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# BIOLOGY 110 – Principles of Biology I

## Spring 2021 Course Syllabus

**Instructor:**

Dr. Michael Steury

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**Course Information:**

Lecture – Online - Canvas

Lectures posted MWF, view asynchronously

Lab - Room 126, Chemistry Biology Building (CBB)

Section 01L1 – Thursday; 1:00 pm – 3:50 pm (divided into 3 cohorts)

Office hours: Bring questions to your lab section or contact Dr. Steury to set up a one-on-one discussion via Zoom or in person

**Required Texts:** (Can be acquired at the university bookstore)

- Urry, Cain, Wasserman, Minorsky, Reece. 2017. **Campbell Biology**, 11<sup>th</sup> ed.
- **Biology 110 – Lab Manual** – the lab manual will be provided to you each week
- A notebook dedicated just to this class is recommended

**Course Description and Objective:**

“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. The objectives of BIOL110 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 BIOL110, 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.
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**Grading:**

Grade Items	% of Course Grade	Points
Exam I	10.5 %	50
Exam II	10.5 %	50
Exam III	10.5 %	50
Comprehensive Final	21.1 %	100
Quizzes	10.5 %	50 (10 @ 5 points each)
Lab Assignments	27.4 %	130 (13 @ 10 points each)
Lab Report	5.3 %	25
Group Discussions	4.2 %	20
<b>Total</b>	<b>100 %</b>	<b>525</b>

**Grade Scale:**

<b>A ≥ 93%</b>	<b>B+ ≥ 87%</b>	<b>C+ ≥ 77%</b>	<b>D+ ≥ 67%</b>	<b>F ≤ 59%</b>
	<b>B ≥ 83%</b>	<b>C ≥ 73%</b>	<b>D ≥ 60%</b>	
<b>A- ≥ 90%</b>	<b>B- ≥ 80%</b>	<b>C- ≥ 70%</b>		

**Grades will be posted on Canvas**

**Exams/Quizzes/Assignments:**

There will be three Exams given during the semester, and a comprehensive Final. Lecture exams will include matching, multiple choice, short-answer and essay type questions. Exams will be designed to test your mastery of the material as well as your ability to apply critical-thinking skills. All exams must be taken for a grade. Missed exams can only be made up upon instructor acceptance of documentation for an excusable absence.

Weekly quizzes will be given at the end of the last class each week. These quizzes will cover only material from that week and are meant to be assess whether you have attended and incorporated the content from lecture. There will be 10 quizzes (50 points) representing the available 5 points, your lowest quiz score will be dropped at the end of the semester. Quizzes will not be allowed to be made up unless communicated in advance by an excusable absence.

We will occasionally suspend lecture to discuss articles or book chapters that supplement textbook material. Readings and associated assignments will be posted on Canvas. Your participation will be assessed based on group exercises and student led Zoom meetings.

There will be a single lab report worth 25 points due at the end of the semester.

Extra credit opportunities are not available to individuals, so please do not inquire about this. If extra credit is offered, it will be communicated and made available to the entire class.

**Attendance Policy:**

- Your commitment to your courses will determine the success of the hybrid format!
- Because the class will be given asynchronously, attendance at all lectures and labs will not be formally required. **HOWEVER** you are expected to complete lectures and assignments by their assigned completion dates. Any missed assignments cannot be made up without instructor approved documentation for an excusable absence.

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- Excusable absences include illness, accident, family emergency, professional development activity, religious activity (see UWSP University Handbook Chapter 22), or university sanctioned event. Acceptable documentation is the instructor's discretion, but may be written or electronic documentation for the reason of absence. In the case you have an expected or unexpected absence, please contact the instructor **AS SOON AS POSSIBLE** to notify about the nature of the absence and determine if it can be excused.

Generally, missing any class will put you at a disadvantage in this and all courses. You are paying to attend this course and learn about Biology. Attending is the first step to getting your money's worth!

### **Academic Conduct:**

#### **Do not copy the work of other students; Do not represent the work of other students as your own; Do not share your work with other students**

You are responsible for the honest completion and representation of your work and for the respect of others' academic endeavors. Any action of cheating, plagiarism, or academic misconduct is subject to the penalties outlined in UWS University Community Rights and Responsibilities, Chapter 14. Please refer to the University Community Rights and Responsibilities rules and regulations for more information: <https://www.uwsp.edu/dos/Documents/CommunityRights.pdf#page=11>

Student assignments determined to be in violation of these policies will result in a grade of zero (0). Depending on the circumstance, students may receive further penalty in accordance with these policies.

