

Science 800

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.

Upon completion of the course, students should be able to do the following:

- Use their main senses for observation of the world around them.
- Describe the atomic structure of different elements.
- Calculate and measure volume, mass, and density for various objects.
- Identify different types of geological changes.
- Discuss how the layers of the earth's crust can show history.
- Describe the different parts of the ocean, both living and non-living.
- Explain the differences in the stars and constellations.
- Discuss the balance in nature regarding the various cycles.
- Demonstrate an understanding of the resources of the Earth and what is needed to conserve those resources.

Unit 1: Our Atomic World		
Assignments		
Science 800	1. Course Overview	14. Experiment: Calorimetry
	2. Scientific Method	15. Quiz 3: Thermodynamics
	3. Science Safety	16. Atomic Nuclei
	4. Project: Scientific Inquiry	17. Nuclear Energy
	5. Project: Descriptive Statistics	18. Project: Reactors
	6. Quiz 1: Science and Chemistry	19. Quiz 4: Atomic Nuclei and Nuclear Energy
	7. Chemistry Review	20. Applications and Environmental Hazards
	8. Project: Chemical Reactions	21. Quiz 5: Applications and Environmental Hazards
	9. Structure of Matter	22. Review
	10. Radioactivity	23. Special Project*
	11. Quiz 2: Matter and Radioactivity	24. Test
	12. Energy and Temperature	25. Alternate Test*
	13. Calorimetry	26. Glossary and Credits

Unit 2: Perceiving Things			
Assignments			
Science 800	1. Measurement: The Metric System	14. Experiment: Mass of Gas	
	2. Measurement: Size and Distance	15. Measurement: Mass	
	3. Measurement: Area	16. Quiz 4: Mass	
	4. Quiz 1: Measurement	17. Density	
	5. Graphs: Uses, Bar, and Line	18. Buoyancy and Specific Gravity	
	6. Graphs: Pictographs and Pie Charts	19. Quiz 5: Density, Buoyancy, and Specific Gravity	
	7. Project: Making Graphs	20. Perceiving Things	
	8. Quiz 2: Graphing Data	21. Review	
	9. Volume	22. Special Project*	
	10. Experiment: Determining Volume	23. Test	
	11. Measurement: Volume	24. Alternate Test*	
	12. Quiz 3: Volume	25. Glossary and Credits	
	13. Mass		
	Unit 3: Physical Geology		
	Assignments		
	Science 800	1. Earth Structures	11. Earth Movements
		2. Internal Structures	12. Experiment: Specific Gravity
		3. Igneous Structures	13. Experiment: Gravity
		4. Project: Volcanoes	14. Plate Tectonics
		5. Mountains	15. Quiz 3: Earth Movements
		6. Quiz 1: Earth Structure	16. Review
		7. Earth Changes	17. Special Project*
		8. Erosion and Sediment	18. Test
		9. Oceans	19. Alternate Test*
		10. Quiz 2: Earth Changes	20. Glossary and Credits
Unit 4: Historical Geology			
Assignments			
Science 800		1. An Observational Science	9. Geography and Time (Part 2)
		2. Sedimentary Rock	10. Project: Relative Dating
		3. Fossils	11. Quiz 2: Measuring Time
		4. Fossil Formation: Location and Local Deposits	12. Review
		5. Crustal Changes	13. Special Project*
		6. Quiz 1: An Observational Science	14. Test
		7. Determining the Earth's Age	15. Alternate Test*
		8. Geography and Time (Part 1)	16. Glossary and Credits
	Unit 5: Oceanography		
	Assignments		
	Science 800	1. History of Oceanography	10. Chemistry of the Ocean
		2. Techniques for Investigation	11. Physical Properties of the Ocean
		3. Submersible and Satellite Research	12. Project: Marine Report
		4. Project: The Moon and Tides	13. Quiz 3: Fishing and Ocean Properties
		5. Quiz 1: History of Oceanography	14. Review
		6. Geology of the Ocean	15. Special Project
7. Turbidity, Sedimentation, and Currents		16. Test	
8. Quiz 2: Geology of the Ocean		17. Alternate Test	
9. Commercial Fishing		18. Glossary and Credits	

Unit 6: Balance in Nature		
Assignments		
Science 800	1. Photosynthesis and Food	15. DNA
	2. Cellular Respiration	16. Project: Genetics
	3. Food	17. Mutations
	4. Quiz 1: Photosynthesis and Food	18. Experiment: Seed or Seedless
	5. Natural Cycles	19. Experiment: Pea Pod
	6. The Water Cycle	20. Historical Genetics
	7. Other Natural Cycles	21. Evolutionary Genetics
	8. Quiz 2: Natural Cycles	22. Quiz 4: DNA, Mutations and the Environment
	9. Balance and Disruption	23. Review
	10. Human Disruption	24. Special Project*
	11. Resources	25. Test
	12. Humans and Genes	26. Alternate Test*
	13. Project: Impact of Humans	27. Glossary and Credits
	14. Quiz 3: Balance and Disruption	

Unit 7: Science and Tomorrow		
Assignments		
Science 800	1. The Biosphere	11. Quiz 3: People and Their New Frontiers
	2. Agriculture and Waste	12. Project: Digital Transmissions
	3. Population	13. Quantum Theory
	4. Quiz 1: People and Their Land	14. Quiz 4: Modern Technology
	5. Energy Sources	15. Review
	6. Nuclear Power	16. Special Project*
	7. Industry and Transportation	17. Test
	8. Quiz 2: People and Their Work Environment	18. Alternate Test*
	9. Outer Space	19. Glossary and Credits
	10. Inner Space	

Unit 8: The Solar System		
Assignments		
Science 800	1. Our Solar System	11. Jupiter and Saturn
	2. Project: Solar System Model	12. Uranus, Neptune, and Pluto
	3. The Sun	13. Project: Planet Comparison
	4. Ability to Orbit	14. Quiz 3: The Planets
	5. Quiz 1: The Solar System	15. Review
	6. Earth and the Moon	16. Special Project*
	7. Moon and Lunar Cycles	17. Test
	8. Earth Orbit and Seasons	18. Alternate Test*
	9. Quiz 2: The Earth	19. Glossary and Credits
	10. Mercury, Venus, and Mars	

Unit 9: Astronomy																					
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