

# Weldon E. Howitt Middle School

## Science Grade Seven

### Course Outline

“What can a student expect to learn?”

#### Intermediate Level Science Skills . . .

Unit A of the science curriculum begins with a review of basic science skills, **laboratory safety** and the use of the **Scientific Method** as a problem solving guide. **Metric system** prefixes, measurements and conversions are examined. The properties of **length, mass, volume and density** are explored using the metric ruler, triple beam balance and graduated cylinder. Data is collected, organized, analyzed, and displayed through the use of **data tables** and **line graphs**. Information is presented as percentages, decimals, fractions, proportions and ratios. Students are encouraged to do “**mental math**” in addition to using a calculator to solve a variety of simple arithmetic and algebraic problems.

<http://www.quia.com/jq/26500.html>

#### Unit 1 Matter and Energy

<http://www.chem4kids.com>

The study of matter and energy is the focus of Unit 1. The nature of elements, compounds and mixtures is examined. The physical and chemical properties of matter are explored. Physical and chemical changes in matter are

depicted using demonstrations, experiments, and phase-change diagrams. Instructors use computer software, videodiscs and the Internet to help students grasp abstract concepts like atoms and molecules. Classes of energy and energy conversion from one type to another are highlighted in this unit.

## Unit 2 Ecology

<http://www.brainpop.com/science/index.weml>

[http://trackstar.hprtec.org/main/track\\_frames.php3?track\\_id=178476&no\\_cache=1440780645](http://trackstar.hprtec.org/main/track_frames.php3?track_id=178476&no_cache=1440780645)

The study of the interactions between organisms and their environment is ecology. Students will be able to describe how living things depend upon each other and their nonliving environment for survival. Students will learn about different biomes and their populations. Students will be able to interpret food chains and food webs and show the flow of energy through an ecosystem.

## Unit 3 Classification

<http://www.brainpop.com>

Classification is the grouping of living things according to similar characteristics. Students will be able to develop classification systems that can be used to organize items based on the methods used by scientists. Students will learn that scientific names are universal and to follow the Binomial Nomenclature System.

## Unit 4 Body Systems I

<http://www.innerbody.com/htm/body.html>

Students will be able to identify the major structures and functions of four human body systems and the interactions between them (skeletal, muscular, nervous and endocrine systems).

## Unit 5 Body Systems II

<http://www.kidshealth.org/kid/body/mybody.html>

[http://www.kidshealth.org/kid/body/kidneys\\_SW.html](http://www.kidshealth.org/kid/body/kidneys_SW.html)

Students will be able to identify the major structures and functions of three human body systems and the interactions between them (respiratory, circulatory and excretory systems).

## Unit 6 Human Digestive System

[http://www.teenshealth.org/teen/your\\_body/body\\_basics/digestive\\_system.html](http://www.teenshealth.org/teen/your_body/body_basics/digestive_system.html)

Students will be able to describe the digestion and absorption of nutrients by the human digestive system. Mechanical and chemical digestion will be compared. It will be shown how the digestive system and circulatory system work together to provide energy for life processes.

## Unit 7 Human Reproductive System

Reproduction is necessary for the survival of the species. Students will compare the functions of the male and female reproductive systems and describe the changes that occur between the fertilization of an egg cell and the birth of a human being.

## Unit 8 Cells and the Microscope

<http://www.cellsalive.com>  
[http://www.brainpop.com/science/plantsandanimals/cellstructures/index.weml?&tried\\_cookie=true](http://www.brainpop.com/science/plantsandanimals/cellstructures/index.weml?&tried_cookie=true)

Students will realize the influence of technology and the use of the microscope in the development of the cell theory and modern cell biology. Students will learn the proper usage of the compound light microscope and the preparation of slides. Students will learn to estimate the size of cells and field of view.

## Unit 9 Cell Reproduction

<http://www.cellsalive.com>  
Students will examine four different types of asexual cell division: binary fission, regeneration, budding and the formation of spores. Students will be able to compare and

contrast the processes of mitosis and meiosis in plant and animal cells.

## Unit 10 Genetics and Heredity

<http://gslc.genetics.utah.edu/units/basics/>

Students will explore the basic principles of genetics and learn how they to human inheritance.

They will investigate various aspects of genetic engineering, human genetic disorders and learn to create Punnett squares and interpret pedigree charts.

## Teacher Resources

<http://www.school.discovery.com/lessonplans/programs/cello/index.html>

<http://www.wliw.org/itv>

<http://www.athro.com>

<http://www.infoplease.com>

<http://www.accessexcellence.org>

<http://www.armoredpenguin.com/wordsearch/>

<http://trackstar.hprtec.org/>