

Biology

SCI-1000

2022 07/01/2022 to 06/30/2023 Modified 04/25/2022

Course Description

Biology is an examination of God's living creations, from the smallest bacterium to the massive blue whale, the largest creature on the Earth. God is definitively presented as the Creator of life according to the description on the pages of Genesis. A wide variety of topics will be discussed including the scientific method, cells, genetics, taxonomic classifications of organisms, human anatomy, and topics in evolution from a creationist perspective. Students will be challenged to think critically about the intricacies of God's creation.

Rationale

The study of biology allows students an opportunity to view and better understand life as a big picture. An appreciation of biology gives students a deeper understanding of their Creator. Students are given the opportunity to examine living organisms from the cellular level to the ecosystem in which the organism lives. Biology also allows students to explore the significance of both historical and modern scientific discoveries.

Prerequisite

None

Measurable Learning Outcomes

Biblical Integration Outcomes

- A. The student will demonstrate an understanding of a biblical worldview as it relates to biology.
- B. The student will investigate and understand the creation account in Genesis and how it relates to biology.
- C. The student will evaluate and compare biological evolution with creation models regarding the origin of life, biological change, and the relatedness of species.

Measurable Learning Outcomes

- A. The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations.
- B. The student will investigate and understand the chemical and biochemical principles essential for life.
- C. The student will investigate and understand relationships between cell structure and function.
- D. The student will investigate and understand life functions of archaea, bacteria, and eukarya.
- E. The student will investigate and understand common mechanisms of inheritance and protein synthesis.
- F. The student will investigate and understand bases for modern classification systems.
- G. The student will investigate and understand how populations change through time.
- H. The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems.

Course Resources

See LUOA's [Systems Requirements](#) for computer specifications necessary to operate LUOA curriculum. Also view [Digital Literacy Requirements](#) for LUOA's expectation of users' digital literacy.

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Scripture Attribution

- Grades 7-12: All Scripture quotations, unless otherwise indicated, are from the ESV® Bible (The Holy Bible, English Standard Version®), copyright © 2001 by Crossway, a publishing ministry of Good News Publishers. Used by permission. All rights reserved. May not copy or download more than 500 consecutive verses of the ESV Bible or more than one half of any book of the ESV Bible.

Policies

Students are accountable for all information in the [Student Handbook \(https://www.liberty.edu/online-academy/wp-content/uploads/2021/11/LUOA-Student-Handbook.pdf\)](https://www.liberty.edu/online-academy/wp-content/uploads/2021/11/LUOA-Student-Handbook.pdf). Below are a few policies that have been highlighted from the Student Handbook.

Course Grading Policies

The student's grades will be determined according to the following grading scale and assignment weights. The final letter grade for the course is determined by a 10-point scale. Assignments are weighted according to a tier system, which can be referenced on the Grades page in Canvas. Each tier is weighted according to the table below. Items that do not affect the student's grade are found in Tier 0.

Grading Scale	Assignment Weights
A 90-100%	Tier 0 0%
B 80-89%	Tier 1 25%
C 70-79%	Tier 2 35%
D 60-69%	Tier 3 40%
F 0-59%	

In order for students to receive credit for a course, the following conditions have to be met:

- All semester exams and module tests have to be completed.
- All Tier 3 projects or papers have to be completed.
- Fewer than 10 zeros exist in the gradebook for blank submissions in a full credit course and 5 zeros for blank submissions in a semester course.

Types of Assessments

To simplify and clearly identify which policies apply to which assessment, each assessment has been categorized into one of four categories: Lesson, Assignment, Quiz, or Test. Each applicable item on the course Modules page has been designated with an identifier chosen from among these categories. Thus, a Quiz on the American Revolution may be designated by the title, "1.2.W - Quiz: The American Revolution." These identifiers were placed on the Modules page to help students understand which Resubmission and Honor Code policies apply to that assessment (see the Resubmission Policy and Honor Code Policy below for further details).

- **Lesson:** *Any item on the Modules page designated as a "Lesson"*

These include instructional content and sometimes an assessment of that content. Typically, a Lesson will be the day-to-day work that a student completes.

- **Assignment:** *Any item on the Modules page designated as an "Assignment"*

Typical examples of Assignments include, but are not limited to, papers, book reports, projects, labs, and speeches. Assignments are usually something that the student should do his or her best work on the first time.

- **Quiz:** *Any item on the Modules page designated as a "Quiz"*

This usually takes the form of a traditional assessment where the student will answer questions to demonstrate knowledge of the subject. Quizzes cover a smaller amount of material than Tests.

- **Test:** *Any item on the Modules page designated as a "Test"*

This usually takes the form of a traditional assessment where the student will answer questions to demonstrate knowledge of the subject. Tests cover a larger amount of material than Quizzes.

