UCONN
UNIVERSITY OF CONNECTICUT

BIOL 1107
Principles of Biology I
Fall 2025

No matter how we twist and turn, we shall eventually come back to the cell.
-Rudolf Virchow, 1858

Syllabus – Fall 2025

Excluding materials for purchase, syllabus information may be subject to change. The most up-to-date syllabus is located within the course in HuskyCT.

Course and Instructor Information

Course Title: Principles of Biology I
Credits: 4
Prerequisites: Previous coursework in chemistry or concurrent enrollment in CHEM 1127 is *recommended*

Professor: Dr. Derek Laux
Email: derek.laux@uconn.edu
Telephone: (860) 486 7963
Office Hours/Availability: T/R: 11AM-12PM; W: 12:15PM-1:15PM; or by appointment

Course Materials

Required course materials should be obtained before the first day of class.

Required textbooks are available for purchase through the UConn Bookstore (or use the Purchase Textbooks tool in HuskyCT).

Required Materials:

(1) Biology: How Life Works, 4th edition, Macmillan/Achieve. If you need assistance getting this book, please email gyl25004@uconn.edu

(2) Laboratory Manual

Course Description

Course Description from Course Catalog: Designed to provide a foundation for more advanced courses in Biology and related sciences. Topics covered include molecular and cell biology, animal anatomy and physiology. Lab exercises include dissection of preserved animals. CA 3-LAB

Alignment of Common Curriculum & Course Student Learning Objectives with Assessments

The Common Curriculum prepares students to tackle 21st-century challenges by combining coursework across disciplines to expand their worldviews, enhance their range of skills, and develop into critical, creative, emotionally intelligent, and interdisciplinary thinkers. The Curriculum is designed to help students learn to be versatile in a rapidly changing world; combine knowledge in innovative ways; apply learning strategies to new contexts, including their major; see local and global patterns and the interconnectedness of intellectual work; and appreciate how we need each other to tackle today's challenges.

The University has defined student learning objectives (what a student should know, be able to do, or attitudes/beliefs they should possess by the end of the course) for each Topic of Inquiry in the Common Curriculum. Each Common Curriculum course aligns to one or more of those objectives. The course's student learning objectives align to the Common Curriculum objectives; course assessment (assignments, exams/quizzes, etc) align to both the course learning objectives and the Common Curriculum objectives.

BIOL 1107 addresses TOI 6, parts 1 and 3:

1. Students will be able to explain and appropriately utilize basic scientific language and concepts.
3. Students will be able to solve problems described verbally, graphically, symbolically, or numerically.

The lab portion of BIOL 1107 addresses TOI 6L:

Through application-based experiences utilizing the scientific method, students will be able to identify problems, make observations, analyze data, interpret data, and develop models or explanations.

Please refer to the tables at the end of the syllabus to see how student learning objectives are mapped to the course assessments.

Course Objectives

1. Describe the molecular and structural foundations of cells, including membranes, organelles, and macromolecules.
2. Explain how cells obtain, transform, and use energy through processes such as respiration and photosynthesis.
3. Evaluate how multicellular organisms maintain homeostasis through nutrition, gas exchange, circulation, excretion, and other physiological processes.
4. Use scientific vocabulary effectively when communicating biological concepts.
5. Analyze primary literature in molecular and cell biology and physiology to build skills for reading and interpreting scientific literature.
6. Interpret and draw conclusions from experiments and scientific data in order to strengthen biological understanding.
7. Connect cellular and molecular processes to disease states and therapeutic interventions.

Course Requirements and Grading

Summary of Course Grading:

Course Components	Weight
Assessments (5)	40% (5 x 8%)
Weekly Quizzes	7.5%
Participation and In-class Activities	7.5%
Laboratory	45%

Assessments: Assessments will be given at the completion of each core module. Each assessment will cover lecture material from the preceding module and associated readings. Biology is an inherently cumulative discipline, and knowledge from earlier modules will be featured on each exam. With this in mind, please keep up to date with the material, and come speak with me if you are ever in need of help.

Weekly Quizzes: Short HuskyCT quizzes will be assigned most weeks to reinforce lecture material. Quizzes are low-stakes, auto-graded, and designed to help you keep up with the material.

