

## Textbook Alignment to the Utah Earth Systems Science Core Curriculum Rubric

<b>Title</b> _____ <b>ISBN#</b> _____			
<b>Publisher:</b> _____			
<b>Name of Person(s) conducting alignment and evaluation:</b> _____			
<b>Overall percentage of coverage of the Utah State Core Curriculum:</b> _____%			
<b>Standard I: Students will understand the scientific evidence that supports theories that explain how the universe and solar system developed.</b>			
<b>Percentage of coverage for Standard I:</b> %			
Objectives	Indicators	If covered, appropriate page #'s	Comments on coverage
<b>Objective 1.1: Describe the big bang theory and evidence supporting it.</b>	a. Determine the motion of a star relative to Earth based on red or blue shift in the wavelength of light from the star.		
	b. Explain how evidence of red and blue shifts is used to determine whether the universe is expanding or contracting.		
	c. Describe the big bang theory and the red shift evidence that supports this		

	theory.		
	d. Investigate and report how science has changed the accepted ideas regarding the nature of the universe throughout history.		
	e. Provide an example of how technology has helped scientists investigate the universe.		
<b>Objective 1.2: Relate the structure and composition of the solar system to the processes that exist in the universe.</b>	a. Compare the elements formed in the big bang (hydrogen, helium) with elements formed through nuclear fusion in stars.		
	b. Relate the life cycle of stars in various masses to the relative mass of elements produced.		
	c. Explain the origin of the heavy elements on Earth (i.e., heavy elements were formed by fusion in ancient stars).		
	d. Present evidence that the process that formed Earth's heavy elements continues in stars today.		
	e. Compare the life cycle of the sun to the life cycle of other stars.		
	f. Relate the structure of the solar system to the forces acting upon it.		

**Standard II: Students will understand that the features of Earth's evolving environment affect living systems, and that life on**

<b>Earth is unique in the solar system.</b>			
<b>Percentage of coverage for Standard II:   %</b>			
<b>Objectives</b>	<b>Indicators</b>	<b>If covered, appropriate page #'s</b>	<b>Comments on coverage</b>
<b>Objective 2.1: Describe the unique physical features of Earth's environment that make life on Earth possible.</b>	a. Compare Earth's atmosphere, solar energy, and water to those of other planets and moons in the solar system.		
	b. Compare the conditions that currently support life on Earth to the conditions that exist on other planets in the solar system.		
	c. Evaluate evidence for existence of life in other star systems, planets, or moons, either now or in the past.		
<b>Objective 2.2: Analyze how ecosystems differ from each other due to abiotic and biotic factors.</b>	a. Observe and list abiotic factors (e.g., temperature, water, nutrients, sunlight, pH, topography) in specific ecosystems.		
	b. Observe and list biotic factors (e.g., plants, animals, organic matter) that affect a specific ecosystem (e.g., wetlands, deserts, aquatic).		
	c. Predict how an ecosystem will change as a result of major changes in an abiotic and/or biotic factor.		

	d. Explain that energy enters the vast majority of Earth's ecosystems through photosynthesis, and compare the path of energy through two different ecosystems.		
	e. Analyze interactions within an ecosystem (e.g., water temperature and fish species, weathering and water pH).		
	f. Plan and conduct an experiment to investigate how abiotic factors influence organisms and how organisms influence the physical environment.		
<b>Objective 2.3: Examine Earth's diversity of life as it changes over time.</b>	a. Observe and chart the diversity in a specific area.		
	b. Compare the diversity of life in various biomes specific to number of species, biomass, and type of organisms.		
	c. Explain factors that contribute to the extinction of a species.		
	d. Compare the evidence supporting various theories that explain the cause of large-scale extinctions in the past with factors causing the loss of species today.		
	e. Evaluate the biological,		

	esthetic, ethical, social, or economic arguments with regard to maintaining biodiversity.		
<b>Standard III: Students will understand that gravity, density, and convection move Earth's plates and this movement causes the plates to impact other Earth systems.</b>			
<b>Percentage of coverage for Standard III:    %</b>			
<b>Objectives</b>	<b>Indicators</b>	<b>If covered, appropriate page #'s</b>	<b>Comments on coverage</b>
<b>Objective 3.1: Explain the evidence that supports the theory of plate tectonics.</b>	a. Define and describe the location of the major plates and plate boundaries.		
	b. Compare the movement and results of movement along convergent, divergent, and transform plate boundaries.		
	c. Relate the location of earthquakes and volcanoes to plate boundaries.		
	d. Explain Alfred Wegener's continental drift hypothesis, his evidence, and why it was not accepted in his time.		
	e. Evaluate the evidence for the current theory of plate tectonics.		
<b>Objective 3.2: Describe the processes within Earth that result in plate motion and relate it to changes in other Earth</b>	a. Identify the energy sources that cause material to move within Earth.		
	b. Model the movement of materials within Earth.		

