

EASTERN KENTUCKY UNIVERSITY (EKU)
Syllabus and Course Objectives
BIO 101
Essentials of Biology
3 Credit Hours

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COURSE DESCRIPTION¹

Essentials of Biology. Biological principles and applications as relates to life on earth from the molecular to ecosphere scale; current topics in genetics, evolution, ecology, plant and animal diversity, and human biology will be discussed. May not be used to satisfy area, major, or minor requirements. Credit will not be awarded to students with credit in BIO 100 or BIO 102. 2 Lec/2 Lab. Gen. Ed. IVA. [NS].

Who should take this course?

This course is a three-hour general education course with lab designed for a general knowledge of biology for the non-biology major.

REQUIRED INSTRUCTIONAL MATERIALS

Biology Today & Tomorrow without Physiology 5th Cengage Learning
Cecie Starr, Christine A Evers, Lisa Starr
ISBN-13: 978-1-305-11739-6 and ISBN-10: 1-305-11739-5

How to access the e-text and assignments. When you register, make sure that you use your University Campus (UC) email address. Do not register more than once.

[Register for Cengage](#)²

Labster Access

- Labster: Virtual reality labs designed to teach specific topics and ideas; access required the first week of class. Registration details are in the course.

¹ <https://catalogs.eku.edu/>

² <https://www.cengage.com/student-training/mindtap/blackboard/ia-no>

Blackboard

- Blackboard [support](#)³
- Blackboard [log-on](#)⁴

Required Computer Resources

Since this is a 100% online course, students are expected to have a reliable internet connection and a computer with a fast enough processor to use Blackboard. All students are expected to use Microsoft Office 2010 or later to access and complete all assignments. Proficiency in Microsoft Excel is desired. Mozilla Firefox is the recommended browser to access Blackboard. Also, please ensure your computer can receive cookies and has the latest Java platform installed. **The course instructor will not reset assignments or give make-up assignments due to Internet failures.**

GENERAL EDUCATION GOALS FOR NATURAL SCIENCE COURSES

Students will be able to:

1. Use appropriate methods of critical thinking and quantitative reasoning to examine issues and to identify solutions. (GE Goal two)
2. Analyze the fundamental natural processes of the world and the interactions of human and their environment. (GE Goal five)
3. Distinguish the methods that underlie the search for knowledge in the arts, humanities, natural sciences, history, and social and behavioral sciences. (GE Goal seven)
4. Integrate knowledge that will deepen their understanding of, and will inform their own choices about, issues of personal and public importance. (GE Goal eight)

COURSE SPECIFIC STUDENT LEARNING OUTCOMES

Upon completing this course, students will be able to

1. Demonstrate an understanding of the value of biological research in daily life.
2. Apply the scientific method in the collection of data and in making valid conclusions on the functioning of biological systems.
3. Demonstrate their ability to use the scientific method to effectively evaluate biological information reported in popular media.
4. Exhibit an understanding of the scope and limitations of scientific observations in the realm of cell and molecular biology, genetics, evolution, ecology, the diversity of life, and the human body.
5. Integrate principles and methods in biological sciences to understand aspects of the dynamics, structure, and function of life.

GRADING AND PARTICIPATION

Course Requirements and Evaluation Methods

Students will complete 8 content modules, each consisting of one quiz (15 pts), one lab journal

³ <http://it.eku.edu/support/blackboard>

⁴ <http://www.learn.eku.edu>

assignment (quiz 5 pts, journal 15 pts), and one homework assignment (15 pts). In addition, there will be an introductory module (40 pts) due the first day of class. There will also be two group discussion boards (60 pts each) and a group mini project (50 pts) and a group major project (100 pts). A midterm exam will be given at the halfway point of the course (50 pts) and a final general education exam at the end of the course (50 pts). The total points possible for the course will be 800.