In-class Assignments: Active learning activities will be incorporated into lecture and review sessions. Credit will be based on participation and completion, not correctness. Problem sets from a given module must be completed before their corresponding assessment. Completed problem sets from a core module are due at

the beginning of class on exam days.

Participation: A successful class will require readiness on everyone's part. Readiness to learn means coming to class being willing to ask questions and offer insight to our class discussions. Students are expected to attend class sessions, participate in assigned activities, and contribute to class discussions.

Laboratory: The laboratory course is outlined in the Lab Syllabus (see HuskyCT). Your final lab grade will make up 45% of your final BIOL 1107 grade. Please email your lab instructor regarding questions about grading and lab assignments.

Characteristics of Students Who can Excel in this Course:

- Identify personal weak spots they have with the material and come prepared to ask questions.
- Participate in class discussions and activities and are willing to help their classmates and, at the same time, be helped.
- Study for assessments at least one week or more in advance.
- Work collaboratively in laboratory and manage their time well with laboratory assignments.

Grading Scale:

Grade	Letter Grade
93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
63-66	D
60-62	D-
<60	F

Due Dates and Late Policy:

Assessments: All in-class assessments are mandatory. If you have an unavoidable conflict, I must be notified no later than two weeks before the scheduled exam so that a make-up exam can be scheduled. In the event of an unexpected illness, please notify me in advance of the exam, provide documentation for the excused absence, and schedule a date with me for a make-up examination. Note that make-up exams will have a different format than the scheduled exam. Failure to adhere to these policies will result in a 0 being given for that exam.

Quizzes and In-class Assignments: Attendance in BIOL 1107 is mandatory. No make-up quizzes or assignments will be given. Two assignments will be dropped at the completion of the semester to account for unexpected illnesses or conflicting events. Otherwise, you are responsible for attending class and completing assignments

Feedback and Grades: I will make every effort to provide feedback and grades within one week of submission. To keep track of your performance, check MyGrades on HuskyCT. You should be able to calculate your own grade at any point by using the grade calculator on HuskyCT, found under Course Content. Feel free to book a one-on-one with me for further clarification.

Late Work: If you do not turn in an assignment or quiz by the day of the exam AND you have not reached out to me to discuss an extension, you will not receive credit for those assignments or quizzes.

Dr. Laux's Keys for Success

(1) Keep up to date with assigned reading.
(2) Have fun in lab and earn those points!
(3) In all sincerity, I want each of you to succeed. With this in mind, please speak with me frequently if you are having any problems with the course. I am here to instruct and to help.
(4) Remember, biology has something to offer everyone. You may not love every lecture, but try to HAVE FUN! Knowledge about biology influences more of your life than you realize.

Student Responsibilities and Resources

Exams for students working with the Center for Students with Disabilities: If you have a disability, please do not hesitate to work with me for exam or classroom accommodations. The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please feel free to discuss options for class accommodation with me. Students needing special accommodations should work with the University's Center for Students with Disabilities (CSD). You may contact CSD by calling (860) 486-2020 or by emailing csd@uconn.edu. If your request for accommodation is approved, CSD will send an accommodation letter directly to your instructor(s) so that special arrangements can be made. (Note: Student requests for accommodation must be filed each semester.)

Blackboard measures and evaluates accessibility using two sets of standards: the WCAG 2.0 standards issued by the World Wide Web Consortium (W3C) and Section 508 of the Rehabilitation Act issued in the United States federal government." (Retrieved March 24, 2013 from http://www.blackboard.com/platforms/learn/resources/accessibility.aspx)

Academic Integrity: UConn's policy – A fundamental tenet of all educational institutions is academic honesty; academic work depends upon respect for and acknowledgement of the research and ideas of others. Misrepresenting someone else's work as one's own is a serious offense in any academic setting and it will not be condoned.
Academic misconduct includes, but is not limited to:

- Providing or receiving assistance in a manner not authorized by the instructor in the creation of work to be submitted for academic evaluation (e.g. papers, projects, exams)
- Any attempt to influence improperly (e.g. bribery, threats) any member of the faculty, staff, or administration of the University in any manner pertaining to academics or research
- Presenting as one's own work the ideas or words of another for academic evaluation
- Doing unauthorized academic work for which another person will receive credit or be evaluated
- Presenting the same or substantially the same papers or projects in two or more courses without the explicit permission of the instructors involved

A student who knowingly assists another student in committing an act of academic misconduct shall be equally accountable for the violation and shall be subject to sanctions and other remedies described in The Student Code at http://www.dos.uconn.edu/.