### **Course Communication:**

Information about this course will be communicated through D2L and/or sent to University email accounts. Students are responsible for/expected to check their University email regularly. If you use an email account other than your University account to contact the instructor, be sure your full name is included in the message!

### **Electronic Devices:**

Cell phones should be turned **OFF** and **NOT BE USED** during class times. No other communication or musical devices are allowed. Students needing an electronic language dictionary during exams may use one with permission from the instructor (see below). No video or audio recording of lectures is permitted without the prior permission from the instructor (see below).

### **Students Seeking Assistance & Students Disabilities:**

As the instructor, it is my goal to meet the educational needs of ALL STUDENTS and to provide the best learning environment possible.

Any students seeking/considering use of assistive technology, materials, or accommodations are encouraged to talk with the instructor at the beginning of the course. It is my goal to find the most effective way to teach all students. Students with a disability seeking accommodations should also register with the Disability and Assistive Technology Center (<https://www.uwsp.edu/disability/Pages/default.aspx>) in the Learning Resource Center (the Library).

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## Suggested study habits:

It is often observed that people learn more when they encounter and interact with subject material in different ways. The following scale presents representative measures of how we might learn through different forms of interaction.

### You learn:

- 10% of what we **read**
- 20% of what we **hear**
- 30% of what we **see**
- 40% of what we **see & hear**
- 50% of what we **write**
- 60% of what is **discussed**
- 70% of what we **experience**, and
- 95% of what we **teach**

### *Before each class:*

- a) Read the textbook chapters and summary sections that pertain to the info in the lecture slides (Powerpoint). While reading, take notes on the side of each slide to help clarify the information discussed in class. These notes can be used as lecture slide guide sheets.

### *Before the exam:*

- a) **Rewrite your notes!** For each lecture, continue developing your lecture slide guide sheets and write out the information that was covered for each slide. Try to describe any images/figures on the slide in your own words. Try to do this for each lecture BEFORE the next lecture. Then read it over once to see the whole picture or overall theme of that lecture. When appropriate, make a table of info to help compare concepts.
- b) **Anticipate exam questions.** Come up with 1-2 questions of your own from each slide to quiz yourself later. Definitions, short answers, problems, and comparisons are all good types of questions.
- c) **Study your notes.** At the end of each week you will have made lecture slide guide sheets that include your notes for that material. Before the week's lectures, read over your lecture slide guide sheets and highlight only the information you could not remember.
- d) **Focus your studies.** Before the exam you will have made a set of lecture slide guide sheets with the information you need to reinforce already highlighted. Focus on this highlighted material one or two days before the exam. Reread, highlight info that you are having trouble learning or remembering and say it out loud, to yourself, with another person from class, a friend or study group.
- e) **Practice questions.** At the end of each chapter, try the practice questions (suggested on D2L) before looking at the answers in the back of the book. Write down the ones you do not understand and ask the instructor for guidance with those problems.
- f) **Revisit your study questions.** Try to answer the questions that you generated for each slide. Study with someone in class and try to answer each other's questions.
- g) **Teach your peers.** If you can teach it to another person, then you know it!

### *The night before the exam:*

- a) **Value your sleep.** Being wakeful and well rested can help your performance on the exam. Be sure to get a good night's sleep before the exam. Cramming at the expense of sleep is not the best method.
- b) **Try to relax.** Study hard, but also seek ways to reduce your stress. Take breaks to help refocus your mind.

### *After the exam:*

- a) A good grade can result from **reading** the text and your notes, **listening** to lectures, **seeing** the words and figures, **writing** and **rewriting** notes from class, the **experience** of answering questions from the chapters or provided, and **discussing** topics with another person (saying it out loud).
- b) Your grade should reflect the amount of cumulative effort you put into your studying. Remember, for every hour of lecture, you should a lot two hours of designated studying time. In other words, for each exam you should be spending about 10-15 hrs studying! It isn't possible to effectively achieve that right before an exam.

