General Biology (BIOL 101)

University of Wisconsin-Stevens Point at Wausau, Fall 2020, 5 Credits

Instructor: Dr. Kristine Prahl
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Lecture: 12:00 p.m. – 12:50 p.m. Mondays, Wednesdays and Fridays by Zoom
https://uwsp.zoom.us/j/95546231126?pwd=ZGgweWdnN0NkWXZGbHh0SHU2V241QT09
Meeting ID: 955 4623 1126
Passcode: 621455

Laboratory: 8:00 a.m. – 10:50 a.m. on predetermined Wednesday dates according to cohort groupings in room 277 for students in section 81872.
8:00 a.m. – 10:50 a.m. on predetermined Friday dates according to cohort groupings in room 277 for students in section 81873.

Lab Cohort Groupings: Cohort groupings have been posted under "People" on the course page in Canvas. Click on the "Group" tab to see your cohort's meeting dates. You must remain in your assigned cohort for the entire semester.

Virtual Zoom Office Hours: 1:15 to 2:45 PM on Tuesdays, Wednesday, Thursdays and Fridays
https://uwsp.zoom.us/j/93247315949?pwd=OEtiZlFtN0ZGaXpONm9SNlZjaUx6dz09
Meeting ID: 932 4731 5949
Passcode: 612597

Textbook: The required textbook is available free online at www.openstax.org/details/concepts-biology. If you prefer to purchase a hardcopy version, the ISBN-13 is 978-1-938168-11-6. The digital version ISBN-13 is 978-1-947172-03-6. Additional readings which offer more information and additional perspectives will also be provided.

Course Catalog Description

Biological principles; survey wide variety of plant and animal life.
Class Attributes: Lab Science (AAS), Natural World (AAS), and Natural Sciences (GEP)

Course Introduction and Learning Outcomes

This course is designed to help students appreciate biology and motivate students to keep on learning about biology after college. This course introduces non-major students to the basic principles of biology and acquaints them with the diversity of life. We will explore basic cellular-level processes, genetics and reproduction, evolution, biological diversity, animal physiology, and how organisms relate to one another within their environments, with special emphasis on the applicability and relevance of biological concepts, knowledge, and technology to average citizens. Students completing this course will attain varying levels of proficiency in their ability to:

1) Describe the diversity of living organisms.
2) Describe the components of the living cell.
3) Explain the metabolic and genetic systems of organisms.

4) Discuss how the functions of cells are accomplished.
5) Discuss the growth and reproductive processes of living organisms.
6) Use vocabulary of biology.
7) Describe how organisms influence each other and their environments.
8) Discuss how organisms are affected by each other and by their environments.
9) Design and carry out experiments to answer specific scientific questions.
10) Communicate scientific information in a clear and concise manner.
11) Solve problems through application of the scientific method.
12) Discuss biological principles including:
    - cellular level functions that are necessary for life
    - inheritance and evolutionary change
    - the diversity of animals and plants within an evolutionary context
    - the function of animal organ systems
    - the basic functioning of populations, communities, and ecosystems
13) Discuss the relevance of biological principles to their lives and society.

Course Expectations

Students are expected to "virtually" be present at all lectures or watch recordings of the lectures within 48 hours of the scheduled meeting time. Students will attend laboratory class sessions in person with their cohort group on their assigned cohort meeting dates. When coming to face-to-face meetings with your lab cohort, you will be assigned a seat, and you must use that seat the entire semester. Also, when attending in-person lab class sessions, students should not use ear buds, laptop computers, cell phones or other electronic devices in class unless they have spoken with the instructor about this first. The instructor and students are expected to show respect for everyone in the class. Respect should be shown for property of the college. Textbook reading assignments should be completed before the designated class meeting time. Students should come to the labs prepared, having read the introductory material (if any) before the designated time. Laboratory safety guidelines will be given to students and must be followed completely. Students may work together on assignments unless notified otherwise. However, students may not copy answers from each other as each person's answers must be in his or her own words. Examinations should be completed independently without using any books or notes. The policies found in chapter UWS 14 of the Wisconsin Administrative Code will be used in the case of suspected academic misconduct. For effective communication, you are expected to type and spell-check your work on assignments unless notified otherwise. Students should daily check their student email account and Canvas as class announcements and handouts and reading assignments will be given using one or both of these technologies. Scores on assignments and examinations will be posted on Canvas, and an estimation of your course grade will be kept updated during the semester on Canvas.

