



# 2012 Curriculum Catalog

Science 600

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### Course Overview

Science 600 is a basic intermediate course intended to expose students to the designs and patterns in God's physical universe. This course expands on the Science 300-500 elementary courses, providing a broad survey of the major areas of science. Some of the areas covered in Science 600 include the study of plant and animal systems, plant and animal behavior, genetics, the structure of matter, light and sound, kinematics, planet Earth, the solar system, and astronomy.

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 children's 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.
- Describe the different systems in plants and animals.
- Explain the different ways plants and animals behave.
- Explain how Mendel used observation to develop his theories.
- Demonstrate a basic knowledge of chemical structure and the periodic table.
- Discuss light and sound waves.
- Describe motion as it relates to force and work.
- Explain how time and season are related to the rotation and revolution of the earth.
- Identify common stars and constellations.

UNIT 1: PLANT SYSTEMS	
Assignment Titles	
1. Course Overview	13. Transport System: Stems and Leaves
2. Photosynthesis: Location	14. Experiment: Celery
3. Experiment: Anacharis Photosynthesis	15. Quiz 2
4. Photosynthesis: The Leaf Factory	16. Regulatory System
5. Experiment: Seeds	17. Experiment: Growing Roots
6. Photosynthesis: Products	18. Quiz 3
7. Experiment: Digestive Enzymes	19. Special Project
8. Photosynthesis: Raw Materials	20. Review Game
9. Investigation: Plant Growth	21. Test
10. Quiz 1	22. Alternate Test
11. Transport System: Roots	23. Reference
12. Experiment: Root Observation	

UNIT 2: BODY SYSTEMS	
Assignment Titles	
1. Digestive System: Structure	13. Project: Lungs
2. Digestive System: Function	14. Experiment: Evaporation and Cooling
3. Experiment: Digestion	15. Quiz 2
4. Digestive System: Function (Part 2)	16. Muscular System
5. Experiment: Oil and Soap	17. Skeletal System
6. Experiment: Passing Food	18. Quiz: Bone Quiz
7. Quiz 1	19. Quiz 3
8. Circulatory System	20. Special Project
9. Experiment: Pulse Rate	21. Review Game
10. Project: Heart	22. Test
11. Excretory System	23. Alternate Test
12. Experiment: Carbon Dioxide	24. Reference

**UNIT 3: PLANTS AND ANIMAL BEHAVIOR**
**Assignment Titles**

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|--------------------------------|--------------------------------|
| 1. The Nervous System          | 13. Terrestrial Biomes         |
| 2. Report: The Eye             | 14. Aquatic Biomes             |
| 3. Report: The Ear             | 15. Food Chains                |
| 4. Nerves and Spinal Column    | 16. Nature: Cycles and Balance |
| 5. Response and Intelligence   | 17. Report: Man's Influence    |
| 6. Report: Instincts           | 18. Quiz 3                     |
| 7. Experiment: Response        | 19. Special Project            |
| 8. Experiment: Trial and Error | 20. Review Game                |
| 9. Quiz 1                      | 21. Test                       |
| 10. Plant Behavior             | 22. Alternate Test             |
| 11. Investigation: Tropisms    | 23. Reference                  |
| 12. Quiz 2                     |                                |

**UNIT 4: MOLECULAR GENETICS**
**Assignment Titles**

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|---|---|
| 1. Reproduction                         | 13. Experiment: Albinos                 |
| 2. Project: Flower Structure            | 14. Report: Genetics                    |
| 3. Male-Female Reproduction             | 15. Mutation                            |
| 4. Project: Lima Bean Embryo            | 16. The Use of Mutations                |
| 5. Quiz 1                               | 17. Project: Pea Pod                    |
| 6. Inheritance                          | 18. Temperature Influence on Coloration |
| 7. Project: Mendel's Discovery          | 19. Quiz 3                              |
| 8. Taste, Dominance, and Multiple Genes | 20. Special Project                     |
| 9. Experiment: Taste Gene Lab           | 21. Review Game                         |
| 10. Project: Traits                     | 22. Test                                |
| 11. Quiz 2                              | 23. Alternate Test                      |
| 12. DNA                                 | 24. Reference                           |

**UNIT 5: CHEMICAL STRUCTURE AND CHANGE**
**Assignment Titles**

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|---------------------------------------|----------------------------------|
| 1. Chemical Structure                 | 16. Project: Chart and Diagram   |
| 2. Experiment: Solid, Liquid, Gas     | 17. Report: Chemical Discoveries |
| 3. Chemical Elements and Atoms        | 18. Acids and Bases              |
| 4. Molecules and Compounds            | 19. Experiment: Acid or Base?    |
| 5. Experiment: Copper Iodide          | 20. Project: From Memory         |
| 6. Experiment: Calcium Carbonate      | 21. Project: Cause and Effect    |
| 7. Quiz 1                             | 22. Project: Chemical Symbols    |
| 8. Periodic Table                     | 23. Project: Discussion          |
| 9. Project: Water Molecule Model      | 24. Quiz 3                       |
| 10. Atomic Mass                       | 25. Special Project              |
| 11. Project: Atomic Number            | 26. Review Game                  |
| 12. Arrangement of the Periodic Table | 27. Test                         |
| 13. Project: Use the Periodic Table   | 28. Alternate Test               |
| 14. Quiz 2                            | 29. Reference                    |
| 15. Chemical Change                   |                                  |