**BIOL-110 COURSE SCHEDULE – Introduction to Animal Biology, Steury**

Date		Topic	Chapter	
Jan.	25	Syllabus/Course Overview		
	27	Evolution, Themes of Biology	1	Exam I Content
	29	Chemical Context of Life <b>QUIZ</b>	2	
February	1	Water and Life; Carbon & the Molecular Diversity of Life	3-4	
	3	Structure & Function of Large Biological Molecules I	5.1-3	
	5	Structure & Function of Large Biological Molecules II <b>QUIZ</b>	5.4-6	
	8	Tour of the Cell I	6.1-4	
	10	Tour of the Cell II	6.5-8	
	12	<b>Discussion 1: Endosymbiosis Theory</b> <b>QUIZ</b>		
	15	Membrane Structure and Function	7	
	17	Introduction to Metabolism	8	
	19	Cellular Respiration and Fermentation <b>QUIZ</b>	9	
	22	Photosynthesis I	10	
March	24	Photosynthesis II	10	Exam II Content
	26	Cell Communication & Cancer	11	
	1	<b>EXAM 1 – Lectures 1-10</b>		
	3	Cell Cycle	12	
	5	Meiosis & Sexual Life Cycles <b>QUIZ</b>	13	
	8	Mendel & the Gene Idea I	14.1-2	
	10	Mendel & the Gene Idea II	14.3-4	
	12	Chromosomal Basis of Inheritance <b>QUIZ</b>	15	
	15	Molecular Basis of Inheritance I	16.1	
	17	<b>Discussion 2: Gap Junctions</b>		
19	Catch Up Day – No Lecture			
	***SPRING BREAK***			
	29	Molecular Basis of Inheritance II	16.2-3	
	31	Gene Expression: From Gene to Protein I	17.1-3	
	2	Gene Expression: From Gene to Protein II	17.4-5	Exam III Content
	5	<b>Exam 2 – Lectures 11-20</b>		
	7	Regulation of Gene Expression I	18.1	
	9	Regulation of Gene Expression II <b>QUIZ</b>	18.2-5	
	12	Viruses	19	
	14	DNA Tools and Biotechnology I	20.1-3	
	16	<b>Discussion 3: Coronavirus</b> <b>QUIZ</b>		
	19	DNA Tools and Biotechnology II	20.4	
	21	Genomes & Their Evolution	21.1-3	
	23	Genomes & Their Evolution <b>QUIZ</b>	21.4-6	
	26	Descent with Modification: A Darwinian View of Life	22	Final Exam + Cumulative Content
	28	Evolution of Populations I	23.1-2	
	30	Evolution of Populations II	23.3-4	
	3	<b>Exam 3 – Lectures 21-30</b>		
	5	History of Life I	25.1-3	
	7	History of Life II <b>QUIZ</b>	25.4-6	

10	Catch Up Day – Lecture TBD		
12	Synthesis and Review		
14	<b>Discussion 4: Evolution</b>		
<b>Comprehensive Final Exam: TBD (Week of May 17)</b>			

### Lab Schedule –

Wk	Lab Topic
2	<b>Scientific Inquiry</b>
3	<b>Quantitative Analysis &amp; Using Excel</b>
4	<b>Cell Membranes &amp; Osmosis</b>
5	<b>Enzymatic Activity</b>
6	<b>Cellular Respiration</b>
7	<b>Photosynthesis</b>
8	<b>Cell Division</b>
9	<b>Transmission Genetics</b>
10	<b>Transcription and Translation</b>
11	<b>Viruses</b>
12	<b>Regulation of Gene Expression</b>
13	<b>Biotechnology &amp; GMOs</b>
14	<b>Modeling Evolution</b>
15	<b>No Lab</b>

### **UWSP COVID-19 Mask Policy:**

This class will largely be conducted through Canvas and all resources will be provided online to you. Weekly labs will not be required for you to complete the course, but attendance is encouraged if you are healthy and able to attend. When you attend these in person sessions you must adhere to the UWSP policy on masks and social distancing.

#### Face Coverings:

- At all UW-Stevens Point campus locations, the wearing of face coverings is mandatory in all buildings, including classrooms, laboratories, studios, and other instructional spaces. Any student with a condition that impacts their use of a face covering should contact the [Disability and Assistive Technology Center](#) to discuss accommodations in classes. Please note that unless everyone is wearing a face covering, in-person classes cannot take place. This is university policy and not up to the discretion of individual instructors. Failure to adhere to this requirement could result in formal withdrawal from the course.
- Class cannot take place unless all people present are wearing masks. All content for this course will be available online as well as in person. If you are uncomfortable wearing a mask **please reach out to me before coming to class** so we can discuss alternative options.

#### Other Guidance:

- Please monitor your own health each day using [this screening tool](#). If you are not feeling well or believe you have been exposed to COVID-19, do not come to class; email your instructor and contact Student Health Service (715-346-4646).
  - As with any type of absence, students are expected to communicate their need to be absent and complete the course requirements as outlined in the syllabus.

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- Maintain a minimum of 6 feet of physical distance from others whenever possible.
  - Do not congregate in groups before or after class; stagger your arrival and departure from the classroom, lab, or meeting room.
  - Wash your hands or use appropriate hand sanitizer regularly and avoid touching your face.
  - Please maintain these same healthy practices outside the classroom.
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