Care Team

The University of Wisconsin-Stevens Point is committed to the safety and success of all students. The Office of the Dean of Students supports the campus community by reaching out and providing resources in areas where a student may be struggling or experiencing barriers to their success. Faculty and staff are asked to be proactive, supportive, and involved in facilitating the success of our students through early detection, reporting, and intervention. As your instructor, I may contact the Office of the Dean of Students if I sense you are in need of additional support which individually I may not be able to provide. You may also share a concern if you or another member of our campus community needs support, is distressed, or exhibits concerning behavior that is interfering with the

academic or personal success or the safety of others, by reporting here: https://www.uwsp.edu/dos/Pages/Anonymous-Report.aspx.

Title IX

UW-Stevens Point is committed to fostering a safe, productive learning environment. Title IX and institutional policy prohibit discrimination on the basis of sex, which includes harassment, domestic and dating violence, sexual assault, and stalking. In the event that you choose to disclose information about having survived sexual violence, including harassment, rape, sexual assault, dating violence, domestic violence, or stalking, and specify that this violence occurred while a student at UWSP, federal and state laws mandate that I, as your instructor, notify the Title IX Coordinator/Office of the Dean of Students.

Please see the information on the Dean of Students webpage for information on making confidential reports of misconduct or interpersonal violence, as well as campus and community resources available to students. Dean of Students: https://www.uwsp.edu/DOS/sexualassault Title IX page: https://www.uwsp.edu/hr/Pages/Affirmative%20Action/Title-IX.aspx

Students with Disabilities

The University has a legal responsibility to provide accommodations and program access as mandated by Section 54 and the Americans with Disabilities Act (ADA). The university's philosophy is to not only provide what is mandated but also convey its genuine concern for one's total well-being. If accommodations are needed, please contact the instructor as well as the Disability and Assistive Technology Center (DATC), located on the Stevens Point campus. Students can also pick up an application for accommodations packet in the Solution Center.
DATC contact information:
(715) 346-3365 (Voice)
(715) 346-3362 (TDD only)
or via email at datctr@uwsp.edu

Academic Integrity

Academic Integrity is an expectation of each UW-Stevens Point student. Campus community members are responsible for fostering and upholding an environment in which student learning is fair, just, and honest. Through your studies as a student, it is essential to exhibit the highest level of personal honesty and respect for the intellectual property of others. Academic misconduct is unacceptable. It compromises and disrespects the integrity of our university and those who study here. To maintain academic integrity, a student must only claim work which is the authentic work solely of their own, providing correct citations and credit to others as needed. Cheating, fabrication, plagiarism, unauthorized collaboration, and/or helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. Failure to understand what constitutes academic misconduct does not exempt responsibility from engaging in it. For more information on UWS chapter 14 visit: https://www.uwsp.edu/dos/Pages/Student-Conduct.aspx

Recording of Lectures

Zoom recordings of the class lecture periods will be made and posted on our class Canvas site.

Laboratory Safety

Closed-toe shoes will also be required at all times when you are in the laboratory classroom. You should also wear long pants or a long skirt instead of shorts in the laboratory classroom.

Evaluation of Student Work

1) **Lecture Examinations (400 points)** There will be three lecture exams scheduled on class days during the semester. There will also be a comprehensive final lecture exam on December 16. All four of these exams will have a time limit and will be online, open-book and open-notes. Point values for each of the exams will be as follows:

Lecture Exam 1	100 points
Lecture Exam 2	100 points
Lecture Exam 3	100 points
Final Exam	100 points
Total	400 points

2) **Assignments (500 points)** These assignments will be given and graded throughout the semester for a total of 500 points. These assignments will give you an opportunity to apply what you have learned in lecture and in lab. Two of these assignments will be essays, one about homeostasis and the other about genetics, and each of these essays will be worth 50 points.

Dates and Topics of Lecture Examinations

September 28	Lecture material covered September 2 through September 25
October 19	Lecture material covered September 30 through October 16
November 23	Lecture material covered October 21 through November 20
December 16	Comprehensive final examination (includes lecture topics covered from September 2 through December 11)

Grading Scale

At the end of the semester, total points earned will be converted to letter grades using the following table:

≥92% = A	80-81%= B–	68-69% = D+
90-91% = A–	78-79% = C+	62-67% = D
88-89% = B+	72-77% = C	60-61% = D–
82-87% = B	70-71% = C–	<60 % = F

Absences and Tardiness

You are responsible for material covered in all class sessions, including class sessions that you miss partially or entirely. If you miss a lecture session, please watch the Zoom recording. If you miss an in-person lab cohort meeting, please check with your instructor.

