

ACADEMIC INSTRUCTIONAL LIBRARY



**Science 600
Home Teacher
Program**

SCIENCE 600 ONLINE

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.

HOME TEACHER LABS

Labs for the Homeschool Edition program are those contained in the Ignitia Online Curriculum. No expensive equipment is required with only several requiring the purchase of small items or household items to conduct the experiments.

It is always advisable to be familiar with your surroundings and wear protective equipment when conducting any experiment. Never allow yourself to be distracted when completing an experiment.

Homeschool Parent Teacher - Home Science Labs

Unit 1 - PLANT SYSTEMS

- 1. Course Overview**
- 2. Photosynthesis: Location**

3. **Photosynthesis: The Leaf Factory**
4. **Experiment: Seeds**
5. **Photosynthesis: Products**
6. **Photosynthesis: Raw Materials**
7. **Investigation: Plant Growth**
8. **Quiz 1**
9. **Transport System: Roots**
10. **Transport System: Stems and Leaves**
11. **Quiz 2**
12. **Regulatory System**
13. **Quiz 3**
14. **Review Game**
15. **Test**
16. **Alternate Test**
17. **Reference**

Unit 2 – BODY SYSTEMS

1. **Digestive System: Structure**
2. **Digestive System: Function**
3. **Experiment: Digestion – *Homeschool Edition complete the lab by either doing the lab as listed or watching the video lab and answering the questions.***
4. **Digestive System: Function (Part 2)**
5. **Quiz 1**
6. **Circulatory System**

7. Excretory System
8. Experiment: Carbon Dioxide – *Homeschool Edition complete the lab by either doing the lab as listed or watching the video lab and answering the questions.*
9. Quiz 2
10. Muscular System
11. Skeletal System
12. Quiz 3
13. Review Game
14. Test
15. Alternate Test
16. Reference

Unit 3 - PLANTS AND ANIMAL BEHAVIOR

1. The Nervous System
2. Report: The Eye - *You have learned that sense organs are part of the nervous system. Your eyes are an important sense organ. They receive visual stimuli and send it to the cerebrum for interpretation. In this project, you will learn about the structure and function of the eye. Use the information in the weblink provided or use a reference of your choosing to do the following: Review a picture of the eye and its main parts, and write a 150-word report on how the eye works. When you have completed your research, type your report in the space provided below. Note: You do not have to draw the picture listed in the assignment...follow these directions*
3. Report: The Ear - *You have learned that sense organs are part of the nervous system. Your ears are an important sense organ. They receive sound stimuli and send it to the cerebrum for interpretation. In this project, you will learn about the structure and function of the ear. Use the*

information in the weblink provided or use a reference of your choosing to do the following: Review a picture of the ear and its main parts, and write a 150-word report on how the ear works. When you have completed your research, type your report in the space provided below. Note: You do not have to draw the picture listed in the assignment...follow these directions.

4. **Nerves and Spinal Column**
5. **Response and Intelligence**
6. **Quiz 1**
7. **Plant Behavior**
8. **Investigation: Tropisms - *Study the experimental data in the assignment and answer the questions.***
9. **Quiz 2**
10. **Terrestrial Biomes**
11. **Aquatic Biomes**
12. **Food Chains**
13. **Nature: Cycles and Balance**
14. **Report: Man's Influence - *Choose one of the endangered species listed above or one of your own choosing and do some research. Prepare a 250-word report on where it lives or has lived, its description, and all that you can find of humankind's influence on that organism, its extinction or near extinction. Share this report with others. Then, attach it to this unit for future use.***
15. **Quiz 3**
16. **Review Game**
17. **Test**
18. **Alternate Test**
19. **Reference**

Unit 4 - MOLECULAR GENETICS

1. **Reproduction**
2. **Male-Female Reproduction**
3. **Quiz 1**
4. **Inheritance**
5. **Taste, Dominance, and Multiple Genes**
6. **Experiment: Taste Gene Lab – *Homeschool Edition complete the lab by either doing the lab as listed or watching the video lab and answering the questions.***
7. **Quiz 2**
8. **DNA**
9. **Report: Genetics - *Choose a plant or animal and find out how it has been improved because of the study of genetics. The examples are given, but you may select some other topic if you like. Be sure that you have the topic and the method written reporting approved before you do your research. Your report should be 500 words in length.***
10. **Mutation**
11. **The Use of Mutations**
12. **Temperature Influence on Coloration**
13. **Quiz 3**
14. **Review Game**
15. **Test**

16. Alternate Test

17. Reference

Unit 5 - CHEMICAL STRUCTURE AND CHANGE

1. Chemical Structure

2. Experiment: Solid, Liquid, Gas – *Homeschool Edition complete the lab by either doing the lab as listed or watching the video lab and answering the questions.*

