Course Description

Introduces all major areas of general biology. Highlights the relevance and contribution of this discipline to business, health care, policy creation, and other sciences.

Prerequisites

None

Course Textbook


Course Learning Objectives

Upon completion of this course, students should be able to:

1. Explain why it is important to acquire a basic knowledge of biology.
2. Categorize the organization of living things.
3. Discuss the role of evolution as the chief unifying principle of biology.
4. Discuss the different molecules of life such as carbohydrates, lipids, proteins, and nucleotides.
5. Explain how cells make proteins, lipids, and carbohydrates.
6. Explain how plant cells differ from animal cells and distinguish which organelles are specific to plant cells.
7. Explain the basic structure and composition of plasma membranes.
8. Name the three types of transport through membranes, indicate what type of molecule is transported by each, and explain what type of energy is required and if protein pores are needed.
9. Identify how the two laws of thermodynamics explain why some actions occur spontaneously while others do not, such as a rock rolling down a hill, and what are the different forms of energy.
10. Differentiate between exergonic and endergonic reactions and explain why the reactions are coupled in living organisms.
11. Explain why enzymes are so critical to living organisms and how enzymes function to hasten reactions.
12. Demonstrate where photosynthesis occurs, what organisms can perform photosynthesis, and why photosynthesis is so important for life on earth.
13. Explain what the reactions of photosynthesis are doing and why it is broken down into two different stages.
14. Describe the importance of DNA and differentiate between the following terms: genome, gene, chromatin, chromosomes, sister chromatids, the cell cycle, mitosis, and cytokinesis.
15. Demonstrate the events that occur during each of the two separate divisions of meiosis and distinguish the differences between meiosis and mitosis.
16. Explain the function of genes on human inheritance.
17. Describe the major features of the Watson-Crick model of the double helix, including the location of covalent bonds, hydrogen bonds, bases, phosphate groups, and pentose sugars, as well as the number of chains and how they are attached.
18. List the major steps in replication of DNA and describe how it ensures accuracy.
19. Understand what a mutation is, how mutations can be harmful or beneficial, and the consequences attributed to their location (either somatic or germ-line).
20. Define all associated key terms presented within each unit.
Credits

Upon completion of this course, the students will earn three (3) hours of college credit.

Course Structure

1. The Summary of Course Unit summarizes key issues in the assigned chapters and is supplemented with additional readings or Internet sources to provide broader subject matter application and professional relevance.

2. Unit Learning Objectives are available in each course unit.

3. Key Terms are available in each unit.

4. Learning Activities: The online learning activities for this course include:
   - Accessing and reviewing biological science information and
   - Using the CSU Online Library to access recent articles from peer reviewed journal if appropriate.

5. Reading Assignments include approximately 1-4 textbook chapters in each course unit.

6. Unit Assessments: Students are required to take unit assessments at the completion of units I, III, IV, VI, and VIII.

7. Laboratory Assignments (three) allow you to apply information from the course to current biological issues. Scientific article reviews and BioFlix and Web Animations direct you to key concepts.

8. Ask the Professor: This communication forum provides you with an opportunity to ask your professor general or course content related questions.

9. Student Break Room: This communication forum allows for casual conversation with your classmates.

Laboratory Assignments

Students are required to complete a total of three (3) lab exercises, with one following Unit II, another following Unit V, and the third and final lab following Unit VII of the respective course. Laboratory exercises in the course will be accomplished through assigned text readings, scholarly Internet research through provided links, and written responses that will be dependent on researching the required scholarly Internet research topics and links contained within each lab exercise. To gain a fuller appreciation of each exercise, students will assess and complete web-based interactive style lessons found within select research links of each lab.

After completing the required research, students will answer each of the given questions shown in each lab. Each lab exercise will contain researchable style essay questions as well as multiple choice or short answer questions or exercises that the student will submit for grading. Students are to cite corresponding references or source links within each of the assigned essay responses as required by CSU’s APA style guidelines.

When students complete a lab assignment, answers are to be submitted within Blackboard for instructor access and grading. Students must complete and submit the laboratory assignments at the Blackboard site.

Communication Forums

These are non-graded discussion forums that allow you to communicate with your professor and other students. Participation in these discussion forums is encouraged, but not required. You can access these forums with the buttons in the Course Menu. Instructions for subscribing/unsubscribing to these forums are provided below.

Once you have completed Unit VIII, you MUST unsubscribe from the forum; otherwise, you will continue to receive e-mail updates from the forum. You will not be able to unsubscribe after your course end date.

Click here for instructions on how to subscribe/unsubscribe and post to the Communication Forums.

