Earth Science

SCI0900

Course Description
God designed the Earth with unique properties and characteristics. He created a delicate balance amongst the systems of the Earth, the solar system, and the universe. Emphasis will be placed on understanding the Earth’s systems, their interrelationships with each other, and man’s effect on the Earth. Students will be given the opportunity to explore rocks and minerals, geology, Earth’s interior, Earth’s geologic history, plate tectonics, volcanoes, earthquakes, weather, storms, climate, oceans, the solar system, and stars and galaxies. The students will be given the challenge to explore the rationale behind secular, old earth, and young earth science in order to be more effective at presenting the Gospel scientifically. The course is a rigorous, multimedia and laboratory-based science course that will require supplies for the hands-on labs.

Rationale
Earth Science allows the students an opportunity to explore the Earth and its systems. Knowledge of the way the Earth changes over time gives students the understanding of the delicate balance on the Earth and the need to preserve it. It allows them the opportunity to explore their surroundings and view their world through different eyes. The study of the Earth will allow students a deeper understanding of the Earth’s place in the solar system and the galaxy to prepare for a greater tomorrow. Earth Science also opens the students up to new technologies that are being utilized every day in this study of our planet.

Prerequisite
None

Biblical Integration Outcomes
A. The student will investigate a biblical perspective on geological history and the origin of the Earth and universe.
B. The student will investigate geological evidences which confirm the reality of biblical history related to the Flood of Noah in scripture.

Measurable Learning Outcomes
A. The student will plan and conduct investigations which include measurement, technology, charts, cartography, variables, and applications to Earth Science.
B. The student will demonstrate an understanding of the nature of science and scientific reasoning, logic, and inference.
C. The student will investigate and understand the characteristics of Earth and the solar system.
D. The student will investigate and understand how to identify major rock-forming and ore minerals based on physical and chemical properties.
E. The student will investigate and understand the rock cycle as it relates to the origin and transformation of rock types and how to identify common rock types based on mineral composition and textures.
F. The student will investigate and understand the differences between renewable and nonrenewable resources.
G. The student will investigate and understand geologic processes including plate tectonics.
H. The student will investigate and understand how freshwater resources are influenced by geologic processes and the activities of humans.
I. The student will investigate and understand that many aspects of the geologic history can be inferred by studying rocks and fossils.
J. The student will investigate and understand that oceans are complex, interactive physical, chemical, and biological systems and are subject to long- and short-term variations.
K. The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth.

Course Materials
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.
This course contains additional physical materials. See the materials page toward the end of this syllabus for a listing of course materials.

- Note: Embedded YouTube videos may be utilized to supplement LUOA curriculum. YouTube videos are the property of the respective content creator, licensed to YouTube for distribution and user access. As a non-profit educational institution, LUOA 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 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.
Course Policies

Students are accountable for all information in the Student Handbook. Below are a few policies that have been highlighted from the Student Handbook.

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 Honor Code and Resubmission policies apply to that assessment (see the Honor Code and Resubmission policies on the pages that follow 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. The student may freely resubmit for their first two attempts without the need for teacher approval.
• **Assignment:** Students are intended to 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, and that request will need to be approved by a Department Chair.

**Consequences for Violations to the Honor Code**

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 Faculty Chair will determine the consequences that should follow, possibly including withdrawal from the course or expulsion from the academy.
# Materials List

## Earth Science

### Module 1
- Graph Paper
- Paper
- Pencil
- Printer
- Ruler

### Module 3
- Antacid Tablets OR Chalk OR Sugar cubes
- Granulated Sugar
- Hammer OR Knife
- Pencil
- Plastic cups
- Printer
- Scanner OR Camera
- Vinegar OR Water

### Module 6
- Camera
- Colored pencils
- Pencil
- Printer
- Scanner OR Camera

### Module 7
- Plastic Film canister OR small cup, saran wrap, rubber band
- Teaspoon
- Alka seltzer regular strength tablets

### Module 8
- Colored Pencils
- Pencil
- Printer
- Scanner OR Camera
## Scope and Sequence

### Earth Science

**Module 1: Introduction to Earth Science**
- Week 1: Class Expectations
- Week 2: The Scientific Method
- Week 3: Measurement on the Earth
- Week 4: Mapping the Earth

**Module 2: Rocks & Minerals**
- Week 5: Minerals
- Week 6: Igneous Rocks
- Week 7: Sedimentary Rocks
- Week 8: Metamorphic Rocks

**Module 3: Weathering & Water**
- Week 9: Weathering
- Week 10: Erosion
- Week 11: The Ocean
- Week 12: Surface Water

**Module 4: Water on the Earth**
- Week 13: Ground Water
- Week 14: Glaciers
- Week 15: Glacial Deposition & the Ice Age
- Week 16: The Atmosphere

**Module 5: Semester Exam**
- Week 17: Temperature Variation
- Week 18: Semester Exam

**Module 6: Water in the Atmosphere**
- Week 19: Water Vapor
- Week 20: Clouds
- Week 21: Precipitation & Air Pressure
- Week 22: Wind

**Module 7: Weather**
- Week 23: Pressure Systems
- Week 24: Storms
- Week 25: Climate
- Week 26: Volcanos

**Module 8: The Earth’s Crust**
- Week 27: Plate Tectonics
- Week 28: Earthquakes
- Week 29: Mountain Building
- Week 30: Fossils & Dating

**Module 9: Astronomy**
- Week 31: The Sun
- Week 32: The Moon
- Week 33: The Inner Planets
- Week 34: The Outer Planets

**Module 10: Final Exam**
- Week 35: Stars & Galaxies
- Week 36: Final Exam