CALVERT™ HOMESCHOOL

CURRICULUM CATALOG

Science 800

online.calverthomeschool.com

Table of Contents

Science 800 Course Overview

Science 800 is a basic intermediate course intended to expose students to the designs and patterns in the physical universe. This course expands on Science 600 and Science 700, providing a set of basic scientific skills and a broad survey of the major areas of science. Some of the areas covered in Science 800 include the structure and properties of matter, measurement and mathematics of science, geology, oceanography, natural cycles and resources, science today and tomorrow, and astronomy.

The curriculum seeks to develop the students' ability to be aware of and participate in scientific inquiry. The units contain experiments and projects to capitalize on the students' natural curiosity. The students will explore, observe and manipulate everyday objects and materials in their environment. Students at this level should show understanding of interrelationships between organisms and the environment, recognize patterns in systems, and expand their knowledge of cellular dimensions of living systems. Collectively, this should help students develop and build on their subject-matter knowledge base.

- **Our Atomic World:** Students will use their main senses for observation of the world around them and describe the atomic structure of different elements.
- **Perceiving Things:** Students will explore different quantities and how to measure them and use graphs to display and analyze data.
- **Physical Geology:** Students will identify different types of geological changes.
- **Historical Geology:** Students will discuss how the layers of the Earth's crust can show history.
- **Oceanography:** Students will describe the different parts of the ocean, both living and non-living.
- **Balance in Nature:** Students will discuss the balance in nature regarding the various cycles.
- **Science and Tomorrow:** Students will explore the relationship between science and society and its possible effects on the future.
- **The Solar System:** Students will explore the solar system and its components.

Astronomy: Students will explore celestial bodies and describe how to make distance measurements and make observations of objects in the universe.

Science 800

Unit 1: Our Atomic World

Assignments

1. Course Overview
2. Scientific Method
3. Science Safety
4. Project: Scientific Inquiry
5. Project: Descriptive Statistics
6. Quiz 1: Science and Chemistry
7. Chemistry Review
8. Project: Chemical Reactions
9. Structure of Matter
10. Radioactivity
11. Quiz 2: Matter and Radioactivity
12. Energy and Temperature
13. Calorimetry
14. Experiment: Calorimetry
15. Quiz 3: Thermodynamics
16. Atomic Nuclei
17. Nuclear Energy
18. Project: Reactors
19. Quiz 4: Atomic Nuclei and Nuclear Energy
20. Applications and Environmental Hazards
21. Quiz 5: Applications and Environmental Hazards
22. Review
23. Special Project*
24. Test
25. Alternate Test*
26. Glossary and Credits

Science 800

Unit 2: Perceiving Things

Assignments

1. Measurement: The Metric System
2. Measurement: Size and Distance
3. Measurement: Area
4. Quiz 1: Measurement
5. Graphs: Uses, Bar, and Line
6. Graphs: Pictographs and Pie Charts
7. Project: Making Graphs
8. Quiz 2: Graphing Data
9. Volume
10. Experiment: Determining Volume
11. Measurement: Volume
12. Quiz 3: Volume
13. Mass
14. Experiment: Mass of Gas
15. Measurement: Mass
16. Quiz 4: Mass
17. Density
18. Buoyancy and Specific Gravity
19. Quiz 5: Density, Buoyancy, and Specific Gravity
20. Perceiving Things
21. Review
22. Special Project*
23. Test
24. Alternate Test*
25. Glossary and Credits

Science 800

Unit 3: Physical Geology

Assignments

1. Earth Structures
2. Internal Structures
3. Igneous Structures
4. Project: Volcanoes
5. Mountains
6. Quiz 1: Earth Structure
7. Earth Changes
8. Erosion and Sediment
9. Oceans
10. Quiz 2: Earth Changes
11. Earth Movements
12. Experiment: Specific Gravity
13. Experiment: Gravity
14. Plate Tectonics
15. Quiz 3: Earth Movements
16. Review
17. Special Project*
18. Test
19. Alternate Test*
20. Glossary and Credits

