



monarch

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	
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	
Assignments	
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	
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	
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	
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	
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	
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		
Assignments		
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

Unit 9: Astronomy and the Stars		
Assignments		
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	

Unit 10: The Earth and the Universe		
Assignments		
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