Assignment	Pts	Total Pts
Introductory module	40	40
Module 1-8 quizzes	15	120
Module 1-8 homework assignments	15	120
Module 1-8 laboratory (Labster quiz 5, journal 15)	20	160
Module discussion boards (total of 2)	60	120
Group Wiki mini-project for modules 1-4	50	50
Group Wiki major project for modules 5-8	100	100
Midterm exam	50	50
General education final exam	40	40
Total points for course		800

Grading and Participation

Online discussions, labs, homework, group projects, and quizzes will be due on or before the times designated in the tentative schedule. Participation in each discussion forum is mandatory. Failure to do so will result in no discussion credit for that module. All assignments have associated rubrics used for grading purposes – please see the rubrics posted in the introductory module and alongside these assignments. All grades will post to Blackboard. You may also use the table on this page to monitor your progress. All weekly module assignments, discussion boards, quizzes, and group projects will be graded by the end of the next assigned module week.

Homework Assignments (regular and case study):

Assignments will be given by the instructor that require reading and answering questions about the textbook chapters and the case studies selected by the instructor. Each homework assignment is worth 15 pts.

Quizzes:

Quizzes will be worth 15 points. The questions will be multiple choice, true/false, or matching, and will automatically be graded. Answers may be viewed only after the due date.

Group Projects (Mini WIKI and Major WIKI):

Group projects will be outlined by the instructor and will consist of a group of three-four students choosing a topic from a list provided by the instructor and developing a

mini project and a major project. A draft version of each project will be due a week earlier than the final draft, and will be submitted by each individual in the group for critique by the instructor as well as in the group discussion board for critique by your classmates. The final assembled project will be submitted by the entire group. The draft documents will be worth 20% of the grade for the entire project and the final draft worth 80%. Therefore, the mini project grade will be: 10 pts for draft and 40 pts for final version. The major project grade will be: 20 pts for draft and 80 pts for final version. See rubric for more information on grading for these assignments.

Discussion Boards:

Group discussion boards will be used as a method for discussion of the group projects; participation in these boards will be graded, and a rubric provided. Participation in these boards is mandatory, and lack of participation will decrease your grade both in the discussion boards and the group projects final grades. Each discussion board is worth 60 points (see rubric).

Exams:

There will be a midterm exam worth 50 points as well as a final general education exam (40 pts). These will consist of multiple choice, true/false, matching, short answer, or essay questions.

Make-up Policy:

Make-ups will only be offered if documentable extraordinary circumstances exist. In the event of extraordinary circumstances notification must be provided to instructor(s) prior to submission deadline and a written approved excuse must be provided.

Final Grade:

Grades are based on the following point system:

Ltr	Percent	Ltr	Percent	Ltr	Percent	Ltr	Percent	Ltr	Percent
A	90 - 100	B	80-89.9	C	70-79.9	D	60-69.9	F	< 60

Learning Resources:

1. Online [tutoring assistance](#)⁵ is available in a number of disciplines. Common Knowledge is available via Skype.
2. Smarthinking Tutoring is free online tutoring available to every eCampus student. Look for the direct link in the course.
3. The ECU [Noel Studio](#)⁶ for Academic Creativity provides assistance with brainstorming, drafting, revising, editing, writing, and research.
4. ECU provides [computer laboratories](#)⁷ for student use if you are within commuting distance of the main or a satellite campus. The Student Services Building computer lab and Student Technology Lab in the Crabbe Library are open extended hours throughout the year. All labs are staffed with trained personnel.
5. Your own individual learning style is important to consider when formulating a study plan. Please consider your own [learning preferences](#)⁸ and [tips to succeed](#)⁹.

Ethics:

1. Students are advised that ECU's [Academic Integrity policy](#)¹⁰ will strictly be enforced in this course. Questions regarding the policy may be directed to the Office of Academic Integrity.
2. Cheating and plagiarism will not be tolerated. Each student should work independently unless a group project is assigned. If a student is determined to be cheating in any manner on a quiz or examination, s/he will receive a grade of "0" for the activity.
3. Intentional or unintentional plagiarism will also receive a grade of "0." Thus, when in doubt, reference your source. In science, we rarely, if ever, use direct quotes but prefer to paraphrase. Thus, it is very important to be sure you are putting the information in your own words and then reference your source. If you are using a website, then identify your source, and provide the webpage.
4. Multiple violations of the academic integrity policy can result in failure of the course and/or a permanent citation on your transcript.

Cancellation statement:

If classes are cancelled for any reason, you are expected to check for emails from your instructor and check the class Blackboard site online for announcements about required alternative assignments and schedule updates.

