

Textbook Alignment to the Utah Biology Core Curriculum Rubric

Title _____ ISBN# _____			
Publisher: _____			
Name of Person(s) conducting alignment and evaluation: _____			
Overall percentage of coverage of the Utah State Core Curriculum: _____%			
Standard I: Students will understand that living organisms interact with one another and their environment.			
Percentage of coverage for Standard I: %			
Objectives	Indicators	If covered, appropriate page #'s	Comments on coverage
Objective 1.1: Summarize how energy flows through an ecosystem.	a. Arrange components of a food chain according to energy flow.		
	b. Compare the quantity of energy in the steps on an energy pyramid.		
	c. Describe strategies used by organisms to balance energy expended to obtain food to the energy gained from the food (e.g., migration to areas of seasonal abundance, switching type of prey		

	based on availability, hibernation or dormancy).		
	d. Compare the relative energy output expended by an organism in obtaining food to the energy gained from the food (e.g., hummingbird – energy expended hovering at a flower compared to the amount of energy gained from the nectar, coyote – chasing mice to the energy gained from catching one, energy expended in migration of birds to a location with seasonal abundance compared to energy gained by staying in a cold climate with limited food).		
	e. Research food production in various parts of the world (e.g., industrialized societies’ greater use of fossil fuel in food production, human health related to food product).		
Objective 1.2: Explain relationships between matter cycles and organisms.	a. Use diagrams to trace the movement of matter through a cycle (i.e., carbon, oxygen, nitrogen, water) in a variety of biological communities and ecosystems.		

	b. Explain how water is a limiting factor in various ecosystems.		
	c. Distinguish between inference and evidence in a newspaper, magazine, journal, or Internet article that addresses an issue related to human impact on cycles of matter in an ecosystem and determine the bias in the article.		
	d. Evaluate the impact of personal choices in relation to the cycling of matter within an ecosystem (e.g., impact of automobiles on the carbon cycle, impact of landfills of processed and packaged foods).		
Objective 1.3: Describe how interactions among organisms and their environment help shape ecosystems.	a. Categorize relationships among living things according to predator-prey, competition, and symbiosis.		
	b. Formulate and test a hypothesis specific to the effect of changing one variable upon another in a small ecosystem.		
	c. Use data to interpret interactions among biotic and abiotic factors (e.g., pH, temperature, precipitation, populations, diversity) within an ecosystem.		

	d. Investigate an ecosystem using methods of science to gather quantitative and qualitative data and describe the ecosystem in detail.		
	e. Research and evaluate local and global practices that affect ecosystems.		
Standard II: Students will understand that all organisms are composed of one or more cells that are made of molecules, come from preexisting cells, and perform life functions.			
Percentage of coverage for Standard II: %			
Objectives	Indicators	If covered, appropriate page #'s	Comments on coverage
Objective 2.1: Describe the fundamental chemistry of living cells.	a. List the major chemical elements in cells (i.e., carbon, hydrogen, nitrogen, oxygen, phosphorus, sulfur, trace elements).		
	b. Identify the function of the four major macromolecules (i.e., carbohydrates, proteins, lipids, nucleic acids).		
	c. Explain how the properties of water (e.g., cohesion, adhesion, heat capacity, solvent properties)		
	d. Explain the role of enzymes in cell chemistry.		
Objective 2.2: Describe the flow of energy and matter in cellular function.	a. Distinguish between autotrophic and heterotrophic cells.		
	b. Illustrate the cycling of		

	<p>matter and the flow of energy through photosynthesis (e.g., by using light energy to combine CO₂ and H₂O to produce oxygen and sugars) and respiration (e.g., by releasing energy from sugar and O₂ to produce CO₂ and H₂O).</p>		
	<p>c. Measure the production of one or more of the products of either photosynthesis or respiration.</p>		
<p>Objective 2.3: Investigate the structure and function of cells and cell parts.</p>	<p>a. Explain how cells divide from existing cells.</p>		
	<p>b. Describe cell theory and relate the nature of science to the development of cell theory (e.g., built upon previous knowledge, use of increasingly more sophisticated technology).</p>		
	<p>c. Describe how the transport of materials in and of cells enables cells to maintain homeostasis (i.e., osmosis, diffusion, active transport).</p>		
	<p>d. Describe the relationship between the organelles in a cell and the functions of that cell.</p>		
	<p>e. Experiment with</p>		