systems.	c. Model the movement of interaction of plates.		
	d. Relate the movement and interaction of plates to volcanic eruptions, mountain building, and climate changes.		
	e. Predict the effects of plate movement on other Earth systems (e.g., volcanic eruptions affect weather, mountain building diverts waterways, uplift changes elevation that alters plant and animal diversity, upwelling from ocean vents resulting in changes in biomass).		
<b>Standard IV: Students will understand that water cycles through and between reservoirs in the hydrosphere and affects the other spheres of the Earth system.</b>			
<b>Percentage of coverage for Standard IV:    %</b>			
<b>Objectives</b>	<b>Indicators</b>	<b>If covered, appropriate page #'s</b>	<b>Comments on coverage</b>
<b>Objective 4.1: Explain the water cycle in terms of its reservoirs, the movement between reservoirs, and the energy to move water. Evaluate the importance of freshwater to the biosphere.</b>	a. Identify the reservoirs of Earth's water cycle (e.g., ocean, ice caps/glaciers, atmosphere, lakes, rivers, biosphere, groundwater) locally and globally, and graph or chart relative amounts in global reservoirs.		
	b. Illustrate the movement		

	of water on Earth and describe how the processes that move water (e.g., evaporation of water, melting of ice/snow, ocean currents, movement of water vapor by wind) use energy from the sun.		
	c. Relate the physical and chemical properties of water to a water pollution issue.		
	d. Make inferences about the quality and/or quantity of freshwater, using data collected from local water systems.		
	e. Analyze how communities deal with water shortages, distribution, and quality in designing a long-term water use plan.		
<b>Objective 4.2: Analyze the physical and biological dynamics of the oceans.</b>	a. Describe the physical dynamics of the oceans (e.g., wave action, ocean currents, El Nino, tides).		
	b. Determine how physical properties of oceans affect organisms (e.g., salinity, depth, tides, temperature).		
	c. Model energy flow in ocean ecosystems.		
	d. Research and report on changing ocean levels over geologic time, and relate		

	changes in ocean level to changes in the water cycle.		
	e. Describe how changing sea levels could affect life on Earth.		
<b>Standard V: Students will understand that Earth’s atmosphere interacts with and is altered by lithosphere, hydrosphere, and biosphere.</b>			
<b>Percentage of coverage for Standard V:    %</b>			
<b>Objectives</b>	<b>Indicators</b>	<b>If covered, appropriate page #'s</b>	<b>Comments on coverage</b>
<b>Objective 5.1: Describe how matter in the atmosphere cycles through other Earth systems.</b>	a. Trace movement of a carbon atom from the atmosphere through a planet, animal, and decomposer, and back into the atmosphere.		
	b. Diagram the nitrogen cycle and provide examples of human actions that affect this cycle (e.g., fertilizers, crop rotation, fossil fuel combustion).		
	c. Interpret evidence suggesting that humans are influencing the carbon cycle.		
	d. Research ways the biosphere, hydrosphere, and lithosphere interact with the atmosphere (e.g., volcanic eruptions putting ash and gases into the atmosphere, hurricanes, changes in		