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. This section provides a brief overview of important standards, policies and resources.

Student Code

You are responsible for acting in accordance with the University of Connecticut's Student Code Review and become familiar with these expectations. In particular, make sure you have read the section that applies to you on Academic Integrity:

- Academic Integrity in Undergraduate Education and Research
- Academic Integrity in Graduate Education and Research

Cheating and plagiarism are taken very seriously at the University of Connecticut. As a student, it is your responsibility to avoid plagiarism. If you need more information about the subject of plagiarism, use the following resources:

- Plagiarism: How to Recognize it and How to Avoid It
- Instructional Module about Plagiarism
- University of Connecticut Libraries' Student Instruction (includes research, citing and writing resources)

Netiquette and Communication

At all times, course communication with fellow students and the instructor are to be professional and courteous. It is expected that you proofread all your written communication, including discussion posts, assignment submissions, and mail messages. If you are new to online learning or need a netiquette refresher, please look at this guide titled, The Core Rules of Netiquette.

Adding or Dropping a Course

If you should decide to add or drop a course, there are official procedures to follow:

- Matriculated students should add or drop a course through the Student Administration System.
- Non-degree students should refer to Non-Degree Add/Drop Information located on the registrar's website.

You must officially drop a course to avoid receiving an "F" on your permanent transcript. Simply discontinuing class or informing the instructor you want to drop does not constitute an official drop of the course. For more information, refer to the:

- Undergraduate Catalog
- Graduate Catalog

http://catalog.grad.uconn.edu/grad_catalog.htmlgrad_catalog.html

Students with Disabilities

The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020 or http://csd.uconn.edu/.

Evaluation of Course Experience

Students will be provided an opportunity to evaluate instruction in this course using the University's standard procedures, which are administered by the Office of Institutional Research and Effectiveness (OIRE).

Additional informal formative surveys may also be administered within the course as an optional evaluation tool.

Course Outline

Module 1: The building blocks of life
Module 2: How cells obtain and use energy
Module 3: The physiology of survival
Module 4: The life and death of the cell
Module 5: Current topics in biology

Class Meeting Schedule

Date	Topic(s)	Reading Assignment(s)
Week 1		
Aug-25	Introduction	
Aug-27	Introduction	
Aug-29	Carbon and Organic Molecules	2.1-2.5
Week 2		
Sep-01	Labor Day- No classes	
Sep-03	Nucleic Acids	4.1-4.2
Sep-05	Protein Structure	5.1
Week 3		
Sep-08	Protein Function and Control	5.1
Sep-10	Review	
Sep-12	Assessment 1	
Week 4		
Sep-15	Biological Membranes	3.2-3.3
Sep-17	Membranes and Transport	3.2-3.3
Sep-19	Energy and Enzymes I	6.1-6.5
Week 5		
Sep-22	Energy and Enzymes II	6.1-6.5
Sep-24	Cellular Respiration- Glycolysis and Pyruvate Oxidation	7.1-7.3
Sep-26	Cellular Respiration and Anaerobic Metabolism	7.4-7.6
Week 6		
Sep-29	Review	
Oct-01	Assessment 2	
Oct-03	Animal Nutrition I	39.2-39.3
Week 7		
Oct-06	Animal Nutrition II	39.4
Oct-08	Gas Exchange I	38.1-38.2
Oct-10	Gas Exchange II	38.3-38.4
Week 8		
Oct-13	The Heart	38.5
Oct-15	Homeostasis	33.3
Oct-17	Review	
Week 9		
Oct-20	Assessment 3	
Oct-22	Intro to Cellular Signaling	9.1-9.3

