

## ARETE HONORS SCIENCE - COURSE SYLLABUS

# 7th Grade Physical Science

*Matter, energy, motion, chemistry, waves, electricity, and magnetism*

2026–2027 • Grade 7 • Weekly two-hour tutorial

*“All our educational pursuits are in the service of God, for all these labors are to establish truth on the earth, and that we may increase in knowledge, wisdom, understanding in the power of faith and in the wisdom of God, that we may become fit subjects to dwell in a higher state of existence and intelligence than we now enjoy. We can attain to this only by adding faith to faith, knowledge to knowledge, temperance to temperance, patience to patience, and godliness to godliness, and so increasing in the principles of happiness and salvation.”*

—Brigham Young

Scale How School - Arete Honors Living Science

## Course Description

Arete Honors Physical Science uses Novare Physical Science to build a coherent foundation in matter, energy, motion, waves, electricity, magnetism, measurement, and scientific reasoning. The course is taught from a Latter-day Saint worldview and invites students to consider both the order of creation and the disciplined limits of scientific explanation.

The course combines a weekly two-hour tutorial with structured home study. The fall term develops atomic theory, energy, heat, work, laws of nature, forces, fields, substances, and scientific models. The spring term emphasizes measurement, physical properties, motion, chemistry, waves, circuits, magnetism, and induction.

| Instructor       | _____                                                |
|------------------|------------------------------------------------------|
| Tutorial Meeting | Mondays, _____                                       |
| Location         | _____                                                |
| Course Text      | <a href="#">Novare Physical Science, 3rd edition</a> |
| First Tutorial   | Monday, August 24, 2026                              |
| Semester Finals  | Monday, Dec. 14, 2026 and Monday, May 10, 2027       |

### Course Color

Teal - used for the 7th Grade Physical Science Anki deck and coordinated course materials.

### Course Promise

Complex does not mean impossible. Every major concept is taught with a visual model, an analogy or memory tool, guided practice, and repeated opportunities to explain the idea in the student’s own words.

## Primary Course Objectives

- Describe atomic structure and the evidence-driven development of atomic models.
- Explain sources, forms, transfer, and conservation of energy, including heat, work, and internal energy.
- Discuss laws, order, design, scientific models, and truth with clear distinctions among evidence, inference, and worldview.
- Explain fundamental interactions, inverse-square relationships, and gravitational, electric, and magnetic fields.
- Use SI units, metric prefixes, dimensional analysis, graphing, density, and disciplined problem-solving methods.
- Analyze velocity, acceleration, inertia, net force, and Newton's three laws of motion.
- Distinguish substances and mixtures; interpret chemical formulas, bonds, reactions, acids, bases, salts, and redox.
- Model wave quantities and behaviors, sound and hearing, static electricity, circuits, Ohm's law, magnetism, and induction.

- Collect data safely, maintain a lab journal, show quantitative work, and write individual evidence-based lab reports.

## Course Structure and Expectations

### In the Tutorial

- Open with gratitude, prayer, hymn, and catechism.
- Review the previous quiz and handwrite a quiz-review (QR) card for each missed or incomplete idea.
- Complete a timed, cumulative written quiz in complete sentences and show quantitative work when appropriate.
- Discuss assigned reading, difficult concepts, worldview questions, Chapter Exercises, Review Guides, and student questions.
- Participate in demonstrations, guided calculations, laboratory investigations, and project presentations.
- Complete all quizzes, chapter assessments, laboratory data collection, and semester finals in person.

### At Home

- Use Read-Recall-Check (RRC) for every assigned section and keep organized notes in the commonplace journal.
- Complete due Anki reviews every assigned day, then learn only the released new cards; review QR cards cumulatively.
- Complete Chapter Exercises and the assigned Weekly Review Guide. Learning Checks are not assigned as a separate routine.
- Complete the weekly Moodle page, including links, checklist, submission, or discussion as assigned.
- Write individual lab reports after tutorial data collection and complete one independent project or presentation per semester.
- Plan for approximately 30-60 minutes on most weekdays, with additional time for reports, projects, and finals.

## Mastery and Study Systems

### RRC Study Cycle: Inspect–Question–Read–Recall–Check

Students use this complete cycle for every assigned Upper School text section. Begin by surveying a text's structure and signposts, then read it closely with a governing question.

1. Inspect. Survey the assigned section before close reading: notice the title, headings, subheadings, diagrams, captions, bold terms, summaries, and overall structure.
2. Question. Turn the section heading into a question that the reading should answer.
3. Read. Read the section attentively with that question in mind.
4. Recall. Close the book. Answer the question from memory and reconstruct the main idea, process, diagram, and key words in the student's own words.

5. Check. Reopen the text. Correct errors or omissions in a different color. If the idea remains unclear, write a specific question to bring to the tutorial.

### Five-Step Study Rescue

If the Check step shows that one important idea is still unclear, use the rescue on that one idea, then return to normal RRC study.

1. Shrink it. Choose one process, diagram, relationship, or paragraph—not the whole chapter.
2. Sketch it. Draw the parts and arrows before trying to memorize precise wording.
3. Say it. Explain the idea aloud as if teaching a younger student.
4. Compare it. State what the idea is and what a nearby, easily confused idea is not.
5. Retrieve it. Close every source and rebuild the explanation or diagram from memory; then check once more in a different color.