	microorganisms and/or plants to investigate growth and reproduction.		
Standard III: Students will understand the relationship between structure and function of organs and organ systems.			
Percentage of coverage for Standard III: %			
Objectives	Indicators	If covered, appropriate page #'s	Comments on coverage
Objective 3.1: Describe the structure and function of organs.	a. Diagram and label the structure of the primary components of representative organs in plants and animals (e.g., heart – muscle tissue, valves and chambers; lung – trachea, bronchial, alveoli; leaf – veins, stomata; stem – xylem, phloem, cambium; root – tip, elongation, hairs; skin – layers, sweat glands, oil glands, hair follicles; ovaries – ova, follicles, corpus luteum).		
	b. Describe the function of various organs (e.g., heart, lungs, skin, leaf, stem, root, ovary).		
	c. Relate the structure of organs to the function of organs.		
	d. Compare the structure and function of organs in one organism to the structure and function of		

	organs in another organism.		
	e. Research and report on technological developments related to organs.		
Objective 3.2: Describe the relationship between structure and function of organ systems in plants and animals.	a. Relate the function of an organ to the function of an organ system.		
	b. Describe the structure and function of various organ systems (i.e., digestion, respiration, circulation, protection and support, nervous) and how these systems contribute to homeostasis of the organism.		
	c. Examine the relationships of organ systems within an organism (e.g., respiration to circulation, leaves to roots) and describe the relationship of structure to function in the relationship.		
	d. Relate the tissues that make up organs to the structure and function of the organ.		
	e. Compare the structure and function of organ systems in one organism to the structure and function in another organism (e.g., chicken to sheep digestive system; fern to peach reproductive system).		

Standard IV: Students will understand that genetic information coded in DNA is passed from parents to offspring by sexual and asexual reproduction. The basic structure of DNA is the same in all living things. Changes in DNA may alter genetic expression.

Percentage of coverage for Standard IV: %

Objectives	Indicators	If covered, appropriate page #'s	Comments on coverage
Objective 4.1: Compare sexual and asexual reproduction.	a. Explain the significance of meiosis and fertilization in genetic variation.		
	b. Compare the advantages/disadvantages of sexual and asexual reproduction to survival of species.		
	c. Formulate, defend, and support a perspective of a bioethical issue related to intentional or unintentional chromosomal mutations.		
Objective 4.2: Predict and interpret patterns of inheritance in sexually reproducing organisms.	a. Explain Mendel's laws of segregation and independent assortment and their role in genetic inheritance.		
	b. Demonstrate possible results of recombination in sexually reproducing organisms using one or two pairs of contrasting traits in the following crosses: dominance/recessive, incomplete dominance, co dominance, and sex-linked traits.		

	c. Relate Mendelian principles to modern-day practice of plant and animal breeding.		
	d. Analyze bioethical issues and consider the role of science in determining public policy.		
Objective 4.3: Explain how the structure and replication of DNA are essential to heredity and protein synthesis.	a. Use a model to describe the structure of DNA.		
	b. Explain the importance of DNA replication in cell reproduction.		
	c. Summarize how genetic information encoded in DNA provides instructions for assembling protein molecules.		
	d. Describe how mutations may affect genetic expression and cite examples of mutagens.		
	e. Relate historical events that lead to our present understanding of DNA to the cumulative nature of science knowledge and technology.		
	f. Research, report, and debate genetic technologies that may improve the quality of life (e.g., genetic engineering, cloning, gene splicing).		