Disability Accommodation Statement:

The University strives to make all learning experiences as accessible as possible. If you are registered with the ECU Center for Student Accessibility (CSA), please obtain your accommodation letters from the CSA, present them to the course instructor, and discuss the accommodations needed. If you believe you need an accommodation and are not registered with the CSA, please contact the office in 361 Whitlock Building by

⁵ <https://ekuonline.eku.edu/academic-support>

⁶ <https://studio.eku.edu/>

⁷ <https://it.eku.edu/computerlabs>

⁸ <https://www.webtools.ncsu.edu/learningstyles/>

⁹ https://www.jeffreybennett.com/pdf/How_to_Succeed_general.pdf

¹⁰ <https://studentconduct.eku.edu/academic-integrity-policy>

disserv@eku.edu or by telephone at (859) 622-2933. Upon individual request, this syllabus can be made available in an alternative format.

A student with a “disability” may be an individual with a physical or psychological impairment that substantially limits one or more major life activities, to include, but not limited to: seeing, hearing, communicating, interacting with others, learning, thinking, concentrating, sitting, standing, lifting, performing manual tasks, working. Additionally, pregnancy accompanied by a medical condition(s), which causes a similar substantial limitation, may also be considered under the Americans with Disabilities Amendments Act (ADAAA).

Instructor Availability During the Course:

Your teacher will be online with all of you at least every two days and will provide feedback within seventy-two hours maximum. However, if you have an urgent subject that you need to discuss with your teacher, then you should send an email to the instructor and in this case, do not forget to fill in the course name within the subject line. Questions may also be posted in the Virtual Office; students are encouraged to help each other in this forum, and the instructor will monitor at least every two days or less.

2019 Winter Term

- Classes Begin:
- Drop Deadline: (Automatic 100% tuition refund during this period)
- Last Day to Withdraw: (No withdrawal fee and no tuition or fees are refunded)
- Midterm Date:
- Last Day to Withdraw: (Withdraw fee applies.)
- Classes End:

See [Colonel's Compass](#) to review add/drop dates.

You are expected to check for emails from your instructor and check the class Blackboard site online for announcements daily.

BIO 101 Schedule Winter Term 2019 –XXX

Day 1: Introductory Module

Objectives:

1. Familiarize students with the requirements for the course.
2. Ensure students have access to Blackboard, e-text or hard copy of text, and labs in Labster
3. Introduce students to their classmates.

Assignments

- Virtual safetylab
- Email to instructor
- Syllabus Quiz
- Lab Journal

All Introduction Module assignments are due XXX at 11: 59 p.m. EST.

Module 1: Invitation to Biology

Objectives:

1. To be able to describe the study of biology
2. Summarize the levels of organization in nature.
3. Identifying the important factors that distinguish living organisms from non-living organisms.
4. To understanding the hierarchical stages of a scientific method.

Assignments

- Textbook: Read Ch. 1.
- Virtual experimental design lab
- Homework #1 (includes textbook reading)
- Module Quiz #1
- Lab journal

All Module 1 assignments are due XXX at 11:59 p.m. EST.

Module 2: Cell Structure

Objectives:

1. To describe the cell theory and identify components of the cell.
2. Distinguishing between prokaryotic and eukaryotic cells.

Assignments

- Textbook: Read Ch. 3.
- Virtual introduction to food macromolecules lab
- Homework #2 (includes textbook reading)
- Module Quiz #2
- Lab Journal
- Group Discussion Board
- Group Mini Project Draft

All Module 2 assignments are due XXX at 11:59 p.m. EST.

Module 3: DNA Structure and Function, Gene Expression and Control, and How Cells Reproduce

Objectives:

1. To be able to describe chromosomal structure and diversity.
2. To understand the process of DNA replication and repair
3. To be able to explain the multistep process of gene expression.
4. To be able to describe the significance of the genetic code for protein synthesis.
5. To be able to explain the process of translation of mRNA into protein.
6. To be able to explain the mechanisms of cell division.
7. To understand the consequences of mutations that result in a flawed cell cycle.

