

Fayette R-III

CMS- Curriculum Guide for 8th Grade Science

Fayette R-III Mission: To educate all students to be ethical, successful citizens.

The 8th grade Science Learning Goals are based on the Missouri Learning Standards. The Missouri Learning Standards define the knowledge and skills students need to succeed in college, other postsecondary training and careers. This document is designed to make clear what each child should know and be able to do by the end of 8th grade science.

Course Description: Eighth grade science consists of 4 basic units of study: **Interactions and Changes in matter:** Students learn about atomic structure and the periodic table, states and changes of matter, and the Law of Conservation of Matter. **Geology:** Students learn about processes that change the Earth's surface such as erosion, heat and pressure. Students also learn about major geologic events in Earth's history and examine the distribution of various fossils and rocks around the Earth. **Adaptation and Natural Selection:** Students learn to examine fossil records to infer patterns of environmental change. Students learn about genetic variations of traits and how natural selection changes populations over time. **Organism Structure and Function:** Students learn about the complexity and structure of multicellular organisms, the role of photosynthesis and cellular respiration in organism survival, and the influence of environmental and genetic factors on growth and reproduction. Students will be given opportunities to use scientific measurement and experimental design skills to answer testable questions. Technology is used as a tool throughout the units to support learning and to give evidence of learning. Students will develop skills in scientific literacy, by asking questions, reading relevant research, testing ideas through prediction and experimentation, observing and analyzing data, synthesizing current results with the work of past scientists and communicating findings and further refining ideas. They will be expected to conduct investigations that involve systematic observations, carefully collected and relevant data, and develop logical conclusions.

Course Rationale: The Science Department of the Fayette School District believes that science is a diverse subject that encompasses many fields of investigation and interests. The primary goals of Fayette science courses are to equip students with an understanding of scientific concepts and principles, to develop students' critical thinking and problem solving skills in a variety of contexts, and to foster students' clear communication of their knowledge with others. We recognize that it is important to teach students methods of using current technology and outside resources to research information and help them make informed decisions for the purpose of better participation in the world around them. To accomplish these goals, students will participate in a variety of instructional activities and will develop information gathering, reading, writing, comprehension, and problem-solving skills both as individuals and as group members.

8 th Grade Science Student Learning Goals	Standard Alignment
1. Students will be able to evaluate the principles of scientific inquiry and utilize scientific measurement and design to conduct experiments.	6-8 ETS.1, 6-8 ETS.3
2. Students will develop models to describe the atomic composition of molecules and other substances.	PS1.A.1
3. Students will identify chemical and physical properties of substances, use data to determine when chemical reactions have occurred, and explain how	PS1.A.2, PS1.B.1

the total number of atoms is the same both before and after a chemical reaction.	
4. Students will research synthetic materials and present information about the natural resources they come from and the impact they have on society.	PS1.A.3
5. Students will construct, test, and modify a device that will release or absorb thermal energy in a chemical reaction and explain how the motion, temperature, and phase state change when thermal energy is added or removed.	PS1.A.4, PS1.B.2
6. Students will explain how fossils and rocks show evidence of Earth's plate movement and use fossil and rock evidence to determine major events and environmental change throughout Earth's history.	ESS1.C.1, ESS2.B.1, LS4.A.1
7. Students will explain how plate tectonics results in changes in rock types and formations through erosion, heat and pressure.	ESS2.A.1, ESS2.A.2
8. Students will use evidence to explain how genetic differences in populations of organisms will affect their probability of survival in a specific environment.	LS4.B.1, LS4.C.1
9. Students will gather information from multiple sources and use it to explain how humans influence the inheritance of desired traits in organisms-artificial selection.	LS4.B.2
10. Students will explain the difference between cells, tissues, organs, and organ systems. Students will identify various organ systems and describe how they interact to carry out key body functions.	LS1.A.3, LS1.A.4
11. Students will use evidence to explain how genetic and environmental factors influence the growth of organisms.	LS1.B.2
12. Students will use evidence to explain the role of photosynthesis and cellular respiration in the cycling of matter and flow of energy into and out of organisms.	LS1.C.1
13. Students will explain how characteristic animal behaviors as well as specialized plant structures affect the probability of successful reproduction of their species.	LS1.B.1

Resources:

Textbook –Prentice Hall- Science Explorer, Nitty Gritty Science Interactive Notebook

Board approved: April 16, 2018