

Term 1			
MCF#	DOK	Objective	Time Frame
1		Apply inquiry-based and problem-solving processes and skills to scientific investigations.	When applicable to curriculum throughout the course
	2	a. Conduct a scientific investigation demonstrating safe procedures and proper care of laboratory equipment. (DOK 2) <ul style="list-style-type: none"> • Safety rules and symbols • Proper use and care of the compound light microscope, slides, chemicals, etc. • Accuracy and precision in using graduated cylinders, balances, beakers, thermometers, and rulers. 	Throughout course
	3	b. Formulate questions that can be answered through research and experimental design. (DOK 3)	Throughout course
	3	c. Apply the components of scientific processes and methods in classroom and laboratory investigations (e.g., hypotheses, experimental design, observations, data analyses, interpretations, theory development). (DOK 3)	Throughout course
	3	d. Construct and analyze graphs (e.g., plotting points, labeling x-and y-axis, creating appropriate titles and legends for circle, bar, and line graphs). (DOK 2)	Throughout course
	3	e. Analyze procedures, data, and conclusions to determine the scientific validity of research. (DOK 3)	Throughout course
	3	f. Recognize and analyze alternative explanations for experimental results and to make predictions based on observations and prior knowledge. (DOK 3)	Throughout course
	3	g. Communicate and defend a scientific argument in oral, written, and graphic form. (DOK 3)	Throughout course

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2	2	Develop an understanding of the history and evolution of the universe and Earth. <ul style="list-style-type: none"> • Summarize the origin and evolution of the universe. (DOK 2) • Big Bang theory • Microwave background radiation • The Hubble constant • Evidence of the existence of dark matter and dark energy in the universe • and the history of the universe 	2 days	
			1	1 day
			2	3 days
			2	4 days
3	1	Discuss factors which are used to explain the geological history of Earth. <ul style="list-style-type: none"> • Develop an understanding of how plate tectonics create certain geological features, materials, and hazards. (DOK 1) • Plate tectonic boundaries (e.g., divergent, convergent, and transform) Modern and ancient geological features to each kind of plate tectonic boundary Production of particular groups of igneous and metamorphic rocks and mineral resources • Sedimentary basins created and destroyed through time 	10 days	
			3	

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	2	b. Compare and contrast types of mineral deposits/groups (e.g., oxides, carbonates, halides, sulfides, sulfates, silicates, phosphates). (DOK 2)	2 days
	2	c. Categorize minerals and rocks by determining their physical and/or chemical characteristics. (DOK 2)	4 days
	2	d. Justify the causes of certain geological hazards (e.g., earthquakes, volcanoes, tsunamis) to their effects on specific plate tectonic locations. (DOK 2)	10 days
	2	e. Interpret and explain how rock relationships and fossils are used to reconstruct the geologic history of the Earth. (DOK 2)	3 days
	3	f. Apply principles of relative age (e.g., superposition, original horizontality, cross-cutting relations, and original lateral continuity) to support an opinion related to Earth's geological history. (DOK 3) <ul style="list-style-type: none"> Types of unconformity (e.g., disconformity, angular unconformity, nonconformity) Geological timetable 	2 days
5		Apply an understanding of ecological factors to explain relationships between Earth systems.	
	3	a. Draw conclusions about how life on Earth shapes Earth systems and responds to the interaction of Earth systems (lithosphere, hydrosphere, atmosphere, and biosphere). (DOK 3) <ul style="list-style-type: none"> Nature and distribution of life on Earth, including humans, to the chemistry and availability of water Distribution of biomes (e.g., terrestrial, freshwater, and marine) to climate regions through time Geochemical and ecological processes (e.g., rock, hydrologic, carbon, nitrogen) that interact through time to cycle matter and energy, and how human activity alters the rates of these processes (e.g., fossil fuel formation and combustion, damming and channeling of rivers) 	6 days

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	2	b. Interpret the record of shared ancestry (fossils), evolution, and extinction as related to natural selection. (DOK 2)	3 days
	1	c. Identify the cause and effect relationships of the evolutionary innovations that most profoundly shaped Earth systems. (DOK 1) <ul style="list-style-type: none"> • Photosynthesis and the atmosphere • Multicellular animals and marine environments • Land plants and terrestrial environments 	2 days
	1	d. Cite evidence about how dramatic changes in Earth's atmosphere influenced the evolution of life. (DOK 1)	3 days