

# MS Life Science

Course Duration: Full Year

Category: Middle School, Science

Assessment: Pre-Test, Lesson Practice, Unit Exams, Mid-Term Exam, Final Exam

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## Course Overview

In Acellus Life Science, students study living organisms, including plants, animals, and human beings. Beginning with a review of the basics of science, such as the scientific method, the teacher goes on to explore life itself, beginning with cellular organization and discussing the organization of living things. Particular emphasis is placed on human biology. Course topics include:

- The Scientific Method
- Science and Nature
- The Nature of Life
- Plant and Animal Cells
- Cell Division
- The Six Kingdoms
- Protists
- Fungus
- Plants
- Simple Invertebrates
- Vertebrates
- Major Systems of the Human Body
- Nutrition

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## Course Objectives & Student Learning Outcomes

Upon completion of Acellus Life Science, students will be able to: make connections between the various branches of science, basic science and metric system vocabulary, the scientific method, tools used in science, the microscope, and safety rules and symbols for science; compare and contrast food webs and chains; the history of life on Earth; evidence of evolution; forest, land, and water biomes; cycles in nature and time; organisms and the environment; and conservation; identify and define the five basic life processes, the basic needs and the chemistry of living things, cell theory, and levels of organization; and identify and define the inner and outer parts of plant and animal cells, cell processes and division, and mitosis. Students will also be able to define classification and classify within the six Kingdoms; discuss characteristics of Viruses, Monerans, and Protists; describe parts of a Moneran, animal-like Protists, and plant and fungus-like Protists; describe fungus; discuss multicellular algae, land and vascular plants, seeds, leaves and photosynthesis, gymnosperms, angiosperm flower parts, mold and graphing; classify sponges, cnidarians, mollusks, worms (with a spotlight on earthworms), groups of arthropods, characteristics of insects, echinoderms, and the parts of a starfish; characterize fish, amphibians, reptiles, birds, and mammals; identify the parts of bony fish and frogs, and groups of reptiles, mammals, and placental mammals; types of birds, beaks, and feet; and use dichotomous keys. Finally, students will be able to classify types of tissue; characterize the skeletal system, bones, skeletal joints; identify and describe muscles and the muscular system; identify and classify the six food groups and the six basic nutrients, as well as the digestive system and its parts; make connections between the major systems of the body, including the circulatory system, the heart, the blood, and the immune, respiratory, excretory, integumentary, and endocrine systems; characterize the central and peripheral nervous systems, the senses, and the systems of the body; discriminate the female and male

reproductive systems, the history of genetics, probability, heredity, DNA, phases of meiosis, and asexual reproduction; evaluate drugs, alcohol, and tobacco, including drug prevention; and work in a lab on chemical color, earthworm and starfish dissection labs, and frog dissection lab.

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## Scope and Sequence

### Unit 1 – Exploring Science

This unit covers the various branches of science, basic science and metric system vocabulary, the scientific method, tools used in science, the microscope, and safety rules and symbols for science. It also includes a lab on chemical color.

### Unit 2 – Science and Nature

This unit discusses food webs and chains, the history of life on Earth, evidence of evolution, forest, land, and water biomes, cycles in nature and time, organisms and the environment, and conservation.

### Unit 3 – The Nature of Life, Cells, and Classification of Organisms

This unit discusses five basic life processes, the basic needs and the chemistry of living things, cell theory, and levels of organization. Also discussed are the inner and outer parts of plant and animal cells, cell processes and division, and mitosis.

### Unit 4 – Simple Kingdoms and Classification

This unit explains what classification is and how it works, introduces the six Kingdoms, discusses characteristics of Viruses, Monerans, and Protists, and describes parts of a Moneran, animal-like Protists, and plant and fungus-like Protists.

### Unit 5 – Fungi and Plants

This unit covers fungus, spotlighting mushrooms, and discusses multicellular algae, land and vascular plants, seeds, leaves and photosynthesis, gymnosperms, angiosperm flower parts, mold and graphing.

### Unit 6 – Simple Invertebrates

This unit discusses sponges, cnidarians, mollusks, worms (with a spotlight on earthworms), groups of arthropods, characteristics of insects, echinoderms, and the parts of a starfish. Earthworm and starfish dissection labs are also included.

### Unit 7 – Vertebrate Animals

This unit discusses the characteristics of fish, amphibians, reptiles, birds, and mammals. It presents the parts of bony fish and frogs, groups of reptiles, mammals, and placental mammals, types of birds, beaks, and feet, and how to use dichotomous keys. A frog dissection lab is also included.

### Unit 8 – Skeletal and Muscular System

This unit discusses types of tissue, characteristics of the skeletal system, bones, skeletal joints, what muscles and the muscular system are, and the muscles of the body.

### Unit 9 – Nutrition

This unit discusses the six food groups and the six basic nutrients, as well as the digestive system and its parts.

### Unit 10 – Major Systems of the Body

This unit covers the major systems of the body, including the circulatory system, the heart, the blood, and the immune, respiratory, excretory, integumentary, and endocrine systems.

### Unit 11 – The Nervous System and Senses

This unit describes the central and peripheral nervous systems, the senses, and the systems of the body.

### Unit 12 – Genetics

This unit discusses the history of genetics, probability, heredity, DNA, phases of meiosis, and asexual reproduction.

### Unit 13 – Alcohol, Drugs, and Tobacco

This unit discusses drugs, alcohol, and tobacco, including drug prevention.