SUBJECT

Approval of the Cumulative Science Document for ISAT for Grades 5, 7, and 10.

APPLICABLE STATUTE, RULE, OR POLICY

Section 33-105, Idaho Code; Section 33-1612, Idaho Code

REFERENCE

11/1/06 M/S (Howard/Thilo): To approve the request of the State Department of Education to approve the Idaho Content Standards and the Idaho Alternative Achievement Standards as documented to be incorporated by reference into rule. Roll call vote taken; motion carried unanimously.

BACKGROUND

The Idaho Standards Achievement Tests for science in grades 5, 7, and 10. Because the science test is not given each grade like the other science tests, it's important educators are given clear guidelines as to the cumulative standards students will be tested. The attached document includes the testing blueprints for grades 5, 7, and 10.

DISCUSSION

The Idaho Content Standards for science are currently posted on the Board of Education website (as referenced in IDAPA 08.02.03.004), and the Idaho Standards Achievements Test (ISAT) is currently aligned to these standards. The cumulative content standards include all standards tested on the science ISAT at grades 5, 7, and 10.

IMPACT

N/A

ATTACHMENTS

STAFF COMMENTS AND RECOMMENDATIONS

The State Department of Education recommends approval of the science blueprint.

BOARD ACTION

Motion to approve the cumulative science document for ISAT grades 5, 7, and 10.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

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IDAHO Cumulative Science Document
GRADE 5
SCIENCE

To be used as a guide for assessment and not as a guide of content at each grade level
Shaded objectives should be assessed in the classroom, but not included on the ISAT assessment.

Standard 1: Nature of Science

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Objective 6	Objective 7
Goal 1.1: Understand Systems, Order, and Organization	5.S.1.1.1 Compare and contrast different systems. (603.01.a) CL: E Content Limit: Compare one item to another; do not make multiple-item comparisons. Systems tested should be familiar to students. Systems that could be used to develop items include classroom systems (stations, seating plans, built-in operation schemes), games (tag, kick ball), school systems (student: teacher: principal), the water cycle, and body systems (skeletal, digestive, respiratory).						

Goal 1.2: Understand Concepts and Processes of Evidence, Models, and Explanations	5.S.1.2.1 Use observations and data as evidence on which to base scientific explanations and predictions. (603.02.a) CL: E Content Limit: Explanations and predictions are limited to directly described or illustrated information in the item.	5.S.1.2.2 Explain the difference between observation and inference. (603.02.b) CL: Content Limit:	5.S.1.2.3 Use models to explain or demonstrate a concept. (603.02.c) CL: Content Limit:				
Goal 1.3: Understand Constancy, Change, and Measurement	5.S.1.3.1 Analyze changes that occur in and among systems. (603.03.b) CL: E Content Limit: Analysis is limited to changes directly described or illustrated in the item.	5.S.1.3.2 Measure in both U.S. Customary and International System of Measurement (metric system) units with an emphasis on the metric system. (603.03.c) CL: C Content Limit: Measurement should be in millimeters, centimeters, grams.					
Goal 1.4: Understand the Theory that Evolution is a Process that Relates to the Gradual Changes in the Universe and of Equilibrium as a Physical State	No objectives at this grade level.						

Goal 1.5: Understand Concepts of Form and Function	5.S.1.5.1 Explain how the shape or form of an object or system is frequently related to its use or function. (603.05.a) CL: E Content Limit: Items are limited to very visual content, including the streamlining of a dolphin's body and the webbing on a duck's foot.						
Goal 1.6: Understand Scientific Inquiry and Develop Critical Thinking Skills	5.S.1.6.1 Write and analyze questions that can be answered by conducting scientific experiments. (604.01.a) CL: C Content Limit: Content should be limited to questions including the amount of water required by bean seedlings grown in small containers for healthy growth, and the conditions necessary for painted lady butterfly larva to pupate.	5.S.1.6.2 Conduct scientific investigations using a control and a variable. (604.01.b) CL: C Content Limit: Assessed in the classroom, not on the ISAT.	5.S.1.6.3 Select and use appropriate tools and techniques to gather and display data. (604.01.c) CL: C Content Limit: Content should be limited to metric rulers, bar graphs, and basic tables.	5.S.1.6.4 Use evidence to analyze descriptions, explanations, predictions, and models. (604.01.d) CL: E Content Limit: Students should be presented a set of evidence or series of observations and be asked to derive information or make predictions based on this evidence.	5.S.1.6.5 State a hypothesis based on observations. (604.01.e) CL: E Content Limit: When provided sequential graphics, students will be able to select the most logical hypothesis from a list of possible options.	5.S.1.6.6 Compare alternative explanations and predictions. (604.01.f) CL: E Content Limit: When provided sequential graphics and a set of possible explanations, students will be able to select the most logical explanation from a list of possible options.	5.S.1.6.7 Communicate scientific procedures and explanations. (604.01.g) CL: Content Limit: Assessed in the classroom, not on the ISAT.
Goal 1.7: Understand That Interpersonal Relationships Are Important in Scientific Endeavors	No objectives at this grade level.						

