



monarch

2017 - 2018 Curriculum Catalog

Science 500

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Science 500 Course Overview

Science 500 is a basic elementary course intended to expose students to the designs and patterns in God’s physical universe. This course expands on the Science 300 and Science 400 courses, providing a broad survey of the major areas of science. Some of the areas covered in Science 500 include the study of cells, plants and animals, ecology, energy, geology, properties of matter, and the natural cycles of life.

The course seeks to develop the student’s ability to understand and participate in scientific inquiry. The units contain experiments and projects to capitalize on the students’ natural curiosity. The student will explore, observe, and manipulate everyday objects and materials in their environment. Students at this level should begin to understand interrelationships between organisms, recognize patterns in ecosystems, and become aware of the 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.
- Demonstrate an understanding of cells and their structure, both plant and animal.
- Differentiate between plants, animals, fungi, protozoa, and algae.
- Explain interactions between different life forms.
- Discuss different energy transformations.
- Describe geology and how it relates to the Flood.
- Demonstrate an understanding of fossil types and the formation of fossils.
- Understand natural cycles.

Unit 1: Cells	
Assignments	
Science 500	1. Course Overview
	2. The Basic Unit of Living Things: A Cell
	3. Viewing Cells
	4. Experiment: Skin Cells
	5. Quiz 1
	6. The Life and Activity of Cells
	7. Plants and Unicellular Organisms
	8. Experiment: Onion Cells
	9. Experiment: Pond Water Examination
	10. Experiment: Cheek Cells
	11. Experiment: Blood Cells
	12. Tissue
	13. Quiz 2
	14. Cells: Energy and Growth of Cells
	15. Cell Reproduction
	16. Quiz 3
	17. Special Project*
	18. Review Game
	19. Test
	20. Alternate Test*
	21. Reference

Unit 2: Plants: Life Cycles		
Assignments		
Science 500	1. Classifying Living Things and Plants	14. Fern Plants
	2. Parts of Plants	15. Report: Walking Fern*
	3. Quiz 1	16. Fungi
	4. Seed Bearing Plants	17. Experiment: Mold
	5. Flowering Plants	18. Quiz 3
	6. Experiment: Flower Dissection	19. One-celled Living Things
	7. Fertilization	20. Quiz 4
	8. Experiment: Seed Dissection	21. Special Project*
	9. Cone-Bearing Plants	22. Review Game
	10. Project: Examining Cones	23. Test
	11. Project: Seed Hunt*	24. Alternate Test*
	12. Quiz 2	25. Reference
	13. Spore Bearing Plants and Fungi	

Unit 3: Animals: Life Cycles		
Assignments		
Science 500	1. Invertebrates: Life Cycles	13. Egg-Laying Vertebrates (Part 3)
	2. One-celled Animal-like Protists	14. Experiment: Chicken Egg*
	3. Report: Protozoa*	15. Live-Bearing Vertebrates
	4. Egg-Laying Invertebrates	16. Report: Mammals*
	5. Experiment: Mealworm*	17. Essay: God and Animals*
	6. Report: The Spider*	18. Quiz 2
	7. Report: Insect Study*	19. Special Project*
	8. Worms and Mollusks	20. Review Game
	9. Quiz 1	21. Test
	10. Vertebrates: Life Cycles	22. Alternate Test*
	11. Egg-Laying Vertebrates	23. Reference
	12. Egg-Laying Vertebrates (Part 2)	

Unit 4: Balance in Nature		
Assignments		
Science 500	1. Balance of Nature: Physical Environment	12. Project: Special Environments*
	2. Project: Cycles*	13. Quiz 2
	3. Ecosystems	14. Humans and the Web of Life
	4. Project: Terrarium Project	15. Humans and the Web of Life (Part 2)
	5. Quiz 1	16. Quiz 3
	6. The Prairie: Web of Life	17. Special Project*
	7. Project: Prairie Land*	18. Review Game
	8. The Prairie: Web of Life (Part 2)	19. Test
	9. Report: Prairie Birds*	20. Alternate Test*
	10. The Prairie: Food Chains	21. Reference
	11. Project: Prairie Food Chain*	

