

# Biology 1101: Introduction to Biology A

Summer 2022

**Lecture:** MTWRF 10:15 AM – Noon Section 910

**Recitation:** Immediately Following Lecture on Mondays and Wednesdays  
[Last 20+ minutes of scheduled lecture time]

**Lab:** TR 1:45 – 4:45 PM Section 911

TR 1:45 – 4:45 PM Section 912

## Welcome to Biology 1101 Summer Session I 2022!

Through in person lectures and problem solving sessions you will be learning general principles of biology. This course will be focusing on the basic chemistry of life, cell biology, molecular biology, and genetics in all types of living organisms. We will also try to foster your biological curiosity, critical reading skills and application of biological principles to current world problems.

### Course Objectives

Our goal is to impart to you the tools to be biologically competent so that you can understand the world around you better and be able to pursue more specialized biology courses in the future.

By the end of this course, you should be able to:

- Know what molecules and atoms are common to living systems on this planet
  - Understand the subset of chemical reactions common to living cells
  - Understand basic properties of proteins as they relate to the function of the protein
- Know how the First and Second laws of Thermodynamics apply to biological systems
- Describe the differences between eukaryotic, bacterial, and archaeal cells
- Describe the basic intracellular components of living cells
- Appreciate the importance of the components of the cell membrane in cell growth and survival
- Understand the flow of information from DNA to protein products
  - Understand how disrupting this flow at the molecular level results in mutations
  - Understand how the process is regulated in both bacterial and eukaryotic organisms
- Understand the difference between genotype and phenotype
  - Understand the relationship between genes and alleles
- Understand basic genetic relationships
  - Solve Mendelian-based inheritance problems
  - Solve more complicated inheritance issues
- Understand what a genome represents
  - Understand eukaryotic genome organization
  - Understand how the genome organization affects the flow of information from DNA to protein products

## Distribution of work for the entire course

|   |             |
|---|-------------|
| <b>Weekly exams [Best 4 of 5 exams]</b>           | <b>34%</b>  |
| <b>Comprehensive final exam</b>                   | <b>13%</b>  |
| <b>Participation</b>                              | <b>10%</b>  |
| <b>Graded assignments [9 in total]</b>            | <b>10%</b>  |
| <b>Lab Assignments [Detailed in Lab syllabus]</b> | <b>33%</b>  |
|   | <b>100%</b> |

## Instructor Contact and Availability

Dr. John Zimmerman

[johne@sas.upenn.edu](mailto:johne@sas.upenn.edu)

Recitation on MW immediately following lecture.

Office hours will be on Wednesdays and Fridays from 12:30 PM to 1:30 PM.

**Use Your Resources for Succeeding in Biol 1101.** The course covers a great deal of material in a short time! The most important strategy for success is to keep up with the work on a regular basis. For example, it is very useful to go over your lecture notes sometime later the same day in order to consolidate your learning and to clarify your lecture notes while the material is still fresh in your mind. In addition, as you review the material, formulate questions to ask during recitation sessions following lecture or during office hours. The optional recitations are your easiest access to and an excellent resource for additional help for this course. It's a regular chance to ask questions, hear discussions of difficult topics and other students' questions and ideas, and review old exam questions. If you encounter difficulties, feel free to see me during the multiple office hours [Dr. Zimmerman]; don't be shy! I'm here to help with the subject matter or for advice that you might need; you can also turn to your TA if you feel more comfortable.

Please contact me outside of lecture, recitation, or office hour, via email [johne@sas.upenn.edu](mailto:johne@sas.upenn.edu) with any issues about the course or to set up a zoom session. I will respond within 24 hours or sooner depending on the issue. Be aware any emails sent after 10 PM are likely not be responded to before 9 AM the next day. [Canvas Student Guide](#) is the place to start with any Canvas related issues.

## Biology 1101 Canvas Site

The Canvas site will be your first choice in staying informed on both lecture and laboratory course information. Make sure to check announcements frequently and that your email settings allow announcements from Canvas be received to your inbox.

