

# Life Science

## Course Description

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Life Science begins with a discussion about the use of the compound microscope. The study of science and its main branches is also discussed in this unit. We discuss the scientific method of examining evidence and solving problems. We then discuss units of measurement and conversions from the English system to the metric system and vice versa.

We next study the activities and chemistry of living things. We learn the difference between organic matter and inorganic matter. The life processes that keep us alive are then discussed followed by a brief discussion of the chemistry of life, elements, compounds and mixtures.

We then learn about the cell and its structures such as organelles and learn the differences between plant cells and animal cells. Next we talk about the principles of diffusion and osmosis. This is followed by a discussion of cell division and DNA.

Next we begin a discussion of unicellular and multicellular organisms. We learn about the different types of animal tissues such as epithelial tissue, connective tissue, muscle tissue, nerve tissue and blood tissue. Then we discuss plant tissues, followed by learning about organs, organ systems and organisms.

We then begin to study taxonomy and the five kingdom system. We learn about phylums, classes, orders, families, genus and species. Next we learn about bacteria and viruses. We then begin our discussion of protozoans and fungi.

Our next lesson is on the plant kingdom and how plants are divided into nonvascular and vascular plants. We learn that vascular plants are further divided into spore plants and seed plants. We learn that seed plants are divided into cone bearers and flowering plants.

Next we study invertebrates starting with sponges, jellyfish, hydra and corals. We then study flatworms such as the tapeworm, then roundworms such as the hookworm and segmented worms such as the earthworm. Next on the agenda are mollusks and starfish. From there we go to jointed animals, such as crustaceans followed by myriapods, arachnids and insects. From there we go to the vertebrates and start with fish followed by amphibians, reptiles, birds and mammals.

Our next lesson is on asexual reproduction and in this unit we study the experiments performed by Francisco Redi in the 17<sup>th</sup> century. We learn about binary fission, budding, spore formation, vegetative reproduction, grafting and regeneration.

Following this unit we study sexual reproduction, beginning with sexual reproduction in plants. We learn about pollination and fertilization in a flower and this is followed by sexual reproduction and animals. We discuss early stages of an embryo and lifecycles of some animals such as the grasshopper and frog.

From here we go into heredity and genetics. We learn about genotypes and phenotypes as well as chromosomes, the formation of sperm and egg cells and fertilization. We discuss Mendel's experiments including the law of dominance, the law of segregation and recombination and the law of independent assortment. This is followed by human inherited traits, female and male sex chromosomes, the heredity of twins, identical twins and fraternal twins. Next we talk about evolution and Charles Darwin. We discuss acquired and inherited traits, mutations adaptations and speciation.

By the time we get this far, the school year is usually over. If the school year is not over there are many more topics left for us to continue with.