Unit 5: Transformation of Energy		
Assignments		
Science 500	1. Energy	11. Energy in the Future
	2. Work	12. Future Sources of Energy
	3. Quiz 1	13. Experiment: Solar Energy for Heat
	4. Work From Energy	14. Quiz 3
	5. Experiment: Heat From the Sun*	15. Special Project*
	6. Forms of Energy	16. Review Game
	7. Experiment: Heat from Bending*	17. Test
	8. Experiment: Heat Energy from a Chemical Reaction*	18. Alternate Test*
	9. Chemical Energy	19. Reference
	10. Quiz 2	

Unit 6: Records in the Rock: the Flood		
Assignments		
Science 500	1. Before the Flood: The Bible Record	9. After the Flood: The Bible Record
	2. Before the Flood: The Physical Record	10. After the Flood: The Physical Record
	3. Quiz 1	11. Quiz 3
	4. The Flood: The Bible Record	12. Special Project*
	5. Project: Interview with Noah*	13. Review Game
	6. The Flood: The Physical Record	14. Test
	7. Report: Ancient Flood Stories*	15. Alternate Test*
	8. Quiz 2	16. Reference

Unit 7: Records in the Rock: Fossils		
Assignments		
Science 500	1. Fossil Formation	11. Project: Fossil Clues*
	2. Project: Mold Fossil Copy	12. Reading Fossils: Reconstruction
	3. Project: Cast Fossil Copy*	13. Project: Fill in the Skeleton*
	4. Fossil Formation Part 2	14. Project: Be Creative*
	5. Fossil Locations	15. Quiz 2
	6. Quiz 1	16. Special Project*
	7. Reading Fossils: Identification	17. Review Game
	8. Reading Fossils: Earth's Age	18. Test
	9. Project: Plant and Animal Fossils*	19. Alternate Test*
	10. Reading Fossils: Difficulties	20. Reference

Unit 8: Records In Rock: Geology		
Assignments		
Science 500	1. Features of the Earth	11. Causes of Surface Change
	2. Project: Compare an Orange and the Earth	12. Earthquakes and Volcanoes
	3. Layers of the Earth	13. Project: Volcano Summary*
	4. Rocks on the Earth's Surface	14. Results of Forces
	5. Project: Examine a Mineral*	15. Quiz 2
	6. Kinds of Rocks	16. Special Project*
	7. Report: Rocks*	17. Review Game
	8. Project: Rock Hunt*	18. Test
	9. Quiz 1	19. Alternate Test*
	10. Changes in the Earth: Surface Change	20. Reference
	11. Experiment: Erosion*	

Unit 9: Cycles in Nature		
Assignments		
Science 500	1. Properties of Matter	14. Comets
	2. Properties of Matter (Part 2)	15. Report: Famous Comets*
	3. Experiment: Volume	16. Life
	4. Changes in Matter	17. Experiment: Water Evaporation*
	5. Experiment: Water Container*	18. Quiz 2
	6. Experiment: Types of Changes*	19. God's Order
	7. Conservation of Matter	20. Quiz 3
	8. Experiment: Conservation of Matter*	21. Special Project*
	9. Structure of Matter	22. Review Game
	10. Quiz 1	23. Test
	11. The Four Seasons	24. Alternate Test*
	12. The Cause of Seasons	25. Reference
	13. Project: Globe*	

Unit 10: Look Ahead		
Assignments		
Science 500	1. Living Things: Plants, Fungi, Protists, and Monerans	10. Energy and Work
	2. Living Things: Animals and Animal-Like Protists	11. Matter
	3. Living Things: Balance of Nature	12. Quiz 3
	4. Quiz 1	13. Special Project*
	5. The Earth: Records of Life	14. Review Game
	6. The Earth: Fossils	15. Test
	7. The Earth: Records in Rock	16. Alternate Test*
	8. Quiz 2	17. Reference
	9. Order in Creation	

(*) Indicates alternative assignment