

SCIENCE - Grade 7

Christ Lutheran School, Costa Mesa, CA

Revised 2008

Goal: The students will develop an appreciation and understanding of God's creation while learning the science of life through hands-on scientific activities, dissections, and projects. They will keep a science notebook with questions, predictions, observations, and conclusions.

Objectives:

Cell Biology

1. The students will be able to explain how all living organisms are composed of cells, from just one to many trillions, whose details usually are visible only through a microscope.

- Cells functions similarly in all living organisms.
- There are characteristics that distinguish plant cells from animal cells, including chloroplasts and cell walls.
- The nucleus is the repository for genetic information in plant and animal cells.
- The mitochondria generate energy for the work that cells do and chloroplasts capture sunlight energy for photosynthesis.
- Cells divide to increase their numbers through a process of mitosis, which results in two daughter cells with identical sets of chromosomes.
- As multi-cellular organisms develop, their cells differentiate.

Materials: *Science Voyages: Glencoe Science (California Edition)*, Glencoe/McGraw-Hill, 2001.

Genetics

1. The students will be able to understand that a typical cell of any organism contains genetic instructions that specify its traits. Those traits may be modified by environmental influences.

- There is a difference between the life cycles and reproduction methods of sexual and asexual organisms.
- Sexual reproduction produces offspring that inherit half their genes from each parent.
- An inherited trait can be determined by one or more genes.

- Plant and animal cells contain many thousands of different genes and typically have two copies of every gene. The two copies of the gene may or may not be identical, and one may be dominant in determining the phenotype while the other is recessive.
- DNA (deoxyribonucleic acid) is the genetic material of living organisms and is located in the chromosomes of each cell.

Materials: *Science Voyages: Glencoe Science (California Edition)*, Glencoe/McGraw-Hill, 2001, Internet.

Structure and Function in Living Systems

1. The students will be able to explain how the anatomy and physiology of plants and animals illustrate the complementary nature of structure and function.

- Plants and animals have levels of organization for structure and function, including cells, tissues, organs, organ systems, and the whole organism.
- Organ systems function because of the contributions of individual organs, tissues, and cells. The failure of any part can affect the entire system.
- Bones and muscles work together to provide a structural framework for movement.
- The reproductive organs of the human female and male generate eggs and sperm and sexual activity may lead to fertilization and pregnancy.
- Learn the function of the umbilicus and placenta during pregnancy.

Materials: *Science Voyages: Glencoe Science (California Edition)*, Glencoe/McGraw-Hill, 2001, Bio Corporation Catalog

Investigation and Experimentation

1. The students will be able to demonstrate their understanding of God's miraculous creation by developing their own questions and performing scientific investigations.

- Select and use appropriate tools and technology to perform tests, collect data, and display data.
- Use a variety of print and electronic resources (including the World Wide Web) to collect information and evidence as part of a research project.
- Communicate the logical connection among hypotheses, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence.
- Construct scale models, maps, and appropriately labeled diagrams to communicate scientific knowledge.
- Communicate the steps and results from an investigation in written reports and oral presentations.

Materials: *Science Voyages: Glencoe Science (California Edition)*, Glencoe/McGraw-Hill, 2001