

# 8th Grade Science

## SCI-800

2022 07/01/2022 to 06/30/2023 Modified 04/22/2022

### Course Description

Physical Science is an introduction to chemistry and physics with an emphasis on utilizing the scientific method. God's love for balance in the world He has created will be evident. Students will be introduced to scientists who built their theories on the Bible and through observations of the world around them. Student experiments are woven through the lessons so they can experience the thrill of science and develop an understanding of the "new language" being learned.

### Rationale

Physical science offers students a deeper examination of the building blocks of nonliving materials and processes they can undergo. Knowledge of the way these items are combined shows the design and purpose of an intelligent God, who created the earth and its laws through His son, Jesus Christ. Students will learn the process of discovering and explaining the order of the physical world and how its parts connect to one another.

#### Prerequisite

None

### Measurable Learning Outcomes

- A. The student will apply the scientific method and analyze data through the method.
- B. The student will perform metric unit conversions.
- C. The student will investigate and understand the nature of matter, its properties, and the four phases of matter.
- D. The student will investigate and understand the historical and modern models of the atomic theory.
- E. The student will investigate and understand the organization of the periodic table.
- F. The student will investigate and understand chemical bonding.
- G. The student will investigate and understand the different forms of energy.
- H. The student will perform temperature scale conversions.
- I. The student will investigate and understand the difference between temperature and heat.
- J. The student will investigate and understand longitudinal waves and transverse waves.
- K. The student will investigate and understand work, force, motion, and their associated calculations.
- L. The student will describe and analyze the different types of simple machines.
- M. The student will investigate and understand the principles of electricity and magnetism.

## Biblical Integration Outcomes

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

## \* Course Policies

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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

- 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

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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

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### Module 1: Measurement & Scientific Investigation

Week 1: Scientific Method

Week 2: Numbers and Measurements

Week 3: Volume, Density, & Graphs

Week 4: Graphing Continued

### Module 2: Force & Motion

Week 5: Newton's Laws

Week 6: Newton's 3<sup>rd</sup> Law & Galileo

Week 7: Forces that Move and Float

Week 8: Labs and Test Review

### Module 3: Work & Power

Week 9: Work & Power

Week 10: Simple Machines, Part 1

Week 11: Simple Machines, Part 2

Week 12: Supporting Work

#### **Module 4: Energy**

Week 13: Types of Energy, Part 1

Week 14: Types of Energy, Part 2

Week 15: Energy Conservation

#### **Module 5: Matter**

Week 16: Property of Matter

Week 17: Breaking It Down

Week 18: Semester Review

#### **Module 6: Electricity & Motors**

Week 19: Electricity

Week 20: Wires and Motors

Week 21: Let's Work on the Science Fair Project\*\*

#### **Module 7: Magnets**

Week 22: Using Magnets

Week 23: How Magnets are in Machines

Week 24: Continuing with the Science Fair Project

#### **Module 8: Light & Waves**

Week 25: Waves that Affect Us

Week 26: The Parts of Light

Week 27: How Sound Is Used

Week 28: Continuing work on the Science Fair Project

#### **Module 9: Nuclear & Atomic Theory**

Week 29: Atoms and the Periodic Table

Week 30: More on the Periodic Table

Week 31: How Atoms React

Week 32: Finishing the Science Fair Project\*\*

#### **Module 10: Chemical Reactions**

Week 33: Modules of Chemicals

Week 34: Chemical Bonding

Week 35: What is pH?

Week 36: Semester Review and Exam

**\*\*Science Fair project starts in Module 6 and is submitted in Module 9.**