	vegetation).		
<b>Objective 5.2: Trace ways in which the atmosphere has been altered by living systems and has itself strongly affected living systems over the course of Earth's history.</b>	a. Define ozone and compare its effects in the lower and upper atmosphere.		
	b. Describe the role of living organisms in producing the ozone layer and how the ozone layer affected the development of life on Earth.		
	c. Compare the rate at which CO <sub>2</sub> is put into the atmosphere to the rate at which it is removed through the carbon cycle.		
	d. Analyze data relating to the concentration of atmospheric CO <sub>2</sub> over the past 100 years.		
	e. Research, evaluate, and report on international efforts to protect the atmosphere.		
<b>Standard VI: Students will understand the source and distribution of energy on Earth and its effects on Earth systems.</b>			
<b>Percentage of coverage for Standard VI:    %</b>			
<b>Objectives</b>	<b>Indicators</b>	<b>If covered, appropriate page #'s</b>	<b>Comments on coverage</b>
<b>Objective 6.1: Describe the transformation of solar energy into heat and chemical energy on Earth and eventually the</b>	a. Illustrate the distribution of energy coming from the sun that is reflected, changed into heat, or stored by plants.		

<b>radiation of energy to space.</b>	b. Describe the pathways for converting and storing light energy as chemical energy (e.g., light energy converted to chemical energy stored in plants, plants become fossil fuel).		
	c. Investigate the conversion of light energy from the sun into heat energy by various Earth materials.		
	d. Demonstrate how absorbed solar energy eventually leaves the Earth system as heat radiating to space.		
	e. Construct a model that demonstrates the reduction of heat loss due to a greenhouse effect.		
	f. Research global changes and relate them to Earth systems (e.g., global warming, solar fluctuations).		
	<b>Objective 6.2: Relate energy sources and transformation to the effects on Earth systems.</b>	a. Describe the difference between climate and weather, and how technology is used to monitor changes in each.	
b. Describe the effect of solar energy on the determination of climate and weather (e.g., El Nino, solar intensity).			

	c. Explain how uneven heating at the equator and polar regions creates atmospheric and oceanic convection currents that move heat energy around the Earth.		
	d. Describe the Coriolis effect and its role in global wind and ocean current patterns.		
	e. Relate how weather patterns are the result of interactions among ocean currents, air currents, and topography.		

### General Rubric

Review Category	High Quality - 3	2	1	0	NA	Comments
<b>Curriculum Content Coverage</b>						
Content matches the standards and objectives of the Utah Core Curriculum.	80% of the Utah Core and objectives are covered. Objectives are clearly stated with measurable outcomes.	70% of the Utah Core and objectives are covered. Objectives are clearly stated with measurable outcomes.	50% of the Utah Core and objectives are covered.	Less than 50% of the Utah Core and objectives are covered		
Content is delivered in an appropriate sequence.	80% of the program content is covered in an appropriate sequence matching the Utah Core.	70% of the program content is covered in an appropriate sequence matching the Utah Core.	50% of the program content is covered in an appropriate sequence matching the Utah Core.	Less than 50% of the program content is covered in an appropriate sequence matching the Utah Core.		
Content is covered with	The program	The program	The program	The program lacks		

appropriate depth.	provides 80% or more of the necessary depth needed for appropriate instruction.	provides 70% or less of the necessary depth needed for appropriate instruction.	provides 50% or less of the necessary depth needed for appropriate instruction.	the necessary depth needed for appropriate instruction.		
Content endorses sound research-based practices.	The program utilizes 80% or more of current research-based practices.	The program utilizes 70% or less of current research-based practices.	The program utilizes 50% or less of current research-based practices.	The program does not utilize current research-based practices.		
Content is presented accurately and in an age-appropriate manner.	Materials reflect current content knowledge without content bias. Materials utilize cross-curricular references and experiences. Materials are age appropriate.	Materials have some content inaccuracies, but do not show content bias. Materials utilize some cross-curricular references. Materials are 70% age appropriate	Materials show many content inaccuracies and some content bias. Materials have very limited cross curricular references. Materials are approximately 50% age appropriate.	Materials have major content inaccuracies. Materials have no cross curricular references. Materials are not age appropriate.		
Content is engaging to the student.	80% or more of the materials and activities are interesting and engaging to the student promoting purposeful learning.	Less than 80% of the materials and activities are interesting and engaging to the student promoting purposeful learning.	50% or less of the materials and activities are interesting and engaging to the student promoting purposeful learning.	Very little, if any, of the materials and activities are interesting and engaging to the student promoting purposeful learning.		
Content is differentiated to meet different abilities and needs.	There are appropriate accommodations for various developmental levels acknowledging	70% of the program provides appropriate accommodations for various developmental levels acknowledging	50% of the program provides appropriate accommodations for various developmental levels acknowledging prerequisite skills	There are few or no appropriate accommodations for various developmental levels with little acknowledgment of		

