

SCI0700_202338_Staging_EMBR_TEM

SCI-700

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

Course Description

This year-long course focuses on studying natural science and creation. Students investigate basic topics in biology, including scientific inquiry, the cell and its processes, the characteristics and taxonomic classification of organisms, DNA and basic genetics, populations, and the ecosystem. Specific attention is given to analyzing the scriptural truth of Creation in contrast to evolutionary "science." Students compare and contrast the kingdoms of living organisms and the ecosystems where they live, demonstrating their learning through various projects. Ultimately, students learn to examine the science of life with a biblical worldview, noting how nature and life align with the scriptural account of Creation and God's sovereignty.

Rationale

Students at this level should show development in their ability and understanding of scientific inquiry. The units contain experiments and projects that seek to develop a deeper conceptual meaning and actively engage the student. The continued exposure to science concepts and scientific inquiry will serve to improve the student's skill and understanding and teach the student how their life is affected by these factors and how they affect the environment in which they live. Scientific inquiry will be introduced in module one but will be seen and utilized through a series of activities throughout this course. The goal is to ensure that each student has a thorough understanding of the entire scientific inquiry process.

Course Learning Outcomes

- A. The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by conducting investigations.
- B. The student will investigate and understand that all living things are composed of cells.
- C. The student will investigate and understand that living things show patterns of cellular organization.
- D. The student will investigate and understand how organisms can be classified.
- E. The student will investigate and understand the basic physical and chemical processes of photosynthesis and its importance to plant and animal life.
- F. The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of the environment.
- G. The student will investigate and understand that interactions exist among members of a population.
- H. The student will investigate and understand interactions among populations in a biological community.
- I. The student will investigate and understand how organisms adapt to biotic and abiotic factors in an ecosystem.
- J. The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment.
- K. The student will investigate and understand the relationships between ecosystem dynamics and human activity.

L. The student will investigate and understand that organisms reproduce and transmit genetic information to new generations.

Biblical Integration Outcomes

A. The student will identify and describe Creation and the universe from a biblical worldview.

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: The Nature of Science

- Week 1: What is Science Knowledge?
- Week 2: Scientific Investigations
- Week 3: The Discovery of Cells and The Cell Theory
- Week 4: Tools of a Scientist

Module 2: Cell Structure & Development

- Week 5: Cell Structure and Function
- Week 6: Cell Structure and Organization
- Week 7: The Energy Cycle: Photosynthesis and Cellular Respiration
- Week 8: Homeostasis and Cell Processes
- Week 9: Quarter 1 Review and Exam

Module 3: Cells & Heredity

- Week 10: Mitosis and Meiosis
- Week 11: Reproduction and Genetics
- Week 12: Generations and Genetics
- Week 13: Predicting Traits and How They Change

Module 4: Evolution & Creationism

- Week 14: Evolution or Creationism
- Week 15: The Theory of Evolution
- Week 16: Formation of the Solar System/ Noah's Flood
- Week 17: History of Life on Earth
- Week 18: Quarter 2 Review and Exam

Module 5: Bacteria, Protists, & Fungi

- Week 19: Introduction to Classification
- Week 20: Archaea, Bacteria, & Viruses
- Week 21: Protist
- Week 22: Fungi / Module Test

Module 6: Plants & Animals

- Week 23: Plants
- Week 24: Animals
- Week 25: Animal & Plant Adaptations
- Week 26: Populations
- Week 27: Quarter 3 Review and Exam

Module 7: Ecology & Energy Transfer

- Week 28: Ecology
- Week 29: Energy Cycles
- Week 30: Energy Transfer
- Week 31: Niches

Module 8: Populations & Communities

- Week 32: Land Biomes
- Week 33: Aquatic Ecosystems
- Week 34: Biome Project
- Week 35: Human Activity
- Week 36: Quarter 4 Review and Exam