## Enrollment and Code of Conduct

Enrollment is not complete until a parent or guardian submits the Scale How School Student Code of Conduct and Host-Home Agreement. The agreement addresses respect for the host residence and property, authorized areas, class etiquette, electronic devices, academic integrity, laboratory safety, and consequences for misconduct. Serious misconduct or repeated failure to follow the agreement may result in dismissal or expulsion.

## Required Materials

- [Novare Physical Science, third edition.](#)
- [The Student Lab Report Handbook by John D. Mays.](#)
- Quad-ruled lab journal and a durable commonplace journal with page numbers and a table of contents.
- Lined index cards on a ring for handwritten quiz-review cards.
- Three-ring binder with dividers: Syllabus, Reference, Quizzes, Class Notes, and Lab.
- Binder pouch with pencils, pens, scissors, ruler, calculator, and QR cards.
- Scientific calculator; a TI-84 or equivalent is useful for students continuing into advanced science.
- Independent project materials selected by the student and parent.

### Encouraged Family Outside Reading

Each Arete family is encouraged to keep one shared family copy of *The God Proofs: How Science Points to YOUR Creator* by Douglas Ell. This is optional family outside reading, not a class-specific text, and it may or may not be referred to during tutorials.

## Laboratory and Investigation Program

All twelve investigations are scheduled during tutorial time. Data collection is collaborative under supervision; each student's journal, calculations, graphs, analysis, and report must represent that student's own work.

| No. | Investigation                | Text pp. | Primary Skill or Product                                                                    |
|-----|------------------------------|----------|---------------------------------------------------------------------------------------------|
| 1   | Kinetic Energy               | 42-43    | Controlled release, repeated trials, graphing, and first formal report.                     |
| 2   | Heat Transfer by Conduction  | 60-61    | Temperature data, conduction, variable control, and energy-transfer analysis.               |
| 3   | Electrostatic Forces         | 96-97    | Qualitative electrostatic evidence compared with a field model.                             |
| 4   | Growing Crystals             | 118-119  | Crystal growth, observation, classification, and patient longitudinal recording.            |
| 5   | Determining Volume           | 166-167  | Caliper and displacement measurements; precision and units.                                 |
| 6   | Determining Density          | 194-195  | Mass-volume relationship, density calculation, and percent difference.                      |
| 7   | Heat of Fusion               | 196-197  | Temperature-time data, phase change, graphing, and heat-of-fusion reasoning.                |
| 8   | Inertia and Force            | 224-225  | Force, mass, motion, repeated trials, and Newtonian interpretation.                         |
| 9   | Observing Chemical Reactions | 248-251  | Safe chemical observation; evidence for reaction types and products.                        |
| 10  | Refraction                   | 270-271  | Ray tracing, normal lines, angle measurement, and refraction.                               |
| 11  | Series and Parallel Circuits | 296-299  | Circuit construction, meter use, Ohm's law, and series/parallel comparison.                 |
| 12  | Magnetic Field Strength      | 314-315  | Compass deflection, current, distance, magnetic-field strength, and controlled measurement. |

## Grading Plan

| Term Component                    | Contribution |
|-----------------------------------|--------------|
| Weekly cumulative quizzes         | 70%          |
| Homework assignments              | 5%           |
| Lab reports and lab journal       | 15%          |
| Special projects or presentations | 10%          |
| Total                             | 100%         |

| Final Course Component | Contribution |
|------------------------|--------------|
| Fall term average      | 40%          |
| Fall semester exam     | 10%          |
| Spring term average    | 40%          |
| Spring semester exam   | 10%          |
| Total                  | 100%         |

## Course Policies

**Attendance:** Regular attendance is essential. Quizzes, labs, and finals may not be completed at home; any permitted make-up must be supervised.

**Preparedness:** Arrive with assigned RRC work complete, materials in hand, QR cards reviewed, and questions marked.

**Late Work:** Late work follows the instructor's stated policy. Lab reports are ordinarily due within one week unless a longer window is announced.

**Lab Safety:** Follow all oral and written directions. Unsafe conduct may result in immediate removal, an alternate assignment, dismissal, or expulsion.

**Academic Integrity:** Data, sources, quotations, digital assistance, and collaboration must be acknowledged. Students may discuss an investigation but may not share or copy report text, calculations, graphs, or files.

**Schedule Changes:** Weather, materials, class progress, and student needs may require adjustment. Changes will be communicated through Moodle or the usual family channel.

## Optional Science and Nature-Lore Reading

These optional selections are adapted from AmblesideOnline's current science and natural-history recommendations for AO Year 7. They are not required, graded, or a substitute for assigned course reading. Families may choose according to interest and reading level; parent read-alouds and audiobooks are welcome.

- The Secrets of the Universe — Paul Fleisher (AO Year 7)
- The Wonder Book of Chemistry — Jean-Henri Fabre (AO Year 7)
- Adventures with a Microscope — Richard Headstrom (AO Year 7)
- Great Astronomers — Robert S. Ball (AO Year 7)
- The Life of the Spider — Jean-Henri Fabre (AO Year 7)

Current source schedules: [AmblesideOnline Year 7 schedule](#)