

# Anatomy and Physiology I Lab (BIO201L)

## Course Materials

- Custom Lab Kit from [eScienceLabs.com](https://www.esciencekits.com/) (please use the “find my kit” button) which is \$211.65 (plus shipping); please enter this code [Kit5201] to ensure that you purchase the correct Lab<sup>1</sup>.

## Course Description

This lab-only course is designed as a standalone addition to StraighterLine’s Anatomy & Physiology I course. Students will complete at-home laboratory experiments, track and record results, answer lab-based questions reflected in graded lab reports, and complete lab-based assessments to meet the lab requirement. The labs are provided by eScience Labs, a leading provider of at home lab kits and online lab instructional materials and resources.

## Course Prerequisites

There are no prerequisites to take Anatomy & Physiology I Lab though we highly recommend concurrent enrollment in Anatomy & Physiology I (BIO201).

## Course Objectives

After completing this course, you will be able to:

- Describe the structural and functional organization of the body.
- Use anatomical terminology.
- Describe how the body maintains homeostasis.
- Relate chemistry to the field of anatomy and physiology.
- Describe how cells function and divide.
- Discuss the structures and functions of the integumentary, skeletal, muscular, nervous and endocrine systems.
- Describe how muscles, bones, and nerves work together to create movement.
- Describe the structure and function of sensory organs.
- Describe the interactions between various organ systems in the body.

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<sup>1</sup> Students also planning to enroll in StraighterLine’s Anatomy & Physiology II Lab course (BIO202L) can save money by purchasing a combined lab kit for \$330.65 (plus shipping) using the code [Kit5219].

## Important Terms

In this course, different terms are used to designate tasks:

- **Tutoring:** memberships include online tutoring for students to access with any content/subject related questions in the place of faculty. If your tutor is not able to answer your questions please contact a student advisor.
- **Lab Worksheets:** These are experiments that you will complete at home and be assessed on through online exercises.
- **Lab Exam:** A graded online test.

**Important Note:** All lab uploads must represent your own individual work. Even if you are working in a group with other students, each individual student must submit independent work. If you submit identical submissions or share submissions with another student, you will earn a zero for the assignment and will not earn credit for the course.

## Course Evaluation Criteria

StraighterLine provides a percentage score and letter grade for each course. See [Academic Questions](#) section in FAQ for further details on percentage scores and grading scale. A passing percentage is **70%** or higher.

If you have chosen a Partner College to award credit for this course, your final grade will be based upon that college's grading scale. Only passing scores will be considered by Partner Colleges for an award of credit<sup>2</sup>.

There are a total of 1000 points in the course<sup>3</sup>:

Topic	Assessment	Points
1	Introduction to Science Worksheet	83
	Lab Exam	42
2	Cell Structure and Function Worksheet	83
	Lab Exam	42

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<sup>2</sup> Please note that all required materials (as reflected in lab instructions) must be completed to be eligible for a transcript. Required materials include lab exercises (Worksheets) and digital photographs of laboratory exercises. If these files are not submitted, StraighterLine will not be able to provide students a final grade.

<sup>3</sup> Note that the actual total reflected here is 1125. However, your lowest lab worksheet and lowest lab exam grade will be dropped for a final total of 1000 possible points.

3	Mitosis and Meiosis Worksheet	83
	Lab Exam	42
4	Diffusion and Osmosis Worksheet	83
	Lab Exam	42
5	Tissues and Skin Worksheet	83
	Lab Exam	42
6	The Skeletal System Worksheet	83
	Lab Exam	42
7	The Muscular System Worksheet	83
	Lab Exam	42
8	The Nervous System Worksheet	83
	Lab Exam	42
9	The Endocrine System Worksheet	83
	Lab Exam	42
Total		1000

## Course Topics and Objectives

Lab	Title	Objectives
1	Introduction to Science	<ul style="list-style-type: none"> <li>• Define hypothesis and determine testable scenarios.</li> <li>• Explain the difference between accuracy and precision.</li> <li>• Perform various scientific calculations and conversions.</li> </ul>
2	Cell Structure and Function	<ul style="list-style-type: none"> <li>• Describe the functions of cells.</li> <li>• Describe the structure and function of the plasma membrane.</li> <li>• Explain the structures and functions of ribosomes, rough and smooth ER, the Golgi apparatus, secretory vesicles, lysosomes, peroxisomes, mitochondria, centrosomes, cilia, flagella, and microvilli.</li> </ul>
3	Mitosis and Meiosis	<ul style="list-style-type: none"> <li>• Explain the events of mitosis and cytokinesis.</li> <li>• Define genetics and explain the roles of chromosomes in inheritance.</li> <li>• Explain karyotype.</li> </ul>

		<ul style="list-style-type: none"> <li>• Describe the differences between mitosis and meiosis.</li> </ul>
4	Diffusion and Osmosis	<ul style="list-style-type: none"> <li>• Explain the ways that substances pass through the plasma membrane.</li> <li>• Discuss diffusion and list substances that diffuse across the cell membrane.</li> <li>• Explain osmosis and describe the differences among hypertonic, hypotonic, and isotonic solutions.</li> </ul>
5	Tissues and Skin	<ul style="list-style-type: none"> <li>• Describe the general characteristics and major functions of epithelial tissue.</li> <li>• Classify epithelial tissues based on number of cell layers and cell shapes.</li> <li>• Describe the various types of epithelial tissues, including their functions and locations.</li> <li>• Describe the various functions of connective tissues.</li> <li>• List the different types of connective tissues giving their locations, structures, and functions.</li> </ul>
6	The Skeletal System	<ul style="list-style-type: none"> <li>• List the components and describe the functions of the skeletal system.</li> <li>• Classify bones according to their shapes.</li> <li>• Describe the differences between the axial and appendicular skeletons and be able to list the bones of each.</li> <li>• Know the bones of the skull including their sutures and other features.</li> <li>• Explain the common features of the vertebrae and contrast the structure of vertebrae from each region.</li> <li>• Describe three different types of ribs.</li> <li>• Describe the various types of joint movements.</li> </ul>
7	The Muscular System	<ul style="list-style-type: none"> <li>• Compare and contrast skeletal, smooth, and cardiac muscle tissue.</li> <li>• Describe the connective tissue components of skeletal muscle.</li> <li>• Describe the structure of a neuromuscular junction, and explain how an action potential is transmitted across the junction.</li> <li>• Describe the sources of energy used to produce ATP in muscle fibers.</li> <li>• Name the muscles of the body and describe the locations and actions of each.</li> </ul>
8	The Nervous System	<ul style="list-style-type: none"> <li>• Explain the functions of the nervous system.</li> <li>• Describe the classification of neurons based on structure and function.</li> <li>• Describe the general structure of the spinal cord.</li> <li>• Describe the following types of reflexes: stretch reflex, a Golgi tendon reflex, a withdrawal reflex, and a cross extensor reflex.</li> <li>• Describe the major regions of the cerebellum and the functions of each.</li> <li>• Describe the functions of each cerebral lobe.</li> </ul>

		<ul style="list-style-type: none"><li>• Name the layers of the eye and describe the structures and functions of each part.</li></ul>
9	The Endocrine System	<ul style="list-style-type: none"><li>• Define hormone and target tissue.</li><li>• Explain the main patterns of hormone secretion.</li><li>• Explain the functions of the endocrine system.</li><li>• Describe the structure, location and function of the various glands of the body.</li></ul>