



# Switched-On

SCHOOLHOUSE® 2012 EDITION

## Curriculum Catalog

Science 500

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### 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	
Assignment Titles	
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	
Assignment Titles	
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**
**Assignment Titles**

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|-------------------------------------|-------------------------------------|
| 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**
**Assignment Titles**

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|--|---|
| 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**
**Assignment Titles**

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

**UNIT 6: RECORDS IN THE ROCK: THE FLOOD**
**Assignment Titles**

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|--|--|
| 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**
**Assignment Titles**

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|--------------------------------------|-------------------------------------|
| 1. Fossil Formation                  | 11. Project: Fossil Clues           |
| 2. Project: Mold Fossil Copy         | 12. Reading Fossils: Reconstruction |
| 3. Project: Cast Fossil Copy         | 13. Project: Label 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**
**Assignment Titles**

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|---|-------------------------------|
| 1. Features of the Earth                    | 12. Causes of Surface Change  |
| 2. Project: Compare an Orange and the Earth | 13. Earthquakes and Volcanoes |
| 3. Layers of the Earth                      | 14. Project: Volcano Summary  |
| 4. Rocks on the Earth's Surface             | 15. Results of Forces         |
| 5. Project: Examine a Mineral               | 16. Quiz 2                    |
| 6. Kinds of Rocks                           | 17. Special Project           |
| 7. Report: Rocks                            | 18. Review Game               |
| 8. Project: Rock Hunt                       | 19. Test                      |
| 9. Quiz 1                                   | 20. Alternate Test            |
| 10. Changes in the Earth: Surface Change    | 21. Reference                 |
| 11. Experiment: Erosion                     |                               |

**UNIT 9: CYCLES IN NATURE**
**Assignment Titles**

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|---------------------------------------|-----------------------------------|
| 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**
**Assignment Titles**

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