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 though we highly recommend previous or concurrent enrollment in Introduction to Biology (BIO101).

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.
- **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

Privacy Policy | Student Handbook
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. ¹

There are a total of 1050 points in the course:²

<table>
<thead>
<tr>
<th>Lab</th>
<th>Assessments</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Scientific Method</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Lab exam: The Scientific Method</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>Cell Structure &amp; Function</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Lab exam: Cell Structure &amp; Function</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>Energy and Photosynthesis</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Lab exam: Energy and Photosynthesis</td>
<td>50</td>
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<tr>
<td>4</td>
<td>Mitosis</td>
<td>100</td>
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<tr>
<td></td>
<td>Lab exam: Mitosis</td>
<td>50</td>
</tr>
<tr>
<td>5</td>
<td>Mendelian Genetics</td>
<td>100</td>
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<tr>
<td></td>
<td>Lab exam: Mendelian Genetics</td>
<td>50</td>
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<tr>
<td>6</td>
<td>Population Genetics &amp; Evolution</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Lab exam: Population Genetics &amp; Evolution</td>
<td>50</td>
</tr>
<tr>
<td>7</td>
<td>Ecology of Organisms</td>
<td>100</td>
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<tr>
<td></td>
<td>Lab exam: Ecology of Organisms</td>
<td>50</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>1000</strong></td>
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</tbody>
</table>

¹ 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.

² Note that the actual total reflected here is 1050. However, your lowest exam grade will be dropped for a final total of 1000 possible points.
## Course Topics and Objectives

<table>
<thead>
<tr>
<th>Lab</th>
<th>Title</th>
<th>Objectives</th>
</tr>
</thead>
</table>
| 1   | Lab: The Scientific Method         | ‣ 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  
 ‣ Recognize what makes a successful analysis |
| 2   | Lab: Cell Structure & Function     | ‣ 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 |
| 3   | Lab: Energy and Photosynthesis     | ‣ Explore Photosynthesis  
 ‣ Understand light dependent reactions and light independent reactions  
 ‣ Identify Chloroplasts, Thylakoids and Grana, lamella, Stroma  
 ‣ Describe the Calvin cycle |
| 4   | Lab: Mitosis                       | ‣ Clearly define Chromosomes  
 ‣ Relate the Cell cycle  
 ‣ Understand Mitosis  
 ‣ Relate the order and purpose of Interphase, Metaphase, Anaphase, and Telophase  
 ‣ Define and discuss Cytokinesis |
| 5   | Lab: Mendelian Genetics            | ‣ 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 |
| 6 | Lab: Population Genetics & Evolution | • Define and understand the importance of gene pools, gene frequency, genetic variation and genetic drift  
• Explore the Founder effect  
• Understand Mutation  
• Discuss natural selection |
| 7 | Lab: Ecology of Organisms | • Have an understanding of the Ecology of organisms  
• Describe range of tolerance |