

# CURRICULUM OVERVIEW

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## Science 700



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## Science 700 Course Overview

Science 700 is a basic intermediate course intended to expose students to the designs and patterns in the physical universe. This course expands on the Science 600 course, providing a set of basic scientific skills and a broad survey of the major areas of science. Some of the areas covered in Science 700 include the scientific method, overview of the four major areas of science, mathematics in science, astronomy, the atmosphere, natural cycles, weather and climate, human anatomy and physiology, and careers in science.

The curriculum seeks to develop the students' ability to be aware of 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 show understanding of interrelationships between organisms, recognize patterns in systems, and expand their knowledge of cellular dimensions of living systems. Collectively, this should help students develop and build on their subject-matter knowledge base.

- **Scientific Inquiry:** Students will explore the processes of scientific inquiry, including the scientific method, data collection and analysis, and drawing conclusions, as well as the role that science plays in society.
- **Matter:** Students will explore the makeup of matter, and its physical and chemical properties.
- **Energy and Motion:** Students will explore the forms of energy, how it is transformed, and its relationship to motion.
- **Biology:** Students will learn about living organisms, starting with cells, through tissues, up to organ systems, as well as homeostasis.
- **Health and Disease:** Students will learn about what causes disease, how diseases can be prevented and making healthy living choices.
- **Genetics:** Students will the basics of genetics, asexual and sexual reproduction, and the role genetics play in society.
- **Ecology and the Environment:** Students will explore various ecosystems and biomes, and the interactions of animals and humans with the environment.
- **Earth Science:** Students will explore the history and makeup of the earth and the processes that occur in, on, and above the earth.
- **Life Over Time:** Students will learn about how life on earth has changed over time, including evolution, extinction, and speciation.

Unit 1: Scientific Inquiry		
Science 700	Assignments	
	1. Course Overview	12. Project: Ethics Case Study
	2. What is Science?	13. Quiz 2
	3. Project: Make a Model	14. Science and Society
	4. Scientific Method	15. Science and Technology
	5. Lab Safety	16. Careers in Science
	6. Observation and Questioning	17. Quiz 3
	7. Data Collection, Analysis, and Communication	18. Review
	8. Project: Design an Experiment	19. Special Project
	9. Project: Conduct an Experiment	20. Test
	10. Quiz 1	21. Alternate Test
	11. Ethics and Bias	22. Glossary and Credits

Unit 2: Matter		
Science 700	Assignments	
	1. Atoms, Molecules, and Compounds	11. Chemical Reactions
	2. Elements	12. Experiment: Chemical Reactions
	3. Essential Elements	13. Chemical Application
	4. Quiz 1	14. Petroleum Uses
	5. Ions	15. Quiz 3
	6. Mixtures and Solutions	16. Review
	7. Experiment: Chromatography	17. Special Project
	8. States of Matter	18. Test
	9. Quiz 2	19. Alternate Test
	10. Phase Change	20. Glossary and Credits
Unit 3: Energy and Motion		
Science 700	Assignments	
	1. Energy	13. Force
	2. Heat	14. Experiment: Air Resistance
	3. Experiment: Heat Transfer	15. Gravity
	4. Light	16. Newton's Laws of Motion
	5. Quiz 1	17. Project: Newton's Laws
	6. Sound	18. Quiz 3
	7. Electricity and Magnetism	19. Review
	8. Experiment: Electric Motor	20. Special Project
	9. Energy Transformation	21. Test
	10. Experiment: Energy Efficiency	22. Alternate Test
	11. Quiz 2	23. Glossary and Credits
	12. Motion	
Unit 4: Biology		
Science 700	Assignments	
	1. Organic Chemistry	13. Quiz 2
	2. Living Organisms	14. Organ Systems (Part 1)
	3. Cells	15. Organ Systems (Part 2)
	4. Reproduction of Cells	16. Project: Systems
	5. Animal Organelles	17. Homeostasis
	6. Plant Organelles	18. Quiz 3
	7. Project: Cell	19. Review
	8. Quiz 1	20. Special Project
	9. Plant Tissue	21. Test
	10. Animal Tissue	22. Alternate Test
	11. Organs	23. Glossary and Credits
	12. Project: Organ Transplants	