## Text

### **"How Life Works" 3rd edition Morris et al editors.**

Purchasing the textbook through the Penn bookstore (or several other retailers) will give you an access code to setup a LaunchPad account. This is an online environment created by the publishers which some institutions use for in-person courses. THIS COURSE WILL ONLY BE USNG THE BILOGY 101 CANVAS SITE FOR ASSIGMENTS, QUIZZES, GRADING, ETC. NOT LAUNCHPAD. There are, however, review exercises and other aspects of the LaunchPad environment you may find useful

## Academic Integrity

Every member of the University community is responsible for always upholding the highest standards of honesty. Students, as members of the community, are also responsible for adhering to the principles and spirit of the Penn Code of Academic Integrity. More details about this policy can be found online at [University of Pennsylvania Code of Academic Integrity](#).

Scientific research is a collaborative process and we encourage the formation of online study groups and other collaborative team-based learning strategies.

However, for any written assignments you must follow the code of academic integrity. Students are prohibited from **“copying another person’s paper, article, or computer work and submitting it for an assignment”**. We will be using Turnitin on Canvas to screen for plagiarism.

## University Services

**Student Disability Services (SDS)**: The self-identification process is confidential and completely voluntary. However, instructors must receive official notification from SDS for those requesting accommodations and will not be able to institute them without official notification.

**The following pages have the lecture topics, evaluations, and reading by date.**

| Date    | Subject  | Reading                 | Assignments & Exams |
|---------|--|-------------------------|---------------------|
| May 23  | Course Introduction<br>Cell theory/definition of life<br>Chemistry of Life | 1.1-1.3<br>2.1-2.6      | Assignment 01       |
| May 24  | Nucleic Acids<br>Carbohydrates   | 3.1-3.3                 |                     |
| May 25  | Proteins   | 2.5, 4.1-4.3,<br>6.3    | Assignment 02       |
| May 26  | Enzyme Regulation & Kinetics   | 6.1-6.5                 |                     |
| May 27  | Lipids & Fats  | 5.1                     | Exam 01             |
| May 30  | <b>Memorial Day - No class and No Assignment</b>                           |                         |                     |
| May 31  | Characteristics of Living Cells  | 10.1                    |                     |
| June 1  | Fluid Mosaic Model<br>Channels, Receptors,<br>Transport Proteins           | 5.2, 9.3                | Assignment 03       |
| June 2  | Endomembrane system  | 5.4                     |                     |
| June 3  | Cytoskeleton<br>Mitochondria & Chloroplasts                                | 5.3, 5.5<br>10.2 – 10.4 | Exam 02             |
| June 6  | Metabolism: Glycolysis   | 7.2 – 7.4               | Assignment 04       |
| June 7  | Metabolism: ETC &  | 7.5 – 7.7               |                     |
| June 8  | Photosynthesis/<br>Cell signaling  | 8.1 - 8.4<br>9.1 – 9.5  | Assignment 05       |
| June 9  | Cell signaling/transduction  | 9.1 – 9.5               |                     |
| June 10 | Cell Cycle/ Mitosis  | 11., 11.2, 11.5         | Exam 03             |
| June 13 | <u>Cell Cycle gone Wrong:</u><br><u>Cancer / Meiosis</u>                   | 11.3, 11.6,<br>Case 2   | Assignment 06       |
| June 14 | Genes and Alleles<br>Phenotypes and genotypes                              | 14.1 – 14.4             |                     |
| June 15 | Mendelian Genetics   | 15.1 – 15.5             | Assignment 07       |
| June 16 | Non-Mendelian Genetics   | 16.1 -16.4              |                     |
| June 17 | Epistasis<br>Cytoplasmic Inheritance                                       | 16.5                    | Exam 04             |
| June 20 | <b>Juneteenth – No class and No Assignment</b>                             |                         |                     |
| June 21 | Central Dogma<br>DNA replication   | 12.1-12.2               | Assignment 08       |
| June 22 | Transcription  | 3.3 - 3.4               |                     |

|         |  |                    |               |
|---------|--|--------------------|---------------|
|         | Translation<br>Mutations & Peptides              | 4.2<br>14.2 – 14.5 |               |
| June 23 | Prokaryotic Transcriptional<br>regulation        | 18.3               | Assignment 09 |
| June 24 | Eukaryotic Transcriptional<br>Regulation         | 18.2               |               |
| June 27 | Epigenetics<br>Genetic Control of<br>Development | 18.1               | Exam 05       |
| June 28 | Genomes & Genomics                               | 19.1 – 19.5        |               |
| June 29 | <b>Comprehensive Exam – No Lecture</b>           |                    |               |