

SCI1000_202338_Staging_EMBR_TEM

SCI-1000

2023 05/01/2023 to 04/30/2024 Modified 03/22/2023

Course Description

In this year-long course, students study living organisms and their place in the created world. Students review foundational science concepts, molecular and cell biology, cell processes, DNA, and genetics. Students compare various living organisms in a survey of classification and kingdoms, including microbiology. Additional units of study include biomes, ecosystems, and the balance of God's created world and man's responsibility to steward it well. The final section of the course introduces the major systems of the human body, God's perfect creation. Students engage with lab activities and demonstrations supporting the lessons and research and write on various assigned topics. Students analyze the contrasting beliefs of a secular view of science and the scriptural truth of Creation to determine how nature and life align with God's creation and sustaining presence.

Rationale

This course allows students 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.

Course 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.

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.

Course Resources

See Ember's [Systems Requirements](#) for computer specifications necessary to operate this curriculum.

- Note: Embedded YouTube videos may be utilized to supplement Ember's YouTube videos are the property of the respective content creator, licensed to YouTube for distribution and user access. As a non-profit educational institution, Ember is able to use YouTube video content under the YouTube Terms of Service. For additional information on copyright, please contact the [Jerry Falwell Library](#)

* Course Policies

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."

- **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.

Materials Selection Policy

Ember 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 Ember 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.

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.

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. With Ember, the teacher may be a physical school teacher or the student's parent/guardian. The teacher can give another attempt from his or her Canvas account. For more information on how to do this, please review the Ember orientation course.

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
- Week 36: 4th Quarter Review & Test