INSTRUCTIONAL OBJECTIVES
Science – First Quarter
Eighth Grade

Photosynthesis/Respiration Unit
The student will:

Identify basic characteristics of plants and seeds
Understand types of plant propagation
State differences between angiosperms and gymnosperms
Identify monocot and dicot characteristics
Demonstrate understanding of structure and function of roots, stems, leaves, and flowers
Recognize the importance of the cycle of pollination and fertilization as related to seed production
Translate the word and chemical formulas for photosynthesis
Cite the connection between photosynthesis and life on Earth
Connect how cellular respiration is the process that uses the stored energy from plants

INSTRUCTIONAL OBJECTIVES
Science – Second Quarter
Eighth Grade

Chemistry Unit

The student will:

- Describe three types of chemical bonds
- Identify the number of valence electrons in an atom
- Predict whether an atom is likely to form bonds
- Recognize parts of and balance a chemical equation
- Compare exothermic and endothermic reactions
- Define the four types of chemical reactions
- State the law of conservation of energy
- Identify properties of acids and bases (using the pH scale if needed)
- Recall properties of radioactive substances
- Recognize differences between fission, fusion, and chain reaction
- Understand how to determine the half life of radioactive substance

INSTRUCTIONAL OBJECTIVES
Science – Third Quarter
Eighth Grade

Genetics/Cell Unit

The student will:

- Explain the relationship between the structure, function, and movement within a cell
- Compare and contrast dominant and recessive traits
- Explain relationship between traits and heredity
- Describe genotype and phenotype of an organism
- Use punnet squares to determine probability of a trait
- Contrast stages of mitosis and meiosis
- Identify purpose of a pedigree
- Describe the basic structure of a DNA molecule
- Connect the role of RNA to protein synthesis
- Be able to cite Darwin's theory of evolution by natural selection

INSTRUCTIONAL OBJECTIVES
Science – Third Quarter (continued)
Eighth Grade

Oceans/Weather Unit

The student will:

- Interpret graphics about the layers/composition of the Earth's atmosphere
- State relationship between air pressure and altitude and temperature and altitude
- Summarize the processes of radiation, thermal conduction, and convection
- Explain the relationship between greenhouse effect and global warming
- Cite the causes of wind
- Describe connection between dew point and temperature
- Distinguish between the three types of cloud forms
- Identify four kinds of precipitation
- Describe the origin of the four kinds of air masses that influence weather in the United States and recognize corresponding symbols
- Define fronts and how they cause weather changes

INSTRUCTIONAL OBJECTIVES
Science – Third Quarter (continued)
Eighth Grade

- Describe the characteristics of severe weather
- Interpret a reading passage on cause and effect of tsunamis
- Interpret graphics on the ability of air to hold water (humidity)

INSTRUCTIONAL OBJECTIVES
Science – Fourth Quarter
Eighth Grade

Force and Motion Unit

The student will:

- Describe how fluids exert pressure
- Analyze how atmospheric pressure varies with depth and altitude
- Recognize examples of fluids flowing from high to low pressure
- Explain relationship between fluid pressure and buoyancy
- Predict whether an object will sink or float using density
- Calculate the density of regular and/or irregular objects
- Explain Bernoulli, Archimedes, and Pascal's principles
- Identify the roles of lift, thrust, and drag in flight
- Determine when work is being done on an object
- Calculate the amount of work done on an object
- Calculate power and mechanical advantage

INSTRUCTIONAL OBJECTIVES
Science – Fourth Quarter (continued)
Eighth Grade

- Relay how a machine makes work easier (but does not save work)
- Give example of the force-distance trade-off that occurs when a machine is being used
- Explain why machines are not 100% efficient
- Identify and/or give examples of six types of simple machines
- Analyze the input and output force and fulcrum location in order to relate to class of lever