Science 800

Unit 4: Historical Geology

Assignments

1. An Observational Science
2. Sedimentary Rock
3. Fossils
4. Fossil Formation: Location and Local Deposits
5. Crustal Changes
6. Quiz 1: An Observational Science
7. Determining the Earth's Age
8. Geography and Time (Part 1)
9. Geography and Time (Part 2)
10. Project: Relative Dating
11. Quiz 2: Measuring Time
12. Review
13. Special Project*
14. Test
15. Alternate Test*
16. Glossary and Credits

Science 800

Unit 5: Oceanography

Assignments

1. History of Oceanography
2. Techniques for Investigation
3. Submersible and Satellite Research
4. Project: The Moon and Tides
5. Quiz 1: History of Oceanography
6. Geology of the Ocean
7. Turbidity, Sedimentation, and Currents
8. Quiz 2: Geology of the Ocean
9. Commercial Fishing
10. Chemistry of the Ocean
11. Physical Properties of the Ocean
12. Project: Marine Report
13. Quiz 3: Fishing and Ocean Properties
14. Review
15. Special Project
16. Test
17. Alternate Test
18. Glossary and Credits

Science 800

Unit 6: Balance in Nature

Assignments

1. Photosynthesis and Food
2. Cellular Respiration
3. Food
4. Quiz 1: Photosynthesis and Food
5. Natural Cycles
6. The Water Cycle
7. Other Natural Cycles
8. Quiz 2: Natural Cycles
9. Balance and Disruption
10. Human Disruption
11. Resources
12. Humans and Genes
13. Project: Impact of Humans
14. Quiz 3: Balance and Disruption
15. DNA
16. Project: Genetics
17. Mutations
18. Experiment: Seed or Seedless
19. Experiment: Pea Pod
20. Historical Genetics
21. Evolutionary Genetics
22. Quiz 4: DNA, Mutations and the Environment
23. Review
24. Special Project*
25. Test
26. Alternate Test*
27. Glossary and Credits

Science 800

Unit 7: Science and Tomorrow

Assignments

1. The Biosphere
2. Agriculture and Waste
3. Population
4. Quiz 1: People and Their Land
5. Energy Sources
6. Nuclear Power
7. Industry and Transportation
8. Quiz 2: People and Their Work Environment
9. Outer Space
10. Inner Space
11. Quiz 3: People and Their New Frontiers
12. Project: Digital Transmissions
13. Quantum Theory
14. Quiz 4: Modern Technology
15. Review
16. Special Project*
17. Test
18. Alternate Test*
19. Glossary and Credits

Science 800

Unit 8: The Solar System

Assignments

1. Our Solar System
2. Project: Solar System Model
3. The Sun
4. Ability to Orbit
5. Quiz 1: The Solar System
6. Earth and the Moon
7. Moon and Lunar Cycles
8. Earth Orbit and Seasons
9. Quiz 2: The Earth
10. Mercury, Venus, and Mars
11. Jupiter and Saturn
12. Uranus, Neptune, and Pluto
13. Project: Planet Comparison
14. Quiz 3: The Planets
15. Review
16. Special Project*
17. Test
18. Alternate Test*
19. Glossary and Credits

Science 800

Unit 9: Astronomy

Assignments

1. History of Astronomy
2. Astronomy and Measurement
3. The Universe
4. Measuring the Universe
5. Quiz 1: The Universe
6. Asteroids, Comets, and Meteors
7. Stars and Constellations
8. Project: Beyond Our Solar System
9. Space Explorations
10. Project: Astronomy Timeline
11. Quiz 2: Beyond Our Solar System
12. Gathering Light with Telescopes
13. Other Types of Telescopes
14. Project: Telescopes
15. Quiz 3: Telescopes and Optics
16. Review
17. Special Project*
18. Test
19. Alternate Test*
20. Glossary and Credits

Science 800

Unit 10: Review

Assignments

1. Final Exam
2. Alternate Exam*
3. Glossary and Credits

(*) Indicates alternative assignment