

CURRICULUM OVERVIEW

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 the 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 curriculum seeks to develop the students' ability to understand 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 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 various energy transformations.
- Demonstrate an understanding of fossil types and the formation of fossils.
- Describe the layers of the earth, landforms, and sources of change.
- Understand natural cycles.

Unit 1: Cells	
Science 500	Assignments
	1. Course Overview
	2. Living Units
	3. Experiment: The Microscope
	4. Project: Robert Hooke*
	5. General Cell Composition
	6. Quiz 1: Living Units
	7. Structure and Function of Cells: Plants
	8. Experiment: Beans*
	9. Experiment: Onion Cells*
	10. Structure and Function of Cells: Protozoa
	11. Structure and Function of Cells: Animals
	12. Experiment: Pond Water*
	13. Structure and Function of Cells: Tissue
	14. Project: Be Creative*
	15. Project: Explain Cells*
	16. Quiz 2: Structure and Function of Cells
	17. Energy of Cells
	18. Reproduction of Cells
	19. Project: Anton Van Leeuwenhoek*
	20. Experiment: Stems*
	21. Experiment: Cheek Cells*
	22. Quiz 3: Life and Growth of Cells
	23. Special Project*
	24. Test
	25. Alternate Test*
	26. Glossary and Credits

Unit 2: Plants: Life Cycles		
Science 500	Assignments	
	1. Seed Bearing Plants: Life Stages	13. Fungi
	2. Seed Bearing Plants: Flowering Plants	14. Experiment: Mold*
	3. Experiment: Flower Dissection	15. Project: Uses of Fungi*
	4. Project: Draw Flowers*	16. Quiz 2: Spore Bearing Plants
	5. Experiment: Seed Dissection*	17. Algae
	6. Seed Bearing Plants: Cone Bearing Plants	18. One-celled Fungi: Yeasts
	7. Experiment: Cones*	19. Quiz 3: One-Celled Fungi
	8. Project: Seed Hunt*	20. Special Project*
	9. Quiz 1: Seed Bearing Plants	21. Test
	10. Spore Bearing Plants: Life Stages	22. Alternate Test*
	11. Spore Bearing Plants: Ferns	23. Glossary and Credits
	12. Project: Walking Fern*	
Unit 3: Animals: Life Cycles		
Science 500	Assignments	
	1. Invertebrates: Life Cycles	12. Egg-Laying Vertebrates (Part 2)
	2. One-celled Organisms	13. Egg-Laying Vertebrates (Part 3)
	3. Project: Protozoa*	14. Experiment: Chicken Egg*
	4. Multicellular Invertebrates	15. Live-Bearing Vertebrates
	5. Experiment: Mealworm*	16. Project: Mammals*
	6. Project: Spiders*	17. Quiz 2: Vertebrates
	7. Project: Insect Study*	18. Special Project*
	8. Worms and Mollusks	19. Test
	9. Quiz 1: Invertebrates	20. Alternate Test*
	10. Vertebrates: Life Cycles	21. Glossary and Credits
	11. Egg-Laying Vertebrates (Part 1)	
Unit 4: The Web of Life		
Science 500	Assignments	
	1. Balance of Nature: Life Needs	14. Project: Prairie Birds*
	2. Balance of Nature: Other Cycles	15. Prairie Food Chains
	3. Project: The Carbon Cycle*	16. Project: Prairie Food Chain*
	4. Mineral Cycle	17. Project: Special Environments*
	5. Project: Cycles*	18. Quiz 2: The Prairie Web of Life
	6. Balance of Nature: Dependence	19. Humans and the Web of Life (Part 1)
	7. Project: Food Chain*	20. Humans and the Web of Life (Part 2)
	8. Project: Build a Terrarium*	21. Quiz 3: Humans and the Web of Life
	9. Project: Terrarium Check*	22. Special Project*
	10. Quiz 1: The Balance of Nature	23. Test
	11. Prairie Web of Life (Part 1)	24. Alternate Test*
	12. Project: Prairie Land*	25. Glossary and Credits
	13. Prairie Web of Life (Part 2)	

Unit 8: Records in Rock: Geology		
Science 500	Assignments	
	1. Features of the Earth	14. Surface Forces (Part 2)
	2. Landforms	15. Experiment: Erosion*
	3. Experiment: Examine an Orange*	16. Living Things
	4. Layers of the Earth (Part 1)	17. Forces from Under the Surface (Part 1)
	5. Layers of the Earth (Part 2)	18. Forces from Under the Surface (Part 2)
	6. Rocks on Earth's Surface	19. Project: Volcanoes*
	7. Project: Examine a Mineral*	20. Results of Forces
	8. Kinds of Rocks	21. Quiz 2: Changes in the Earth
	9. Identifying Rocks	22. Special Project*
	10. Project: Rocks and Minerals*	23. Test
	11. Project: Rock Hunt*	24. Alternate Test*
	12. Quiz 1: Structure of the Earth	25. Glossary and Credits
	13. Surface Forces (Part 1)	
Unit 9: Cycles in Nature		
Science 500	Assignments	
	1. Matter: Properties of Matter (Part 1)	13. Project: Globe*
	2. Matter: Properties of Matter (Part 2)	14. Other Natural Cycles: Phases of the Moon
	3. Experiment: Volume	15. Other Natural Cycles: Comets
	4. Matter: Changes in Matter	16. Project: Comets*
	5. Experiment: Water Container*	17. Other Natural Cycles: Life
	6. Experiment: Types of Changes*	18. Other Natural Cycles: Water Cycle
	7. Matter: Conservation	19. Experiment: Evaporation*
	8. Structure of Matter	20. Quiz 2: Other Natural Cycles
	9. Experiment: Conservation of Matter*	21. Special Project*
	10. Project: Antoine Lavoisier*	22. Test
	11. Quiz 1: Matter	23. Alternate Test*
	12. Other Natural Cycles: Seasons	24. Glossary and Credits
Unit 10: Look Ahead		
Science 500	Assignments	
	1. Living Things: Plant Life	13. The Earth: Changes in the Earth
	2. Living Things: Plants and Fungi	14. Project: Landforms*
	3. Experiment: Mitosis and Budding*	15. Quiz 2: The Earth
	4. Living Things: Animal Life	16. Order: Energy
	5. Project: Organs and Tissue*	17. Order: Work
	6. Living Things: Animals and Protozoa	18. Project: Make A Collage*
	7. Project: Organism Report*	19. Order: Matter
	8. Living Things: Balance of Life	20. Quiz 3: Order
	9. Project: Use the News*	21. Special Project *
	10. Quiz 1: Living Things	22. Test
	11. The Earth: Fossils	23. Alternate Test*
	12. The Earth: Records of Rock	24. Glossary and Credits

(*) Indicates alternative assignment