Resubmission Policy

Students are expected to submit their best work on the first submission for every Lesson, Assignment, Quiz, and Test. However, resubmissions may be permitted in the following circumstances:

- **Lesson:** Students are automatically permitted two attempts on a Lesson. Students may freely resubmit for their first two attempts without the need for teacher approval.
- **Assignment:** Students should do their best work the first time on all Assignments. However, any resubmissions must be completed before the student moves more than one module ahead of that Assignment. For example, a student may resubmit an Assignment from Module 3 while in Module 4, but not an Assignment from Modules 1 or 2. High School students may not resubmit an Assignment without expressed written permission from the teacher in a comment.
- **Quiz:** Students may NOT resubmit for an increased grade.
- **Test:** Students may NOT resubmit for an increased grade.

If a student feels that he or she deserves a resubmission on a Lesson, Assignment, Quiz, or Test due to a technical issue such as a computer malfunction, the student should message his or her teacher to make the request.

Honor Code Policy

Every time a student violates the Honor Code, the teacher will submit an Honor Code Incident Report. The Student Support Coordinator will review the incident and allocate the appropriate consequences. Consequences, which are determined by the number of student offenses, are outlined below:

- **Warning:** This ONLY applies to high school Lessons and elementary/middle school Assignments and Lessons. Students should view these actions as learning opportunities.
 - **Lessons:** A zero will be assigned for the question only.
 - **Elementary/Middle School Assignment:** The student must redo his or her work; however, the student may retain his or her original grade.
- **1st Offense:**
 - **Lesson, Quiz, or Test:** The student will receive a 0% on the entire assessment.
 - **Assignment:** The student will either:
 - Receive a 0% on the original assignment
 - Complete the Plagiarism Workshop
 - Retry the assignment for a maximum grade of 80%
- **2nd Offense:** The student will receive a 0% and be placed on academic probation.
- **3rd Offense:** The student will receive a 0% and the Director of Faculty will determine the consequences that should follow, possibly including withdrawal from the course or expulsion from the academy.

Materials Selection Policy

LUOA curates educational materials that are consistent with the school's philosophy; however, the fallen human condition depicted in literature (as in Scripture itself) is not always pleasant. Valuable works sometimes have objectionable or profane elements. Good books provide four (4) recognized values.

- They build godly attitudes and character traits.
- They deepen our social and cultural awareness.

- They strengthen our use of written language.
- They provide a lifelong source of enjoyment and relaxation.

In order to instill these values in students and fulfill the stated objectives of the school, all LUOA students are expected to read and study good books on a regular basis. Recognizing that materials designed for one level may not be appropriate for another, three (3) levels of criteria are applied:

- Elementary materials must contain no objectionable material,
- Objectionable elements in sixth through eighth-grade materials must be limited and must serve a specific educational purpose, and
- Objectionable content may be included in high school materials but must be outweighed by positive literary, curricular, and/or Christian values.

The curriculum department has approved required educational materials for students.

Schedule

Module 1: Introduction to Biology

Week 1: Course Expectations

Week 2: Graphing

Week 3: Life

Module 2: Molecular Biology

Week 4: Matter and Biomolecules

Week 5: Biomolecules, Enzymes, pH

Module 3: Cell Biology

Week 6: Cell Basics

Week 7: Cell Membrane, Transport, and Photosynthesis

Week 8: Respiration

Week 9: Review and Test

Module 4: The Cell Cycle & DNA

Week 10: Cells and Area

Week 11: DNA and RNA

Week 12: How DNA is Used

Module 5: Heredity

Week 13: Meiosis, Probability, and Mendel

Week 14: Punnett Squares

Module 6: Human Genetics

Week 15: Human Genetics

Week 16: Disorders and Pedigrees

Week 17: Let's Write a Paper

Week 18: Review & 2nd Quarter Test

Module 7: Classification and Kingdoms

Week 19: Classification

Week 20: Microbiology

Week 21: Protists and Fungi

Module 8: Plant Kingdom

Week 22: What is a Plant?

Week 23: Plant Physiology & Agriculture

Module 9: Animal Kingdom

Week 24: Animals with Simple Body Plans

Week 25: They Don't Have a Backbone

Week 26: What a Difference a Backbone Makes

Week 27: Quiz Module 9 & 3rd Quarter Test

Module 10: Ecology

Week 28: Big Pictures of Ecosystems

Week 29: Details of Ecosystems

Week 30: Water Biomes and Our Part for the Earth

Module 11: Human Anatomy

Week 31: Anatomy Part 1

Week 32: Anatomy Part 2

Module 12: Creation and Evolution

Week 33: Types of Evolution

Week 34: What is Truth?

Week 35: Different Worldviews