Oct-24	Cellular Signaling- RTKs and GPCRs	9.4-9.5
Week 10		
Oct-27	The Cell Cycle	11.1-11.4
Oct-29	DNA replication and repair	11.2
Oct-31	Mitosis	11.4
Week 11		
Nov-03	Meiosis	14.1
Nov-05	From DNA to Protein I	4.3-4.4
Nov-07	From DNA to Protein II	4.3-4.4
Week 12		
Nov-10	Control of Gene Expression	17.2-17.3
Nov-12	Review	
Nov-14	Assessment 4	
Week 13		
Nov-17	Electrical Signaling	35.1-35.2
Nov-19	The Neuron	35.1-35.2
Nov-21	The Nervous System	35.3
Week 14		
Nov-24	Thanksgiving Recess	
Nov-26	Thanksgiving Recess	
Nov-28	Thanksgiving Recess	
Week 15		
Dec-01	The Immune System I	42.1-42.4
Dec-03	Cancer and the Immune System	42.1-42.4
Dec-05	Current Topics in Biology	
Finals Week	Assessment 5	

Alignment of Common Curriculum & Course Student Learning Objectives with Assessments

The table below lists the course student learning objectives connected to TOI 6L. Details about course assessments are on the BIOL 1107 Lab HuskyCT page.

Course Student Learning Objective	Course Assessments	TOI 6 Alignment
Apply biochemical concepts to interpret biomolecular structure/function relationships and make predictions about how macromolecules will function in cells.	Exam 1, Exam 5, In Class Assignments, Learning Curve Adaptive Quizzes	1. Students will be able to explain and appropriately utilize basic scientific language and concepts. AND 3. Students will be able to solve problems described verbally, graphically, symbolically, or numerically.
Recognize how common macromolecules are formed and degraded in cells.	Exam 1, Exam 2, Exam 3, Exam 5, In Class Assignments, Learning Curve Adaptive Quizzes	1. Students will be able to explain and appropriately utilize basic scientific language and concepts. AND 3. Students will be able to solve problems described verbally,

		graphically, symbolically, or numerically.
Illustrate cellular processes including cellular respiration, membrane transport, cell division, and inter- and intracellular communication	In Class Assignments	1. Students will be able to explain and appropriately utilize basic scientific language and concepts. AND 3. Students will be able to solve problems described verbally, graphically, symbolically, or numerically.
Explain DNA structure and the key processes related to gene expression (replication, transcription, translation) in pro- and eukaryotes.	Exam 2, Exam 5, In Class Assignments, Learning Curve Adaptive Quizzes	1. Students will be able to explain and appropriately utilize basic scientific language and concepts. AND 3. Students will be able to solve problems described verbally, graphically, symbolically, or numerically.
Describe human organ systems. Compare human anatomy to other vertebrate and invertebrate examples.	Exam 4, Exam 5, Exam 5, In Class Assignments, Learning Curve Adaptive Quizzes	1. Students will be able to explain and appropriately utilize basic scientific language and concepts. AND 3. Students will be able to solve problems described verbally, graphically, symbolically, or numerically.
Interpret diagrams and graphs representing molecular and cellular biological phenomena.	All exams, In Class Assignments, Learning Curve Adaptive Quizzes	3. Students will be able to solve problems described verbally, graphically, symbolically, or numerically.

The table below lists the course student learning objectives connected to TOI 6, parts 1 and 3.

Course Student Learning Objective	Course Assessments
Use a micropipette, serological pipette, microscope, and other equipment to complete lab work.	Lab Quizzes (HuskyCT with practical components at the bench, observed by TA), Practical final exam
Solve metric system unit conversions.	Lab Quizzes (HuskyCT with practical components at the bench, observed by TA), Practical final exam, Pre-Lab and During-Lab assignments
Calculate and create molar and percent solutions and dilutions.	Lab Quizzes (HuskyCT with practical components at the bench, observed by TA), Practical final exam, Pre-Lab and During-Lab assignments
Communicate using common scientific research concepts: hypotheses, independent and dependent variables, controls, etc.	Pre-Lab and During-Lab assignments, Practical Final Exam
Create and analyze figures and tables to support conclusions.	Pre-Lab and During-Lab assignments, Practical Final Exam