COURSE SYLLABUS

Introduction to Biology

Hello, and welcome!

Life. It’s all around us, but what is it? What characteristics do all living things share? What happens at the cellular level? What are the patterns of heredity and gene expression? And how do living things interact with their environments? The story of life is complex and fascinating. It started long before we were part of it and will continue long after we are gone. Biology is the study of life, and it seeks to answer these questions and many more. In this course, you will gain a foundational understanding of this remarkable science. You will explore the theories of life from biological research. And you will look at the fundamental concepts and principles of the study of living organisms. As you finish this course, you will have a better understanding of what life is and the story it tells.

We invite you to take a minute to learn about the course by reviewing the information that follows. This way, you will be better able to understand the expectations of the course as a whole. Then you can determine how to manage your time and efforts as you navigate through it.

You are in the right place. You belong here. You can do this!
Course Description and Competencies

What to Expect

In this course, you will work through three modules and nine units. Engaging with this material will build foundational knowledge of the science of biology. You will explore overarching theories of life from biological research. You will study key concepts and principles of the study of living organisms. You will look at how life evolves and adapts to the environment—and so much more.

Throughout the course, you will find readings and a variety of interactive elements. These include virtual labs and knowledge checks to help deepen your understanding of the content. Engaging with these activities reinforces new learning. It also complements the knowledge you bring to this area of study.

This course covers the following competencies:

1. The graduate analyzes the characteristics and classifications of living organisms.
2. The graduate analyzes the basic chemical composition of cells and the basic processes that happen at the cellular level.
3. The graduate analyzes different types of cells based on their structures and biological functions.
4. The graduate analyzes the biological basis for and patterns of heredity and gene expression.
5. The graduate analyzes inter-dependencies of organisms and their environments.

You will be assessed by the following criteria:

- 3 quizzes
- 1 final exam
- 3 competency units

You will have two attempts to pass each quiz.

The assessment provides an opportunity to demonstrate your mastery of the competencies in this course. You may attempt the assessment two times before additional support is necessary. If you require further attempts, please contact our support team at (888) 320-0540 or support@academy.wgu.edu.
## Course Outline

<table>
<thead>
<tr>
<th>Module</th>
<th>Upon completion of this unit, you will be able to:</th>
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<tbody>
<tr>
<td><strong>Foundations</strong></td>
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| **Unit 1: What is Life?** | A. Classify items as biotic or abiotic.  
B. Identify the levels of organization from atom to biome.  
C. Apply the process of scientific inquiry.  
D. Relate experimental design to scientific inquiry. |
| **Unit 2: Macromolecules** | A. Describe the subatomic particles that comprise an atom.  
B. Identify different types of chemical bonds.  
C. Identify the special properties of water.  
D. Describe the major characteristics of organic molecules.  
E. Identify carbohydrates, lipids, and proteins.  
F. Compare and contrast RNA and DNA. |
| **Unit 3: The Cell** | A. Compare and contrast animal and plant cells.  
B. Compare and contrast prokaryotic and eukaryotic cells.  
C. Describe the function of organelles.  
D. Describe how the cell membrane functions.  
E. Describe the different membrane transport mechanisms.  
F. Describe homeostasis. |
| **Cell Replication** | |
| **Unit 1: Metabolism** | A. Identify ATP as the major carrier for cells.  
B. Analyze cellular respiration.  
C. Analyze photosynthesis.  
D. Describe fermentation as an anaerobic process. |
### Unit 2: Cell Division

A. Compare and contrast mitosis and meiosis.  
B. Describe chromosomes.  
C. Describe the phases of the cell cycle.  
D. Describe the phases of mitosis.  
E. Describe the phases of meiosis.

### Unit 3: Classical Genetics

A. Describe the Law of Independent Assortment.  
B. Interpret the results of dihybrid and monohybrid crosses.  
C. Describe the Law of Segregation.  
D. Distinguish between genotype and phenotype.  
E. Identify patterns of inheritance.  
F. Identify how changes in chromosome number lead to disorders.

### DNA to Ecosystems

### Unit 1: Molecular Genetics

A. Describe the process of DNA replication.  
B. Identify how a change in the DNA code may affect phenotype.  
C. Identify translation.  
D. Identify transcription.  
E. Describe the flow of information between DNA, RNA, and proteins.

### Unit 2: Evolution

A. Analyze natural selection.  
B. Describe microevolution.  
C. Recognize the process of creating new forms of species.  
D. Describe the evidence for evolution.

### Unit 3: Ecology

A. Identify the levels of organization important to the study of ecology.  
B. Compare and contrast relationships between species.  
C. Describe how an ecosystem functions.  
D. Identify human activities that impact the environment.  
E. Recognize the importance of biodiversity.
Technology Requirements

We want you to have the tools to succeed! Since this course includes at least one proctored test, please be sure to have a working microphone, speakers, and an external webcam. Unfortunately, an internal webcam (built into many laptops) is not acceptable. (Note: The external webcam is required only for exams that have proctors. You do not need one for practice tests and other non-proctored assessments.) For other details about the technology you'll need, review the Computer System and Technology Requirements. If you have questions about your setup, contact support@academy.wgu.edu.

You will need Adobe Acrobat Reader DC. If you haven't already, download this free software. You may encounter an interactive form that contains fields that you can select or fill in. Review how to fill in a PDF form.

Key Contacts

Your Fellow Learners
Check out the Introduction to Biology Lobby in the course site! In this online community, you can ask questions and explore ideas. You can connect with your fellow learners. When you use this site, you will realize that other learners may have the same questions you have. You can all benefit from learning together!

Tutor.com
If you need academic support, don’t hesitate to contact Tutor.com. There, you have access to thousands of tutors. And they are available 24/7 from any internet-ready device. You can also benefit from instructional videos, study tools, and other assistance.

Technical Support
If you encounter technical issues, be sure to contact the Help Desk. Just submit a Support Request for assistance.

Program Support
Do you have questions about your account? Student Support has answers. They can help with billing, switching courses, and other requests. You can contact them at (888) 320-0540 or support@academy.wgu.edu.
Accommodations

WGU provides compliant and accessible learning experiences. If you require accommodation, please contact us at the start of the course. You can email Support@academy.wgu.edu or call (888) 320-0540. We are committed to ensuring that all students with disabilities have equal access to WGU's services and materials. We strive to use best practices for accessibility. Our goal is to conform to existing U.S. laws. These include the Americans with Disabilities Act and Section 504 and Section 508 of the Rehabilitation Act. Our learning management system (LMS) platform is Open edX. Open edX's commitment to accessible content is published on their Website Accessibility Policy.