Ask the Professor

This communication forum provides you with an opportunity to ask your professor general or course content questions. Questions may focus on Blackboard locations of online course components, textbook or course content elaboration, additional guidance on assessment requirements, or general advice from other students.
Questions that are specific in nature, such as inquiries regarding assessment/assignment grades or personal accommodation requests, are NOT to be posted on this forum. If you have questions, comments, or concerns of a non-public nature, please feel free to email your professor. Responses to your post will be addressed or emailed by the professor within 48 hours.

Before posting, please ensure that you have read all relevant course documentation, including the syllabus, assessment/assignment instructions, faculty feedback, and other important information.

Student Break Room

This communication forum allows for casual conversation with your classmates. Communication on this forum should always maintain a standard of appropriateness and respect for your fellow classmates. This forum should NOT be used to share assessment answers.

Grading

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Unit Assessments (5 @ 14% each)</td>
<td>70%</td>
</tr>
<tr>
<td>Laboratory Assignments (3 @ 10% each)</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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Course Schedule/Checklist (PLEASE PRINT)

The following pages contain a printable Course Schedule to assist you through this course. By following this schedule, you will be assured that you will complete the course within the time allotted.
By following this schedule, you will be assured that you will complete the course within the time allotted. Please keep this schedule for reference as you progress through your course.

<table>
<thead>
<tr>
<th>Unit I</th>
<th>A Guide to the Natural World and Fundamental Building Blocks</th>
</tr>
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</table>
| Review: | - Unit Study Guide  
- Several Web Animations from the publisher’s website are available to students using this text. To access these resources, follow the instructions in the course menu button “mybiology.com”. |
| Read: | - Chapter 1: Science as a Way of Learning: A Guide to the Natural World  
- Chapter 2: Fundamental Building Blocks: Chemistry, Water, and pH |
| Submit: | - Assessment |
| Notes/Goals: | |

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<thead>
<tr>
<th>Unit II</th>
<th>Life’s Components: Biological Molecules</th>
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</table>
| Review: | - Unit Study Guide  
- Several Web Animations from the publisher’s website are available to students using this text. To access these resources, follow the instructions in the course menu button “mybiology.com”. |
| Read: | - Chapter 3: Life’s Components: Biological Molecules |
| Submit: | - Laboratory Assignment I |
| Notes/Goals: | |

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<thead>
<tr>
<th>Unit III</th>
<th>The Cell and Plasma Membrane</th>
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| Review: | - Unit Study Guide  
- Several Web Animations from the publisher’s website are available to students using this text. To access these resources, follow the instructions in the course menu button “mybiology.com”. |
| Read: | - Chapter 4: Life’s Home: The Cell  
- Chapter 5: Life’s Border: The Plasma Membrane |
| Submit: | - Assessment |
| Notes/Goals: | |
# Course Schedule

## Unit IV
**Energy and Its Transformations (Part I)**

**Review:**
- Unit Study Guide
- Several Web Animations from the publisher's website are available to students using this text. To access these resources, follow the instructions in the course menu button “mybiology.com”.

**Read:**
- Chapter 6: Life's Mainspring: An Introduction to Energy
- Chapter 7: Vital Harvest: Deriving Energy from Food

**Submit:**
- Assessment

**Notes/Goals:**

## Unit V
**Energy and Its Transformations (Part II)**

**Review:**
- Unit Study Guide
- Several Web Animations from the publisher's website are available to students using this text. To access these resources, follow the instructions in the course menu button “mybiology.com”.

**Read:**
- Chapter 8: The Green World’s Gift: Photosynthesis

**Submit:**
- Laboratory Assignment II

**Notes/Goals:**

## Unit VI
**How Life Goes On: Genetics (Part I)**

**Review:**
- Unit Study Guide
- Several Web Animations from the publisher's website are available to students using this text. To access these resources, follow the instructions in the course menu button “mybiology.com”.

**Read:**
- Chapter 9: Genetics and Cell Division
- Chapter 10: Preparing for Sexual Reproduction: Meiosis

**Submit:**
- Assessment

**Notes/Goals:**
## Unit VII
### How Life Goes On: Genetics (Part II)

- **Review:**
  - Unit Study Guide
  - Several Web Animations from the publisher's website are available to students using this text. To access these resources, follow the instructions in the course menu button "mybiology.com".

- **Read:**
  - Chapter 11: The First Geneticist: Mendel and His Discoveries
  - Chapter 12: Units of Heredity: Chromosomes and Inheritance

- **Submit:**
  - Laboratory Assignment III

### Notes/Goals:

## Unit VIII
### How Life Goes On: Genetics (Part III)

- **Review:**
  - Unit Study Guide
  - Several Web Animations from the publisher's website are available to students using this text. To access these resources, follow the instructions in the course menu button "mybiology.com".

- **Read:**
  - Chapter 13: Passing on Life’s Information: DNA Structure and Replication
  - Chapter 15: The Future Isn't What It Used to Be: Biotechnology

- **Submit:**
  - Assessment

### Notes/Goals: