	Office Hours:	W 9 -11 AM, Th noon-2 PM

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 answering 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 lab manual, *BIOL 110 Lab Manual* and protective lab goggles are required and available for purchase at the bookstore.

A dedicated notebook for the course is recommended.

Exams, Assignments, and Grading. Your final grade will be based on 434 possible points.

BIOL 110	**points**
Lecture Exam 1	50
Lecture Exam 2	50
Lecture Exam 3	50
Daily Quizzes	64
Group Discussions	20
Lab Quizzes	75
Lab Reports	25
Final Exam	100
TOTAL	**434**

There are three lecture exams (50 points each) that constitute 35% of your total points. Lecture 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. The cumulative final exam is worth 100 points (23%) and will cover material from the entire course, emphasizing lecture material. Exams will be designed to test your mastery of the material as well as your ability to apply critical-thinking skills.

2-point quizzes will take place at the beginning of each lecture period. Questions will be short-answer format, and topics from preceding sessions as well as the lecture scheduled for that day are fair game. Any daily quiz points acquired above 64 are "bonus" points (15%).

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 a 5-point group exercise (20 total points, 5%).

We will have a 15-point quiz at the beginning of every other laboratory session. Your lowest quiz score will be dropped, for a total of 75 points (17%). Lab quizzes will test your knowledge of the material from the previous lab sessions as well as your preparation for the current session. There will also be a single lab report worth 25 points (6%) due at the end of the semester. Lab attendance will also directly impact your final grade (see below).

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 handling 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 (i.e., no MP3 players, tablets, phones, etc.)
- 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. You are expected to attend all lecture, lab, and exam sessions. Two unexcused absences from lab will result in a 1/3 reduction in your final grade.

If you will miss a class to participate in a college-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 (see URL below). In either case, Dr. Graf must be notified within the first three weeks of class regarding the specific dates that you will be absent.

https://docs.legis.wisconsin.gov/code/admin_code/uws/22

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 within one week or you will forfeit the points.

- **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.

https://www.uwsp.edu/dos/Pages/stu-academic.aspx

Remember: DR. 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.

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.

https://www.uwsp.edu/datc/Pages/default.aspx

BIOL 110 Principles of Biology I

Wk	Date	Day	#	Lecture/Reading	Ch.	pp.	Lab
1	3-Sep	T	0	Introduction to BIOL 110	—		NO LAB
	5-Sep	TH	1	Evolution, the Themes of Biology, and Scientific Inquiry	1	2-24	
				THE CHEMISTRY OF LIFE			
	6-Sep	F	2	The Chemical Context of Life	2	28-41	
2	10-Sep	T	3	Water & Life, Carbon & the Molecular Diversity of Life	3-4	44-64	Lab 1. Scientific Investigation
	12-Sep	TH	4	The Structure & Function of Large Biological Molecules I	5.1-3	66-75	
	13-Sep	F	5	The Structure & Function of Large Biological Molecules II	5.4-6	75-87	
				THE CELL			
3	17-Sep	T	6	A Tour of the Cell I	6.1-4	93-108	Lab 2. Measurements and Microscopes
	19-Sep	TH	7	A Tour of the Cell II	6.5-8	109-123	
	20-Sep	F	8	Membrane Structure & Function	7	126-141	
4	24-Sep	T	9	An Introduction to Metabolism	8	143-161	Lab 3. Cell Membranes and Osmosis
	26-Sep	TH	10	Cellular Respiration & Fermentation	9	164-184	
	27-Sep	F	*D1*	*Discussion 1*	*TBD*		
5	1-Oct	T	11	Photosynthesis	10	187-207	Lab 4. Enzymatic Activity
	3-Oct	TH	12	Cell Communication	11	212-231	
	4-Oct	F	**E1**	**EXAM 1 (#1-10 + D1)**			
6	8-Oct	T	13	The Cell Cycle	12	234-249	Lab 5. Cellular Respiration
				GENETICS			
	10-Oct	TH	14	Meiosis & Sexual Life Cycles	13	254-267	
	11-Oct	F	15	Mendel & the Gene Idea I	14.1-2	269-278	
7	15-Oct	T	16	Mendel & the Gene Idea II	14.3-4	278-290	Lab 6. Photosynthesis and Respiration in Plants
	17-Oct	TH	17	The Chromosomal Basis of Inheritance	15	294-311	
	18-Oct	F	18	The Molecular Basis of Inheritance I	16.1	304-319	
8	22-Oct	T	19	The Molecular Basis of Inheritance II	16.2-3	320-332	Lab 7. Mitosis and Meiosis
	24-Oct	TH	20	Gene Expression: From Gene to Protein I	17.1-3	335-347	
	25-Oct	F	*D2*	*Discussion 2*	*TBD*		
9	29-Oct	T	21	Gene Expression: From Gene to Protein II	17.4-5	347-360	Lab 8. Transmission Genetics
	31-Oct	TH	22	DNA Tools & Biotechnology I	20.1-3	413-431	
	1-Nov	F	**E2**	**EXAM 2 (#11-20 + D2)**			
10	5-Nov	T	23	DNA Tools & Biotechnology II	20.4	431-437	Lab 9. Biotechnology and GMOs I
	7-Nov	TH	24	Regulation of Gene Expression I	18.1	363-367	
	8-Nov	F	25	Regulation of Gene Expression II	18.2-5	368-392	
11	12-Nov	T	26	Viruses	19	396-411	Lab 9. Biotechnology and GMOs II
	14-Nov	TH	27	Genomes & their Evolution I	21.1-3	440-448	
	15-Nov	F	*D3*	*Discussion 3*	*TBD*		
12	19-Nov	T	28	Genomes & their Evolution II	21.4-6	448-462	Lab 9. Biotechnology and GMOs III
	21-Nov	TH	29	Descent with Modification: A Darwinian View of Life	22	466-482	Lab 10. Regulation of Gene Expression I
	22-Nov	F	30	Evolution of Populations I	23.1-2	484-491	
13	26-Nov	T	*D4*	*Discussion 4*	*TBD*		NO LAB
	28-Nov	TH		THANKSGIVING — NO CLASSES			
	29-Nov	F		THANKSGIVING — NO CLASSES			
				MECHANISMS OF EVOLUTION			
14	3-Dec	T	31	Evolution of Populations II	23.3-4	491-502	Lab 10. Regulation of Gene Expression II
	5-Dec	TH	32	The Origin of Species	24	504-521	
	6-Dec	F	**E3**	**EXAM 3 (#21-30 + D3-4)**			
15	10-Dec	T	33	History of Life I	25.1-3	523-535	Lab 11. Modeling Evolution
	12-Dec	TH	34	History of Life II	25.4-6	535-547	
	13-Dec	F	35	Synthesis & Review	—		**Lab Report Due!**
16	16-Dec	M	**F**	**COMPREHENSIVE FINAL (8-10 AM)**			