Assignments must be handed in on time (this includes lecture and laboratory assignments that were given or due in your absence) unless your instructor has given you permission beforehand to hand in the assignment late.

Make-Up Labs and Exams

If you must miss a class session, please contact your instructor and also watch Zoom lecture recordings that you missed. Notify the instructor in advance if you need to reschedule an examination. An acceptable reason must be given for needing to reschedule the testing time. Your instructor will determine if the reason for rescheduling the examination is acceptable. Make-up examinations must be taken within 48 hours of the original test date unless unusual circumstances exist. If you have a reason to reschedule the final exam, please notify your instructor by December 10.

Late Assignments

Hand in assignments on time. If you are unable to hand in a lecture assignment or laboratory assignment on time, notify your instructor in advance of the due date. You must provide an acceptable reason for handing in an assignment late. Failure to hand in assignments on time may delay the grading of your work. You may lose some or all of the points from a late assignment if your instructor has not given you permission to hand in the assignment late. The late penalty will usually be a loss of 10% of the points per day.

Proper Use of Course Materials

Course materials and recordings for BIOL 101 are protected intellectual property at UW-Stevens Point. Students in this course may use the materials and recordings for their personal use related to participation in this class. Students may also take notes solely for their personal use. Students may not copy or share course materials and recordings outside of class, including posting on internet sites or selling to commercial entities. Students are also prohibited from providing or selling their personal notes to anyone else or being paid for taking notes by any person or commercial firm without the instructor's express written permission. Unauthorized use of these copyrighted lecture materials and recordings constitutes copyright infringement and may be addressed under the university's policies, UWS Chapters 14 and 17, governing student academic and non-academic misconduct.

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.

Health Guidance

1. 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.

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

Academic Support Services

UWSP at Wausau students have academic support resources available to them for FREE. The Tutoring-Learning Center (TLC) offers tutoring services including one on one and drop-in tutoring services, academic skills workshops, and one on one academic coaching appointments. For additional information please contact Megan Sippel, the Academic Success Coordinator, via email msippel@uwsp.edu or phone 715-261-6148.

International Module

BIOL 101 will include a course module written for the Midwest Institute for International and Intercultural Education. This module will be infused into the course throughout the semester, particularly during discussions of microbiology, virology, immunology, and epidemiology.

1. Module Title: The Global Nature of Bioterrorism (With a Focus on Anthrax, Plague, and Smallpox)
2. Description of Module: Bioterrorism has become an increasing concern worldwide in recent years. In this module, students will study the biological consequences of bioterrorism involving anthrax, plague and smallpox. Students will also consider the potential global impact of a bioterrorism event. The epidemiology and pathogenesis of anthrax, plague, and smallpox will be discussed. International research efforts (including vaccine development) related to these diseases will also be discussed in class.
3. Module Objectives:
    1) Understand the international nature of medical research.
    2) Describe how the World Health Organization (WHO) is preparing people for possible bioterrorist attacks.
    3) Describe the importance of global surveillance of unusual illnesses.
    4) Become familiar with the potential global consequences of a possible bioterrorist attack.
    5) Understand the differences between viral and bacterial diseases.
    6) Describe the epidemiology, pathogenesis, and treatment of anthrax, plague, and smallpox.
    7) Describe how smallpox was eradicated worldwide and how international cooperation was necessary to achieve such an accomplishment.
    8) Explain how vaccination can, in general, lead to immunity.
    9) Describe the pro and cons of vaccination against anthrax, plague and smallpox.
    10) Understand the nature of antibiotic resistance in bacteria.
    11) Understand the global implications of the existence of drug-resistant pathogens.