	prerequisite skills and knowledge.	prerequisite skills and knowledge.	and knowledge.	needed prerequisite skills and knowledge.		
<b>Review Category</b> <b>Physical Qualities</b>	High Quality - 3	2	1	0	NA	Comments
Student materials provide appropriate print, illustrations and text features.	Student materials provide appropriate use of font, illustrations and text features, (e.g., illustrations, graphs, tables).	70% of the student material provides appropriate use of font, illustrations and text features, (e.g., illustrations, graphs, tables).	50% of the student material provides appropriate use of font, illustrations and text features, (e.g., illustrations, graphs, tables).	The student materials lack appropriate use of font, illustrations, and text features, (e.g., illustrations, graphs, tables).		
Student materials provide table of contents, glossary, index, and etc.	Student materials provide necessary table of contents, indices, glossaries, and other references to assist and guide students, parents, and teachers.	Student materials provide some table of contents, indices, glossaries, and other references to assist and guide students, parents, and teachers.	Student materials provide a limited amount of table of contents, indices, glossaries, and other references to assist and guide students, parents, and teachers.	Student materials provide very little, if any, table of contents, indices, glossaries, and other references to assist and guide students, parents, and teachers.		
Student materials are durable.	Student materials are securely bound and reinforced.	Student materials are adequately hardbound.	Student materials have secure bindings.	Student materials have inferior bindings.		
Teacher materials are easy to use.	Teacher materials are well organized with easy to read font and good correlation with student materials.	Teacher materials are organized with easy to read font, and follow correlation with student materials.	Teacher materials are somewhat organized with hard to read font and layout. Materials provide difficult to follow correlation with student materials.	Materials are disorganized with hard to read font for teachers. Layout provides little or no correlation to student materials.		
Teacher material is durable.	Teacher materials are securely bound and reinforced	Teacher materials are adequately hardbound while	Teacher materials have secure bindings but do not open and	Teacher materials have inferior bindings but do lay		

	while staying open and flat for teaching.	staying open and flat for teaching	lay flat to facilitate teaching.	flat to facilitate teaching.		
<b>Review Category Technology Qualities</b>	High Quality - 3	2	1	0	NA	Comments
Technology provided is user friendly.	Program provides menus that are easy to read and follow. Program is user-friendly to install and requires a minimal level of computer expertise. Manuals and directions are understandable.	Program provides menus that are generally easy to read and follow. Installation requires little computer expertise. Manuals and directions are simple to understand.	Program menus are easy to read. Manuals might have to be read in detail to understand operation of technology, (e.g., laser remote, software). Installation might require some knowledge or expertise. Manuals are included.	Menus are not descriptive and hard to follow. Installation requires expertise. No manuals or written instructional materials are provided.		
Technology provided enhances the learning experience.	Technology provided is appropriate giving additional support for student learning.	Technology provided is appropriate giving some additional support for student learning.	Limited technology is provided giving little support for student learning.	No technology is provided.		
Technology has quality audio/visual attributes.	Program provides high quality audio and visual effects.	Program provides good audio and visual effects.	Program audio and visual effects are of poor quality.	No technology is available.		
<b>Review Category Ancillary Materials</b>	High Quality - 3	2	1	0	NA	Comments
Student ancillary materials provide appropriate supplemental instruction.	Program provides high quality student ancillary materials that enhance and supplement the delivery of	Program provides adequate student ancillary materials to enhance and supplement the delivery of	Program provides some student ancillary materials that are of limited value to supplement and enhance the	The program provides no student ancillary materials or student ancillary materials are of such poor quality		

