Utah	Geology Standards	Essentials of Geology 13e Page Reference
Standard GEOL.1.1	Plan and carry out investigations to explore the structure and properties of different minerals to classify them based on their characteristics.	pp. 74-88
Standard GEOL.1.2	Analyze and interpret data to identify the patterns that are present in different rocks to classify them based on their properties, characteristics, and how they were formed.	pp. 68-88, pp. 97-98, pp. 199-200
Standard GEOL.1.3	Develop a model which demonstrates how matter is cycled and how energy flows throughout the rock cycle. Emphasize the processes that form plutonic (intrusive) and volcanic (extrusive) igneous rocks, the processes that form sedimentary rocks (weathering, erosion, deposition, burial, dissolution, precipitation, compaction, and cementation), and the conditions of metamorphism including how the starting (parent/protolith) rock compositions determine the metamorphic rock type.	pp. 21-23, pp. 186-188, pp. 218-222
Standard GEOL.2.1	Ask questions to analyze and interpret data about the stability of rock layers and how they can change according to Steno's laws of stratigraphy.	pp. 471-475, pp. 478-480, p. 485
Standard GEOL.2.2	Engage in argument from evidence applying stratigraphic principles to interpret the relative geologic history of an area (system).	pp. 470-475, pp. 478-487
Standard GEOL.2.3	Use mathematics and computational thinking to determine the age of geologic layers using different measurements of scale, proportion, and quantity. Emphasize relative and absolute dating principles as well as the fossil record.	pp. 471-485, pp. 510-512
Standard GEOL.2.4	Obtain, evaluate, and communicate information about the causes of fossilization and how the fossil record provides evidence of change in environments and life over time.	pp. 476-478, pp. 510-512
Standard GEOL.3.1	Develop and use a model that explains the structure of Earth's interior. Emphasize both the physical (lithosphere, asthenosphere, mesosphere, outer core, inner core) and chemical (crust, mantle, core) layers.	pp. 19-20, pp. 261-263
Standard GEOL.3.2	Engage in argument from evidence about the patterns and claims that explain the theory of plate tectonics. Examples of evidence could include earthquake patterns, volcanic arcs, benioff zones, seafloor age and magnetic striping, and topographic and bathymetric features.	pp. 34-35, pp. 39-57, pp. 270-274
Standard GEOL.3.3	Construct an explanation how the matter and energy in Earth's interior causes different stresses on the surface, affecting and forming different visible features. Examples of these features could include fault types (normal, reverse, sinistral, dextral) and fold types (anticlines, synclines).	pp. 294-299, pp. 301-305
Standard GEOL.4.1	Ask questions to analyze data about the effects of regional climate on weathering processes and soil/sediment formation.	p. 162, pp. 168-173

Utah	Geology Standards	Essentials of Geology 13e Page Reference
Standard GEOL.4.2	Obtain, evaluate, and communicate information to characterize the formation of erosional and depositional landforms in different environment systems. Emphasize information from geologic maps, topographic maps, cross-sectional maps, and remote sensing data. Examples of environment systems could include desert, glacial, coastal, and fluvial environments.	pp. 359-361, pp. 428-436, pp. 449-451
Standard GEOL.4.3	Plan and carry out an investigation to collect and analyze data on how surface water and groundwater act as major agents of change in geologic systems. Emphasize surface reservoirs, groundwater reservoirs, and fluvial systems. Examples of processes of change could include infiltration, runoff, evaporation, precipitation, cementation, karst, and mass wasting.	pp. 342-358, pp. 371-377, pp. 386-390
Standard GEOL.5.1	Ask questions to obtain, evaluate, and communicate information on the origin, distribution, economic importance, extraction, and use of resources in Earth's geologic system. Emphasize resources found in Utah. Examples of resources could be metals, ores, minerals, water, and energy resources.	pp. 5-6, pp. 88-90, pp. 206-209
Standard GEOL.5.2	Evaluate design solutions which have a structure and function to mitigate geologic hazards, minimize property damage, and preserve life. Define the problem, identify criteria and constraints, analyze available data on proposed solutions, and determine an optimal solution.	pp. 5-6, pp. 322-336, pp. 465-467