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

Biblical Integration Outcomes
A. The student will identify and describe Creation and The Universe from a biblical worldview

Measurable Learning Outcomes
A. Apply the scientific method and analyze data through this
B. Perform metric unit conversions
C. Investigate and understand the nature of matter, its properties, and the four phases of matter
D. Investigate and understand the historical and modern models of the atomic theory
E. Investigate and understand the organization of the periodic table
F. Investigate and understand chemical bonding
G. Investigate and understand the different forms of energy
H. Perform temperature scale conversions
I. Investigate and understand the difference between temperature and heat
J. Investigate and understand longitudinal waves (sound waves) and transverse waves (light)
K. Investigate and understand work, force, motion, and their associated calculations
L. Describe and analyze the different types of simple machines
M. Investigate and understand the principles of electricity and magnetism

Course Materials
See LEOA’s Systems Requirements for computer specifications necessary to operate LEOA curriculum. Also view Digital Literacy Requirements for LEOA’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 LEOA 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, LEOA 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.

<table>
<thead>
<tr>
<th>Grading Scale</th>
<th>Assignment Weights</th>
</tr>
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<tbody>
<tr>
<td>A 90-100%</td>
<td>Tier 0 0%</td>
</tr>
<tr>
<td>B 80-89%</td>
<td>Tier 1 25%</td>
</tr>
<tr>
<td>C 70-79%</td>
<td>Tier 2 35%</td>
</tr>
<tr>
<td>D 60-69%</td>
<td>Tier 3 40%</td>
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<tr>
<td>F 0-59%</td>
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</table>

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.
Course Materials
Physical Science

General Items for Labs
- Ruler
- Clear scotch tape
- Meter / yard stick with metric measurements
- Scissors
- White paper
- Markers

Module 1
- Tape measure
- Container with millimeters marked on it
  - Small ball and rocks that fits inside, 2 different length pencils, colored pencil

Module 2
- Plastic cup
- Clear drinking glass
- Flashlight
- Aluminum foil
- Rubber band
- Sewing needle
- 2 balls of different sizes
- 2 baking sheets
- Camera
- 2 small toy cars
- Cardboard
- 2 plastic bottles that are identical
- Masking tape or sidewalk chalk
- Measuring cup
- 2 heavy and large books
- Tube sock
- Length of rope or twine or heavy-duty string - 2 meters long
- 2 metal washer or metal nuts
- Clothes hanger
- Watch with second hand
- 100 pennies

Module 3
- 2 spools of heavy string
- 1 spool of light string
- Bricks or heavy stones
- Masking tape
- Empty spool – like from ribbon
- Hole puncher
- Plastic cup
- 15 ft of thin cardboard
- Children’s modeling clay
- Circular tube between 8 - 20 cm diameter – for example empty large can, oatmeal container
  - 12-30 small stones to go into tube

Module 4
- Empty pizza box
- 2 clear sheet protectors
- Black construction paper
- Duct tape
- Clear packing tape
- Box knife
- Wooden skewer
- Glue
- Aluminum foil
- Large pot or sink that can hold water
- Small glass
- Marbles or small stones
- Food coloring
- 2 or 3 eggs (uncooked)
- Cup large enough to hold the egg
- Salt

Module 5
- Cardboard box with lid – medium sized
- Marbles or small stones to fill the box
- Bubble gum
• Measuring scale
• Coffee filters or paper towels
• 3 clear cups
• 3 different brands of black markers (not sharpies)
• 13 paper clips
• Hole puncher
• Black pen

Module 6
• Comb
• Balloon
• Tissue paper
• Magnet
• 3 paper clips
• String – 15 cm
• Penny
• Baking tray
• Paper bag
• Plastic bag

Module 7
• 3 magnets – all of different sizes
• 100 metal paper clips
• String
• Extra-large steel nail – 3.75 inches, 9.5 cm long

Module 8
• Drinking glass about 12 -16 oz
• Drinking straw
• Toy boat
• 20 cm string

Module 9
• 10 different colored pencils or crayons

Module 10
• Purple cabbage
• 9 clear plastic cups
• Waxed paper or aluminum foil
• Rubber bands or masking tape
Scope and Sequence
Physical Science

Module 1: Measurement and Scientific Investigation
Week 1
Week 2
Week 3
Week 4

Module 2: Force and Motion
Week 5
Week 6
Week 7
Week 8

Module 3: Work and Power
Week 9
Week 10
Week 11
Week 12

Module 4: Energy
Week 13
Week 14
Week 15

Module 5: Matter
Week 16
Week 17
Week 18

Module 6: Electricity
Week 19
Week 20
Week 21

Module 7: Magnets
Week 22
Week 23
Week 24

Module 8: Light and Waves
Week 25
Week 26
Week 27
Week 28

Module 9: Nuclear and Atomic Theory
Week 29
Week 30
Week 31
Week 32

Module 10: Chemical Reactions
Week 33
Week 34
Week 35
Week 36

**Science Fair project starts in Module 7 and is submitted in Module 9.**