	instruction.	instruction.	delivery of instruction.	and have little correlation to learning objectives that they are of no value.		
Student ancillary materials are easy to access and utilize.	Student ancillary materials are easy to access, are durable and easy to utilize.	Student ancillary materials are easy to access, are somewhat durable requiring some modification to utilize.	Student ancillary materials are difficult to access and require modification to utilize.	Student ancillary materials are of such poor quality or difficult to prepare or access that they are of little or no value.		
Parent ancillary materials are appropriate and support desired student learning	Parent ancillary materials are appropriate providing good support for desired student learning through home activities, homework, and practice opportunities.	Parent ancillary materials are appropriate providing adequate support for desired student learning through a variety of opportunities and activities.	Parent ancillary materials are not always appropriate nor do they provide adequate support through a variety of opportunities for student learning.	There are no parent ancillary materials available.		
<b>Review Category Assessment Materials</b>	High Quality - 3	2	1	0	NA	Comments
A variety of assessment options are provided.	Program provides multiple assessment measures to monitor individual student progress at regular intervals.	Program provides some assessment measures to monitor individual student progress at regular intervals.	Program provides limited assessment measures to monitor individual student progress at regular intervals.	Program provides no assessment measures or measures are of such poor quality or correlation to student learning to be of any value.		

Assessment tools are appropriate to inform instruction and are aligned with the program, the Utah Core curriculum, and U-PASS.	Assessment tools are appropriate to inform the major areas of instruction and are aligned with the program and the Utah Core curriculum and U-PASS.	Assessment tools are appropriate to inform some areas of the instructional program and are adequately aligned with the program and the Utah Core curriculum and U-PASS.	Assessment tools are appropriate to inform limited areas of the instructional program and are poorly aligned with the program and the Utah Core curriculum and U-PASS.	Assessment tools are not appropriate to inform areas of the instructional program and are not aligned with the program and the Utah Core curriculum and U-PASS.		
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Assessment tools are easily accessible and utilized.	Assessment tools are easily accessible with a limited amount of training or expertise.	Assessment tools are accessible with some amount of training or expertise needed.	Assessment tools are difficult to access and require extensive training.	Assessment tools are not accessible.		
<b>Category Universal Access</b>	High Quality - 3	2	1	0	NA	Comments
Program content accurately reflects diverse populations.	Program provides ways to adapt curriculum for all students, (e.g., special learning needs, learning disabilities, ELL, and advanced learners).	Program provides some ways to adapt curriculum to meet special learning needs of students.	Program provides limited strategies to assist special learning needs of students.	Program provides no strategies to assist special learning needs of students.		
Program contents provides for the development of healthy attitudes and values.	Program accurately portrays and promotes understanding of cultural, racial, religious and diversity in society.	Program accurately portrays and promotes some understanding of cultural, racial, religious and diversity in society.	Program accurately portrays and promotes a limited understanding of cultural, racial, religious and diversity in society.	Program does not accurately portray or promote an understanding of cultural, racial, religious and diversity in society.		

**I have reviewed the above program and recommend the following use: (Choose one category only.)**

- (1) Instructional materials are in alignment with content philosophy and instructional strategies of the Utah Core. Materials provide comprehensive coverage of course content and support U-PASS. Materials may be used for **primary course instruction**.
  - (2) Instructional materials provide limited alignment with the Utah Core or U-PASS or have a narrow or restricted scope and sequence. Use of these materials must be supplemented with necessary missing program elements for effective instruction. Materials may be used on a **limited basis with accompanying plan** for use with additional appropriate materials to assure coverage of core requirements.
    - Materials could be used to support primary course instruction - **Tier I** of the **Utah Model for Instruction and Intervention**.
    - Materials could be used to support intervention instruction - **Tier II** of the **Utah Model for Instruction and Intervention**.
    - Materials could be used to support intervention instruction - **Tier III** of the **Utah Model for instruction and Intervention**.
  - (3) Materials are not for student instructional use, but may only be used only as **teacher resource material**.
  - (4) Materials are aligned to the core, developmentally appropriate, may contain valuable content information, but are not intended to be used as the source for primary instruction, but **only as student resource material**.
- Materials have been reviewed, but **not adopted** because of lack of alignment, inaccurate content, misleading connotations, undesirable presentation, or are in conflict with existing law and rules, or otherwise unsuitable for use by students. **School districts are strongly cautioned against using these materials.** Materials were included in the publisher bid, but **not sampled** to the USOE or Textbook commission.
- Materials were not reviewed**, but may be purchased in accordance with the law and Rule **277-469-6**: Advanced placement materials, International materials, concurrent enrollment materials, library or trade books, reference materials, teacher professional materials which are not components of an integrated instructional program. Galley proofs or unfinished copies are not reviewed.

Evaluator Signature: \_\_\_\_\_

Date: \_\_\_\_\_