



# 2017-2018 Curriculum Catalog

Science 600

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## Science 600 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	
Assignments	
Science 600	1. Course Overview
	2. Photosynthesis: Location
	3. Experiment: Anacharis Photosynthesis
	4. Photosynthesis: The Leaf Factory
	5. Experiment: Seeds
	6. Photosynthesis: Products
	7. Experiment: Digestive Enzymes
	8. Photosynthesis: Raw Materials
	9. Investigation: Plant Growth
	10. Quiz 1
	11. Transport System: Roots
	12. Experiment: Root Observation
	13. Transport System: Stems and Leaves
	14. Experiment: Celery
	15. Quiz 2
	16. Regulatory System
	17. Experiment: Growing Roots*
	18. Quiz 3
	19. Special Project*
	20. Review Game
	21. Test
	22. Alternate Test*
	23. Reference

**Unit 2: Body Systems****Assignments**

Science 600

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|--|---|
| 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****Assignments**

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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****Assignments**

Science 600

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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****Assignments**

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|-------------|---------------------------------------|-----------------------------------|
| Science 600 | 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****Assignments**

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|-------------|--------------------------------|--|
| Science 600 | 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****Assignments**

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|-------------|--|------------------------------------|
| Science 600 | 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                      |

<b>Unit 8: Spaceship Earth</b>		
<b>Assignments</b>		
Science 600	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

<b>Unit 9: Astronomy and the Stars</b>		
<b>Assignments</b>		
Science 600	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	

<b>Unit 10: The Earth and the Universe</b>		
<b>Assignments</b>		
Science 600	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	

(\*) Indicates alternative assignment