

Introduction to Biology Lab

Course Text/Materials

- Custom Lab Kit from eScienceLabs.com (please use the "find my kit" button) which is \$98.00; please enter this code [SLKIT1399] to ensure that you purchase the correct Lab.

Course Description

This lab-only course is designed as a standalone addition to StraighterLine's Introduction to Biology course. Students will complete at home laboratory experiments, track and record results and take lab-based assessments to meet the lab requirement. The labs are provided by eScience Labs, a leading provider of at home lab kits and supplemental online materials. This course will give the student a solid foundation for further study into laboratory sciences.

Course Objectives

After completing this course students will have,

- Learn how work to safely in the laboratory
- Understand how to make testable observations and hypotheses
- Explore key concepts in biology
- clearly define and relate all aspects of the cell cycle
- understand and describe each structure of the cell and their roles
- Explore photosynthesis
- Understand Mendelian genetics
- Discuss heredity and mutation
- Have an understanding of the Ecology of organisms
- Understand mutation.

Course Prerequisites

There are no prerequisites to take Introduction to Biology with Lab.

Important Terms

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

- **Labs:** These are experiments at home that you will complete and be assessed on through online exercises.
- **Lab Quiz:** A graded online test.

Course Evaluation Criteria

StraighterLine does not apply letter grades. Students earn a score as a percentage of 100%. 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.

There are a total of 500 points in the course*:

Topic	Assessment	Points
	Lab Safety	
1	The Scientific Method	
2	Cell Structure & Function	
3	Energy and Photosynthesis	
4	Mitosis	
5	Mendelian Genetics	
6	Population Genetics & Evolution	
7	Ecology of Organisms	
Total		500

*Please note that not every piece of the lab will carry a grade but any required materials (as reflected in lab instructions must be completed to be eligible for a transcript. Uploads required include lab exercises (Word documents) and digital photographs of laboratory exercises. If these files are not submitted StraighterLine will not be able to provide students a final grade.

Course Topics and Objectives

Topics	Title	Objectives
1	Lab Safety	<ul style="list-style-type: none">• Learn how to work safely in the laboratory• Learn when and how to use the safety equipment in the laboratory• Learn the names of the equipment used in the experiments
2	Lab: The Scientific Method	<ul style="list-style-type: none">• How to make testable observations• The roles of a hypothesis and null hypothesis• How to conduct a successful experiment• The role of variables and control in an experiment• The importance of organized data collection

		<ul style="list-style-type: none"> • Recognize what makes a successful analysis
3	Lab: Cell Structure & Function	<ul style="list-style-type: none"> • Explore key concepts in biology such as what is a cell? • Understand the differences between Prokaryotes and Eukaryotes • Recognize various aspects of Cell structure • Understand the Functions of cell structures
4	Lab: Energy and Photosynthesis	<ul style="list-style-type: none"> • Explore Photosynthesis • Understand light dependent reactions and light independent reactions • Identify Chloroplasts, Thylakoids and Grana, Iamella, Stroma • Describe the Calvin cycle
5	Lab: Mitosis	<ul style="list-style-type: none"> • Clearly define Chromosomes • Relate the Cell cycle • Understand Mitosis • Relate the order and purpose of Interphase, Metaphase, Anaphase, and Telophase • Define and discuss Cytokinesis
6	Lab: Mendelian Genetics	<ul style="list-style-type: none"> • Learn about Gregor Mendel • Understand the Law of segregation • Contrast Homozygous and Heterozygous • Review Dominant vs. recessive genes and their impact on genetics • Explore incomplete dominance and Co-dominance • Review Genotype and Phenotype • Create a Monohybrid cross and Dihybrid cross • Be able to replicate and test Punnett squares
7	Lab: Population Genetics & Evolution	<ul style="list-style-type: none"> • Define and understand the importance of gene pools, gene frequency, genetic variation and genetic drift • Explore the Founder effect • Understand Mutation • Discuss natural selection
8	Lab: Ecology of Organisms	<ul style="list-style-type: none"> • Have an understanding of the Ecology of organisms

		• Describe range of tolerance
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