Standard V: Students will understand that biological diversity is a result of evolutionary processes.			
Percentage of coverage for Standard V: %			
Objectives	Indicators	If covered, appropriate page #'s	Comments on coverage
Objective 5.1: Relate principles of evolution to biological diversity.	a. Describe the effects of environmental factors on natural selection.		
	b. Relate genetic variability to a species' potential for adaptation to a changing environment.		
	c. Relate reproductive isolation to speciation.		
	d. Compare selective breeding to natural selection and relate the differences to agricultural practices.		
Objective 5.2: Cite evidence for changes in populations over time and use concepts of evolution to explain these changes.	a. Cite evidence that supports biological evolution over time (e.g., geologic and fossil records, chemical mechanisms, DNA structural similarities, homologous and vestigial structures).		
	b. Identify the role of mutation and recombination in evolution.		
	c. Relate the nature of science to the historical development of the theory of evolution.		
	d. Distinguish between		

	<p>observations and inferences in making interpretations related to evolution (e.g., observed similarities and differences in the beaks of Galapagos finches leads to the inference that they evolved from a common ancestor; observed similarities and differences in the structures of birds and reptiles leads to the inference that birds evolved from reptiles).</p>		
	<p>e. Review a scientific article and identify the research methods used to gather evidence that documents the evolution of a species.</p>		
<p>Objective 5.3: Classify organisms into a hierarchy of groups based on similarities that reflect their evolutionary relationships.</p>	<p>a. Classify organisms using a classification tool such as a key or field guide.</p>		
	<p>b. Generalize criteria used for classification of organisms (e.g., dichotomy, structure, broad to specific).</p>		
	<p>c. Explain how evolutionary relationships are related to classification systems.</p>		
	<p>d. Justify the ongoing changes to classification schemes used in biology.</p>		

General Rubric

Review Category Curriculum Content Coverage	High Quality - 3	2	1	0	NA	Comments
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 appropriate depth.	The program provides 80% or more of the necessary depth needed for appropriate instruction.	The program provides 70% or less of the necessary depth needed for appropriate instruction.	The program provides 50% or less of the necessary depth needed for appropriate instruction.	The program lacks 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	Materials have some content inaccuracies, but do not show content bias.	Materials show many content inaccuracies and some content bias. Materials have very limited cross	Materials have major content inaccuracies. Materials have no cross curricular		

	cross-curricular references and experiences. Materials are age appropriate.	Materials utilize some cross-curricular references. Materials are 70% age appropriate	curricular references. Materials are approximately 50% age appropriate.	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 prerequisite skills and knowledge.	70% of the program provides appropriate accommodations for various developmental levels acknowledging prerequisite skills and knowledge.	50% of the program provides appropriate accommodations for various developmental levels acknowledging prerequisite skills and knowledge.	There are few or no appropriate accommodations for various developmental levels with little acknowledgment of needed prerequisite skills and knowledge.		
Review Category Physical Qualities	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	Student materials provide some table of contents, indices, glossaries, and other references	Student materials provide a limited amount of table of contents, indices, glossaries, and other	Student materials provide very little, if any, table of contents, indices, glossaries, and other		

	to assist and guide students, parents, and teachers.	to assist and guide students, parents, and teachers.	references to assist and guide students, parents, and teachers.	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 while staying open and flat for teaching.	Teacher materials are adequately hardbound while staying open and flat for teaching	Teacher materials have secure bindings but do not open and lay flat to facilitate teaching.	Teacher materials have inferior bindings but do lay flat to facilitate teaching.		
Review Category Technology Qualities	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.		
Review Category Ancillary Materials	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 instruction.	Program provides adequate student ancillary materials to enhance and supplement the delivery of instruction.	Program provides some student ancillary materials that are of limited value to supplement and enhance the delivery of instruction.	The program provides no student ancillary materials or student ancillary materials are of such poor quality 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	Parent ancillary materials are appropriate providing adequate support for desired student learning through a variety of	Parent ancillary materials are not always appropriate nor do they provide adequate support through a variety of opportunities for	There are no parent ancillary materials available.		

	activities, homework, and practice opportunities.	opportunities and activities.	student learning.			
Review Category Assessment Materials	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.		

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.		
Category Universal Access	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.,	Program provides some ways to adapt curriculum to meet special learning	Program provides limited strategies to assist special learning	Program provides no strategies to assist special learning needs of		

	special learning needs, learning disabilities, ELL, and advanced learners).	needs of students.	needs of students.	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: _____