



monarch

2018 - 2019 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	
1. Course Overview	12. Tissue
2. The Basic Unit of Living Things: A Cell	13. Quiz 2
3. Viewing Cells	14. Cells: Energy and Growth of Cells
4. Experiment: Skin Cells	15. Cell Reproduction
5. Quiz 1	16. Quiz 3
6. The Life and Activity of Cells	17. Special Project*
7. Plants and Unicellular Organisms	18. Review Game
8. Experiment: Onion Cells	19. Test
9. Experiment: Pond Water Examination	20. Alternate Test*
10. Experiment: Cheek Cells	21. Reference
11. Experiment: Blood Cells	

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

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

(*) Indicates alternative assignment