Unit 5: Health and Disease		
Science 700	Assignments	
	1. Pathogens	12. Medical Advances
	2. Immune System	13. Unhealthy Behaviors
	3. Project: Lupus	14. Healthy Living
	4. Communicable Diseases	15. Project: Personal Health Assessment
	5. Quiz 1	16. Quiz 3
	6. Chronic Diseases	17. Review
	7. Project: Radiation Therapy	18. Special Project
	8. Degenerative Diseases	19. Test
	9. Vaccinations and Immunizations	20. Alternate Test
	10. Project: Public Health	21. Glossary and Credits
	11. Quiz 2	
Unit 6: Genetics		
Science 700	Assignments	
	1. Genetic Basics	11. Project: Ethics Essay
	2. Project: Karyotype	12. Forensic DNA
	3. Asexual Reproduction	13. Project: Solve the Case
	4. Sexual Reproduction	14. Quiz 3
	5. Quiz 1	15. Review
	6. Mendelian Genetics	16. Special Project
	7. Project: Punnett Squares	17. Test
	8. Patterns of Inheritance	18. Alternate Test
	9. Quiz 2	19. Glossary and Credits
	10. Genetic Engineering and Ethics	20. Project: Ethics Essay
Unit 7: Ecology And The Environment		
Science 700	Assignments	
	1. Ecosystems	14. Quiz 2
	2. Project: Virtual Lab - Biome: Desert	15. Air and Water Pollution
	3. Project: Local Ecosystem	16. Project: Global Warming
	4. Biodiversity	17. Project: Environmental Policies
	5. Cycles and Energy Flow	18. Energy Sources
	6. Limiting Factors	19. Conservation
	7. Project: Virtual Lab - Biome: Coniferous	20. Experiment: Biodegradability
	8. Quiz 1	21. Quiz 3
	9. Food Chains and Webs	22. Review
	10. Project: Food Web	23. Special Project
	11. Competition and Cooperation	24. Test
	12. Project: Virtual Lab - Biome: Grassland	25. Alternate Test
	13. Symbiosis	26. Glossary and Credits

Unit 8: Earth Science		
Science 700	Assignments	
	1. The Earth	14. Effects of the Sun
	2. The Lithosphere	15. Quiz 2
	3. The Rock Cycle	16. Constructive Forces
	4. Project: The Rock Cycle	17. Destructive Forces
	5. The Atmosphere	18. Natural Disasters
	6. Quiz 1	19. Project: Geologic Map
	7. The Hydrosphere	20. Fossils
	8. The Water Cycle	21. Quiz 3
	9. Project: Water Cycle	22. Review
	10. Groundwater	23. Special Project
	11. Weather	24. Test
	12. Measuring Weather	25. Alternate Test
	13. Project: Measuring Weather	26. Glossary and Credits
Science 700	Unit 9: Life over Time	
	Assignments	
	1. Evolution	12. Taxonomy
	2. Question Pool	13. Plantae Kingdom
	3. Evidence of Evolution	14. Animalia Kingdom
	4. Project: Morphology	15. Project: Metamorphosis
	5. Mutation	16. Quiz 3
	6. Project: Sickle Cell Anemia	17. Review
	7. Quiz 1	18. Special Project
	8. Other Methods of Evolution	19. Test
	9. Project: Natural Selection	20. Alternate Test
	10. Extinction	21. Glossary and Credits
	11. Speciation	
Science 700	Unit 10: Course Review and Exam	
	Assignments	
	1. Review	3. Final Exam Alternative
	2. Exam	

(\*) Indicates alternative assignment