3. Chemical Elements and Atoms

4. Molecules and Compounds

5. Quiz 1

6. Periodic Table

7. Atomic Mass

8. Project: Atomic Number - *You have learned that the atomic number of a chemical is the number of protons found in the nucleus. Atomic numbers can be used to find the number of neutrons and electrons in an atom. In this project you will practice atomic mass and atomic mass number calculations. The atomic number of the sodium atom is 11. The atomic mass number can be estimated by rounding the atomic mass to 23. From this information, you can find the number of neutrons: 11 protons plus how many neutrons equals a mass number of 23? The number of neutrons would have to be the difference between 23 and 11, which is 12. This fact can be restated this way: 11 protons plus 12 neutrons equals a mass number of 23. For every proton in the nucleus, an electron revolves around the nucleus. Since 11 protons are in sodium, 11 electrons must be in sodium. The atomic number of the chlorine atom is 17. The atomic mass number can be estimated by rounding the atomic mass to 35. From this information, you can find the number of neutrons, protons, and the number of electrons. 1. How many neutrons are in the chlorine atom? 2. How many electrons are in the chlorine atom? 3. How many protons are in the chlorine atom?*

9. Arrangement of the Periodic Table

10. Project: Use the Periodic Table - *You have learned that chemists use symbols to stand for elements. Symbols are like an abbreviation for the name of an element. In this project you will practice using chemical symbols for elements. An interactive periodic table is provided as a link in the lesson called Arrangement of the Periodic Table or you may print out the periodic table in the lesson on Chemical Elements and Atoms in this unit. Study the names of the chemical and their symbols on the periodic table and then click on the report below and fill in the missing element or symbol. Look at the periodic table and in the space below; type in the missing element name or symbol.*

11. Quiz 2

12. Chemical Change

13. Acids and Bases

14. Quiz 3

15. Review Game

16. Test

17. Alternate Test

18. Reference

Unit 6 - LIGHT AND SOUND

1. Waves: Sound

2. Light Waves

3. Quiz 1

4. The Spectrum

5. Quiz 2

6. Colors

7. **Experiment: Subtractive Colors – Homeschool Edition complete the lab by either doing the lab as listed or watching the video lab and answering the questions.**
8. **Mixing Colors**
9. **Quiz 3**
10. **Review Game**
11. **Test**
12. **Alternate Test**
13. **Reference**

Unit 7 - MOTION AND ITS MEASUREMENT

1. **Motion, Force, and Work**
2. **Measurement of Work**
3. **Quiz 1**
4. **Power and Newton's Laws of Motion**
5. **Report: Horsepower and Watts - You have learned that power is the speed, or rate of doing work. In this report you will learn more about James Watt or horsepower. Complete one of these activities: 1. Research the life of James Watt. Report in about fifty words some of the important events in Watt's life leading up to the watt being named in his honor. 2. Conduct a survey of equipment and cars to find out the amount of horsepower of each item you check. You may visit a car dealer, an appliance store, a heavy-equipment dealer. Make a list of the horsepower of at least ten items of equipment. Some suggestions include: comparing two or three different makes of cars or finding the horsepower of a lawn mower, boat, vacuum cleaner, or some heavy equipment for moving dirt. You may find that the power of a washing machine or vacuum cleaner is given in watts instead of horsepower. Make a chart to record your findings, including: Type of Equipment Surveyed: (Indicate whether it is a**

*car, shovel, vacuum cleaner, etc.) Amount of Horsepower or Watts:
(Record power in horsepower or in watts.)*

6. **Newton's Laws of Motion and Gravitation**
7. **Quiz 2**
8. **Change in Motion**
9. **Quiz 3**
10. **Review Game**
11. **Test**
12. **Alternate Test**
13. **Reference**

Unit 8 - SPACESHIP EARTH

1. **Earth's Motion**
2. **Earth's Rotation**
3. **Time**
4. **Earth's Orbit**
5. **Quiz 1**
6. **Eclipses**
7. **Quiz 2**
8. **The Solar System**
9. **Asteroids, Comets, and Meteoroids**
10. **Quiz 3**
11. **Review Game**
12. **Test**
13. **Alternate Test**

14. Reference

Unit 9 - ASTRONOMY AND THE STARS

- 1. Astronomy**
- 2. Astronomy Today**
- 3. Quiz 1**
- 4. Stars**
- 5. Elements and Spectra**
- 6. Magnitude and Luminosity**
- 7. Light Years and Astronomical Units**
- 8. Quiz 2**
- 9. Constellations and Major Stars**
- 10. Quiz 3**
- 11. Review Game**
- 12. Test**
- 13. Alternate Test**
- 14. Reference**

Unit 10- THE EARTH AND THE UNIVERSE

- 1. The Photosynthesis System**
- 2. The Transport System of Plants**
- 3. The Digestive System**
- 4. The Excretory System**
- 5. Skeletal and Muscular Systems**

6. **The Nervous System**
7. **Genetics and Reproduction**
8. **Ecological Systems**
9. **Quiz 1**
10. **Physics and Chemistry: Matter**
11. **Physics and Chemistry: Light**
12. **Physics and Chemistry: Sound**
13. **Physics and Chemistry: Motion**
14. **Physics and Chemistry: Machines**
15. **Quiz 2**
16. **Earth's Rotation**
17. **Earth's Revolution**
18. **Our Solar System**
19. **Quiz 3**
20. **Review Game**
21. **Test**
22. **Alternate Test**