Tentative Lecture Schedule with Major Topics and Textbook References

September 2	Course introduction; Homeostasis; Levels of biological organization; Urinary system and excretion (Chapter 16.1)
September 4	Digestive system; Nutrition (Chapter 16.2)
September 9	Respiratory system and gas exchange (Begin chapter 16.3)
September 11	Circulatory system; Blood and cardiovascular disorders (Finish chapter 16.3 and References on Canvas)
September 14	Endocrine system and hormones (Chapter 16.4 and endocrinology case study) **-Homeostasis essay will be assigned, due electronically on September 21**
September 16	Muscular system; Skeletal system (Chapter 16.5)
September 18	Nervous system; Epilepsy (Chapter 16.6 and References on Canvas)
September 21	Viruses; Vaccines (Chapter 17.1)
September 23	Immune system and immune system diseases; Lymphatic system (Chapter17.2 through 17.4)
September 25	World-wide eradication of smallpox (References on Canvas)
September 28	**Lecture examination 1** (Online)
September 30	Reproduction (Begin Chapter 18)
October 2	Finish reproduction; Human development (Finish Chapter 18)
October 5	Characteristics of living things (Chapter 1.1); Biological chemistry and Biological molecules (Chapter 2)
October 7	Cell structure; Cell types (Chapter 3.1 through 3.4
October 9	Movement of molecules (Chapter 3.5 and 3.6) Enzymes; Metabolism; (Chapter 4.1)
October 12	Cellular respiration (Chapter 4.2 and 4.3)
October 14	Fermentation and other metabolic pathways (Chapter 4.4 and 4.5)
October 16	Photosynthesis: overview and the light-dependent reactions (Chapter 5.1 and 5.2)

October 19 **Lecture examination 2** (Online)

Tentative Lecture Schedule, Continued

October 21 Photosynthesis continued: the Calvin cycle (Chapter 5.3)

October 23 The cell cycle; Mitosis; Cell division; Cancer (Chapter 6)

October 26 Meiosis (Chapter 7.1 and 7.2)

October 28 Chromosomal alterations; Crossing over; Nondisjunction (Chapter 7.3)

October 30 Mendelian genetics; Pedigree analysis; Extensions of Mendel's laws (Chapter 8)

November 2 Chromosome structure; DNA structure (Begin chapter 9.1)

November 4 DNA replication; DNA mutations (Finish chapter 9.2)

November 6 DNA function; RNA structure and function; Transcription (Chapter 9.3)

November 9 Translation; Regulation of gene expression (Chapter 9.4 and 9.5)

November 11 Molecular biology; Genetic engineering; Cloning of genes; Genetically modified organisms; DNA fingerprinting; Gene therapy (Begin chapter 10)
-Genetics essay will be assigned, due electronically on November 18

November 13 Human Genome Project and applications (Finish chapter 10)

November 16 Evolution – definitions, genetic variation, adaptation, population genetics, Hardy-Weinberg equation (Begin chapter 11)

November 18 Types of selection (Chapter 11)
The diversity of life (Chapter 12)

November 20 Evolution - antibiotic resistance in bacteria (Reference on Canvas)

November 23 **Lecture Examination 3** (Online)

November 25 Bacteria, Anthrax; Plague; (Chapter 13.1; references on Canvas)

November 30 Overview of protists; Overview of fungi (Chapter 13.2, 13.3 and 13.4)

December 2 Overview and review of plants (Chapter 14)

Tentative Lecture Schedule, Continued

December 4	Population size, density and distribution; Survivorship curves; Exponential growth, Logistic growth, Carrying capacity, Factors affecting population growth (density-dependent and density independent) Age structure diagrams; Greenhouse gases; Defenses against predation; Niches; Symbiosis (Chapter 19)
December 7	Communities; Ecosystems; Food chains; Food webs; Trophic levels; Productivity; Biological magnification; Water and other biogeochemical cycles; Dead zones; Acid rain; Terrestrial biomes, Aquatic biomes (Chapter 20)
December 9	Biodiversity, threats to biodiversity and preserving biodiversity (Chapter 21); Discussion about ecological footprints
December 11	Review for final exam
December 16	**Comprehensive final exam** (Online)

Tentative Laboratory Schedule

September 2 through September 23

1. Online Activities
    a. Scientific Method
    b. Data Analysis and Graphing
    c. Circulation and Gas Exchange
2. One face-to-face cohort meeting to further discuss the online assignments (see Canvas for your meeting date)

September 25 through October 14

1. Online Activities
    a. Macromolecules and Cells
    b. Diffusion and Osmosis
    c. Enzymatic Activity
    d. Photosynthesis
2. One face-to-face cohort meeting to further discuss the online assignments (see Canvas for your meeting date)

October 16 through November 4

1. Online Activities
    a. The Cell Cycle, Mitosis and Meiosis
    b. Natural Selection
    c. Bacteria and Protists
2. One face-to-face cohort meeting to further discuss the online assignments (see Canvas for your meeting date)

November 6 through December 11

1. Online Activities
    a. Plant Diversity
    b. Animal Diversity
    c. Estimating Population Size
    d. Food Webs
2. One face-to-face cohort meeting to further discuss the online assignments (see Canvas for your meeting date)