

BIOL S105 - Introductory Information

Note: BIOL S105 is co-taught and divided into two parts. Each will count toward 50% of your grade.

Part I (105A) will be taught by Dr. Thomas Loreng and corresponds with the course BIOL 101 that is held during the fall and spring semesters.

Part II (105B) will be taught by Dr. Amaleah Hartman and corresponds with the course BIOL 102 that is held during the fall and spring semesters.

Please read the entire syllabus. This syllabus is a general guide, and subject to change if necessary.

General Class Structure

BIOL S105 will have live lectures Monday-Friday 10:30-12:15 EST from **May 26th - June 27th 2025**.

Students are expected to attend in-person in **TBD (Yale campus)**. During the scheduled class time, students will be participating in group activities, answering and asking questions, and presenting live.

Course Calendar

On Canvas.

Academic Integrity

Students are expected to read and understand “Appendix A” as outlined in the Yale Summer Session Handbook. A student violating the terms outline Appendix A of the Yale summer session handbook in any assignment, test, or examination in this class will receive a minimum penalty of a zero (0) for that exam, quiz or assignment, and may receive a grade of "F" for the course at the discretion of the instructors.

Late Policies

For homework assignments turned in on Canvas:

- 1% of the total score will be deducted for every hour that the submission is late (maximum of 50% lost).
- Corrupt or blank files will be counted as late. The countdown will end once a completed version is received. Therefore, **be sure to check your submissions after submitting.**

Class Attendance:

- For every 10 minutes late you are for class, you will lose 1 out of your total of 6 participation points for the lecture.

In-class Quizzes and Exams:

- If you are late for class on quiz/exam days, you will be subject to the same class attendance penalty above AND
 - Extra time will not be given to you for the quiz (e.g., if you are 10 minutes late into a 30 minute quiz, you will only have 20 minutes to take the quiz and will finish with everyone else).
 - There are no make up quizzes if you miss a quiz in its entirety.

Dr. Thomas Loreng - thomas.loreng@yale.edu

Office Hours: I tend to hang out after the lecture for a bit. Otherwise, schedule some time by emailing me!

GOALS: BIOL S105A will introduce the common macromolecules of life and their function. In short, we will investigate life at the molecular level. Experimental methods and rationales will be introduced. Students will be asked to interpret data and understand related research and its impact on society.

TEXTS: Life: The Science of Biology, 12th edition, By Sadava et al. Sinauer/ WH Freeman, publishers. The eBook of the 11th edition or 10th editions are acceptable, and I will list readings for all versions. All relevant lecture slides will be posted to Canvas before the lecture, and all additional assigned readings can be downloaded via the course website.

THE TEXTBOOK IS SUPPLEMENTAL ONLY. I do highly recommend it, but it is not necessary to succeed in the course. Nothing in the textbook will be tested on if it is not also in one of my lectures. You can find these items at the Yale Bookstore by clicking [HERE](#).

ASSESSMENT:

For BIOL S105A ONLY (50% of overall grade in BIOL S105):

- **Weekly Quizzes:** Three lecture periods will begin with a quiz (administered on paper) focused on material presented during the previous lectures. No information in the assigned readings that is not discussed in lectures will be on the quizzes or exam. You are responsible for information in lectures only. The quizzes make up **25%** of your grade.
- **Homework:** Will be posted on Canvas during the week, submit your work via Canvas on the due date **before** the due time. The homework assignments make up **30%** of your grade. You may discuss the assigned exercises with classmates but must compose and write the answers independently.
- **Final Exam:** Administered on paper during normal class hours on June 10th and will count for **35%** of your grade. This exam is cumulative.
- **Participation:** You will receive a score worth **10%** of your grade for participation in exercises and activities done in class, so come prepared and participate. All readings will be posted on Canvas (see below). This grade includes attendance. **ATTENDANCE IN BIOL S105A IS MANDATORY.** A student who is absent without prior authorization (through email) will receive 0 participation points for the day.

Keeping Yourself Organized:

The Pages tab on Canvas will contain a To Do List for each week the course. It will list the required and supplemental readings. By reading these materials **before** lecture, you can better prepare yourself for the content of said lecture. The To Do List will also contain due date reminders and links to any outside sources that may help in your learning.

Amaleah Hartman, Ph.D. (she/her) - amaleah.hartman@yale.edu

Office Hours: TBD

Required Text: No textbook required. Assigned readings will be uploaded to Canvas.

Course Description

The focus of BIOL 105B is the biology of a cell, the smallest unit of life, from a molecular perspective. We will learn how cells are studied and investigate our current knowledge of cell membranes, organelles, the cell's cytoskeleton, how cells move, grow and divide, and how cells respond and communicate with their environment and/or other cells. To cultivate your familiarity of the science behind what we know, we will discuss specific experimental techniques utilized to study the biology of cells and explore the historical context behind the biggest discoveries in cell biology.

The lectures are designed to be interactive. In addition to instructor presentations, we will often break into small groups to discuss problems and analyze data. These "pop" activities will be unannounced and may be turned in for participation EXTRA credit that will be added onto your Final Exam grade.

This course will also work on your skills in scientific reading. We will discuss how to read and interpret primary research articles, and how to construct precise and concise scientific writing in your weekly problem sets.

The course is designed both for students who have never studied biology before and also for students who completed an advanced high school biology course. It works for all levels of experience and knowledge because we focus not on memorizing facts, but rather on truly understanding the higher-order concepts that underlie the complexity of life at the cellular and molecular level. We also focus on critical thinking skills ("thinking like a scientist"), and on learning to read research papers from the primary scientific literature, which is often not emphasized in high school and will certainly be emphasized in upper level Biology courses.

Expected Learning Outcomes

Students from this class will:

1. Be able to identify the basic structures of a eukaryotic cell and understand how these structures relate to cellular function in diverse cell types.
2. Understand the storage, flow, and regulation of genetic information in cells, in the contexts of cell function and inheritance.
3. Understand how molecules move around the cell and across membranes.
4. Be able to draw and explain key aspects of the cell cycle and how they are regulated.
5. Understand how cells interact with their environment and communicate with each other.
6. Be able to analyze data relating to gene expression, cellular function and proliferation, and synthesize hypotheses regarding the regulation of fundamental cellular processes.
7. Understand tools, techniques, hypotheses and experiments that were used to generate our understanding of some of the key aspects of cell biology.
8. Understand the consequences of cell biology as they relate to human disease.

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Methods of Assessment

- Lecture activities (10%)
- 4 take home homework assignments (30%)
- 3 in-class quizzes, each over the previous three lectures (20%)
- 2 journal-club style small group participation (10%)
- 1 Final exam (30%)

Prerequisites

None.

Inclusion and Accessibility

In BIOL S105, we strive to be an inclusive community to all, and work to provide an enriching learning environment regardless of level of preparation, race, ethnicity, religion, gender, or sexual orientation. We aim to create an environment that promotes discussion, inquiry and diligence in understanding and respecting other viewpoints.

If you have a disability-related need for academic accommodations, please let us know as soon as possible even if you have not yet completed registration with the Student Accessibility Services. We will make every attempt to accommodate your disability-related needs.