Assignments

- Textbook: Read Ch. 6; Ch. 7 sections 7.1-7.5; and Ch. 8.
- Virtual meiosislab
- Homework #3 (includes textbook reading)
- Module Quiz#3
- Lab Journal
- Group Mini Project Final

All Module 3 assignments are due XXX at 11:59 p.m. EST.

Module 4: Patterns of Inheritance and Biotechnology

Objectives:

1. To understand Mendel's experimental approach to studying inheritance.
2. To be able to understand a Punnett square, illustrate the Mendelian inheritance patterns of a monohybrid cross and a dihybrid cross.
3. To be able to explain the use of a pedigree analysis for analyzing human genetic traits.
4. Explain the importance of single-nucleotide polymorphisms (SNPs) to the diversity of human traits.
5. Using diagrams and flowcharts, explain the methods used by researchers to manipulate DNA.
6. Discuss the genomics techniques used to analyze DNA.

Assignments

- Textbook: Ch. 9; Ch. 10 sections 10.1-10.3.
- Virtual Mendelian inheritance lab
- Homework #4 (includes textbook reading)
- Module Quiz#4
- Midterm Exam
- Lab Journal

All Module 4 assignments are due XXX at 11:59 p.m. EST.

Module 5: Evidence of Evolution, Process of Evolution

Objectives:

1. To understand the contributions of Lamarck, Darwin, and Wallace to the understanding of the evolution of organisms.

2. To be able to explain the process of fossilization and its importance in determining the history of the natural world.
3. To explain the factors that lead to the evolution of antibiotic-resistant bacteria, and the subsequent dangers of these superbugs.
4. To explain the effect of mutations on the evolution of organisms.
5. To describe the different modes of natural selection.

Assignments

- Textbook: Read Ch. 11 and 12.
- Virtual evolution lab
- Homework #5 (includes textbook reading)
- Quiz #5
- Lab Journal
- Group Discussion Board

All Module 5 assignments are due XXX at 11:59 p.m. EST.

Module 6: Early Life Forms and Viruses

Objectives:

1. To explain the features and significance of the human microbiome.
2. To explain the structure and replication cycles of viruses and the impact of viruses on plants and animals.
3. To describe scientific theories about the origin of life.

Assignments

- Textbook: Read Ch. 13.
- Virtual bacterial isolation lab
- Homework #6 (includes textbook reading)
- Quiz #6
- Lab Journal
- Group Major Project Draft

All Module 6 assignments are due XXX at 11:59 p.m. EST.

Module 7: Animal Evolution

Objectives:

1. To explain the potential for invertebrate compounds to being as medicinal drugs.
2. To explain the evolutionary connection between humans and fish ancestors.
3. Describe how invertebrate compounds are used as medicinal drugs using examples.
4. To explain the importance of synthetic drugs.
5. To summarize the evolutionary trends of animal traits.
6. To use examples to discuss the evolutionary features of the different invertebrate phyla.
7. To explain the evolutionary traits of invertebrate and vertebrate chordates.
8. To examine the traits responsible for the evolution of fishes and amphibians using examples.
9. To use examples to describe the factors that influenced the evolution of amniotes from amphibians and summarize the major groups of amniotes found today.
10. To describe the evolution of Homo sapiens from hominins and other anthropoids

Assignments

- Textbook: Read Ch. 15.
- Virtual embryology lab
- Case Study Homework #7
- Quiz #7
- Lab Journal
- Group Major Project Final

All Module 7 assignments are due XXX at 11:59 p.m. EST.

Module 8: Communities and Ecosystem, The Biosphere and Human Effects

Objectives:

1. To explain species diversity and the different factors that affect the structure of a biological community.
2. To explain the factors that influence community structure.
3. To describe how organisms interact with the environment in an ecosystem.
4. To explain the major factors that affect the climatic conditions of Earth.
5. To identify and examine the negative effects of human activities on ecosystems.
6. Explain the mechanisms that drive the maintenance of biodiversity.

Assignments

- Textbook: Read Ch. 17 and 18.
- Virtual biodiversity lab
- Homework #8 (includes textbook reading)
- Quiz #8
- Lab Journal
- Final Gen. Ed. Exam

All Module 8 assignments are due XXX at 11:59 p.m. EST.