**UNIT 6: LIGHT AND SOUND**
**Assignment Titles**

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|--------------------------------|---------------------------------------|
| 1. Waves: Sound                | 13. Project: Color Wheel              |
| 2. Experiment: Test Tube Tunes | 14. Experiment: Subtractive Colors    |
| 3. Project: Sound Vibrations   | 15. Experiment: Mixing Colored Lights |
| 4. Light Waves                 | 16. Mixing Colors                     |
| 5. Project: Light Waves        | 17. Experiment: Mixing Colorants      |
| 6. Project: Refracted Light    | 18. Quiz 3                            |
| 7. Quiz 1                      | 19. Special Project                   |
| 8. The Spectrum                | 20. Review Game                       |
| 9. Project: Color Spectrum     | 21. Test                              |
| 10. Project: Create a Rainbow  | 22. Alternate Test                    |
| 11. Quiz 2                     | 23. Reference                         |
| 12. Colors                     |                                       |

**UNIT 7: MOTION AND ITS MEASUREMENT**
**Assignment Titles**

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|--|------------------------------------|
| 1. Motion, Force, and Work                   | 10. Experiment: The Law of Inertia |
| 2. Measurement of Work                       | 11. Quiz 2                         |
| 3. Experiment: Forces of Lifting and Pulling | 12. Change in Motion               |
| 4. Project: Unscramble Activity              | 13. Quiz 3                         |
| 5. Quiz 1                                    | 14. Special Project                |
| 6. Power and Newton's Laws of Motion         | 15. Review Game                    |
| 7. Report: Horsepower and Watts              | 16. Test                           |
| 8. Experiment: Your Horsepower               | 17. Alternate Test                 |
| 9. Newton's Laws of Motion and Gravitation   | 18. Reference                      |

**UNIT 8: SPACESHIP EARTH**
**Assignment Titles**

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|----------------------------------|---------------------------------------|
| 1. Earth's Motion                | 11. Quiz 2                            |
| 2. Experiment: Balloon Globe     | 12. The Solar System                  |
| 3. Earth's Rotation              | 13. Report: Planets                   |
| 4. Time                          | 14. Asteroids, Comets, and Meteoroids |
| 5. Experiment: Observing Shadows | 15. Quiz 3                            |
| 6. Earth's Orbit                 | 16. Special Project                   |
| 7. Quiz 1                        | 17. Review Game                       |
| 8. Eclipses                      | 18. Test                              |
| 9. Project: Fact or Opinion      | 19. Alternate Test                    |
| 10. Experiment: Eclipses         | 20. Reference                         |

**UNIT 9: ASTRONOMY AND THE STARS**
**Assignment Titles**

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|--|---------------------------------------|
| 1. Astronomy                           | 12. Quiz 2                            |
| 2. Report: Great Astronomers           | 13. Constellations and Major Stars    |
| 3. Astronomy Today                     | 14. Project: Betelgeuse and Aldebaran |
| 4. Quiz 1                              | 15. Project: Constellations           |
| 5. Stars                               | 16. Quiz 3                            |
| 6. Elements and Spectra                | 17. Special Project                   |
| 7. Project: The Spectroscope           | 18. Review Game                       |
| 8. Experiment: Spectrography           | 19. Test                              |
| 9. Experiment: Oil on Water            | 20. Alternate Test                    |
| 10. Magnitude and Luminosity           | 21. Reference                         |
| 11. Light Years and Astronomical Units |                                       |

**UNIT 10: THE EARTH AND THE UNIVERSE****Assignment Titles**

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|-----------------------------------|-------------------------------------|
| 1. The Photosynthesis System      | 14. Physics and Chemistry: Motion   |
| 2. The Transport System of Plants | 15. Physics and Chemistry: Machines |
| 3. The Digestive System           | 16. Quiz 2                          |
| 4. The Excretory System           | 17. Earth's Rotation                |
| 5. Skeletal and Muscular Systems  | 18. Earth's Revolution              |
| 6. The Nervous System             | 19. Our Solar System                |
| 7. Genetics and Reproduction      | 20. Quiz 3                          |
| 8. Ecological Systems             | 21. Special Project                 |
| 9. Report: Biomes                 | 22. Review Game                     |
| 10. Quiz 1                        | 23. Test                            |
| 11. Physics and Chemistry: Matter | 24. Alternate Test                  |
| 12. Physics and Chemistry: Light  | 25. Reference                       |
| 13. Physics and Chemistry: Sound  |                                     |