



ACES Academic Enrichment Center
2019 Summer Biology I Course Syllabus

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Textbook: OpenStax Biology 2e (<https://openstax.org/details/books/biology-2e>)

Course Description: This course is designed to give students an introduction to biology, making meaningful connections among the structures, processes, and interactions that exist across biological systems—from cells to ecological communities. The first part of this course (Biology I) will focus on two main areas: Cellular systems and genetics.

Course Objectives and Student Learning Outcomes:

Students will understand that...

- ⇒ Four classes of macromolecules serve as the primary building blocks of biological systems.
- ⇒ Biological systems have specialized structures that enable specific functions necessary to sustain life.
- ⇒ Biological systems must respond to changes in internal and external environments in order to maintain dynamic homeostasis.
- ⇒ In order to sustain complex processes, biological systems must have mechanisms for growth and repair.
- ⇒ The molecular structure of DNA enables its function of storing life's genetic information.
- ⇒ Encoded in DNA is the heritable information responsible for synthesis of RNA, which makes gene expression possible.
- ⇒ Organisms have diverse strategies for passing their genetic material on to the next generation.

Class structure: Each class meeting (except for the first one) will consist of some time at the beginning reviewing previous quizzes and homework. After that, there will be a mixture of lectures and activities to help students understand concepts being covered. Short quizzes will be given at the beginning of class to assess student understanding of material covered the previous day. For the first class day, a quiz will be given at the beginning of class to simply assess student background knowledge on the material being covered throughout the course. The last day of class will entail a comprehensive exam to assess student learning throughout the course. There will be an extensive review session prior to the exam. Reading should be done prior to class to increase comprehension of the subject material being discussed.

Class Notes: For this course, we are following the College Board's Pre-AP Biology content. We will be covering A LOT of information. I will do my best to cover only what needs to be covered and not throw too much information at you. The reading in the schedule is tentative, meaning that as we approach that particular lesson, I may change the reading assignment a bit. This would typically occur if I don't need you to read everything I specified in the original schedule.

Schedule (subject to change based on pace of learning):**WEEK 1:**

Date	Topic	Tentative Reading	Homework
7/8	Nature of Science & The Scientific Method Chemistry of Life	Ch. 1.1, Ch. 3, Ch. 6.1, Ch. 6.4-6.5	HW 1
7/9	Cell Structure and Function	Ch. 4	HW 2
7/10	Cell Transport and Homeostasis	Ch. 5	HW 3
7/11	Organisms Maintaining Homeostasis	Ch. 30, Ch. 34.3-34.4, Ch. 39.1, Ch. 39.4, Ch. 40.2-40.3, Ch. 41.1-41.2	HW 4
7/12	Cell Growth and Division	Ch. 10.1-10.3	HW 5

WEEK 2:

Date	Topic	Tentative Reading	Homework
7/15	Photosynthesis, Cellular Respiration & Fermentation	Ch. 7.1-7.6, Ch. 8	HW 6
7/16	Structure of DNA, DNA & Protein Synthesis	Ch. 14.1-14.5, Ch. 15	HW 7
7/17	Asexual and Sexual Passing of Genes	Ch. 43.1-43.2, Ch. 10.5, Ch. 11	HW 8
7/18	Biotechnology	Ch. 17.1	HW 9
7/19	Review Session & Comprehensive Exam		