Goal 1.8: Understand Technical Communication	5.S.1.8.1 Read and follow technical instructions. (613.02.a) CL: C Content Limit: Assessed in the classroom, not on the ISAT.						

Standard 2: Physical Science

Goals:	Objective 1	Objective 2	Objective 3
Goal 2.1: Understand the Structure and Function of Matter and Molecules and Their Interactions	5.S.2.1.1 Describe the differences among elements, compounds, and mixtures. (605.01.a) CL: D Content Limit: Students should be able to identify the characteristics of an element, compound, and mixture.	5.S.2.1.2 Compare the physical differences among solids, liquids and gases. (605.01.c) CL: D Content Limit: Students should be able to recognize the differences in molecular distance between a solid, a liquid, and a gas, as well as differences in basic molecular motion.	5.S.2.1.3 Explain the nature of physical change and how it relates to physical properties. (605.01.d) CL: D Content Limit: Students should be able to recognize the change(s) in physical properties that take place when physical changes occur including ice melting into water and water being heated into steam.
Goal 2.2: Understand Concepts of Motion and Forces	No objectives at this grade level.		
Goal 2.3: Understand the Total Energy in the Universe is Constant	No objectives at this grade level.		
Goal 2.4: Understand the Structure of Atoms	No objectives at this grade level.		
Goal 2.5: Understand Chemical Reactions	No objectives at this grade level.		

Standard 3: Biology

Goals:	Objective 1	Objective 2
Goal 3.1: Understand the Theory of Biological Evolution	No objectives at this grade level.	
Goal 3.2: Understand the Relationship between Matter and Energy in Living Systems	5.S.3.2.1 Communicate how plants convert energy from the Sun through photosynthesis. (608.01.a) CL: D Content Limit: Students will know that chlorophyll, carbon dioxide, and water are necessary for photosynthesis to occur. Additionally, students will know that the energy necessary to "power" the photosynthetic reaction is provided by the Sun.	
Goal 3.3: Understand the Cell is the Basis of Form and Function for All Living Things	5.S.3.3.1 Compare and contrast the structural differences between plant and animal cells. (606.01.b) CL: E Content Limit: Address only the readily observable organelles: cell wall, cell membrane, and chloroplast.	5.S.3.3.2 Explain the concept that traits are passed from parents to offspring. (606.01.c) CL: D Content Limit: Traits should be limited to clearly observable characteristics including eye color, hair color and texture, and widow's peak.

Standard 4: Earth and Space Systems

Goals:	Objective 1
Goal 4.1: Understand Scientific Theories of Origin and Subsequent Changes in the Universe and Earth Systems	5.S.4.1.1 Describe the interactions among the solid earth, oceans and atmosphere (erosion, climate, tectonics and continental drift). (609.01.a) CL: D Content Limit: The role wind and water play in erosion, different cloud types, and the formation of earthquakes and volcanoes can all be addressed.
Goal 4.2: Understand Geo-chemical Cycles and Energy in the Earth System	5.S.4.2.1 Explain the rock cycle and identify the three classifications of rocks. (609.02.a) CL: D Content Limit: How sedimentary, igneous, and metamorphic rocks are formed.

Standard 5: Personal and Social Perspectives; Technology

Goals:	Objective 1	Objective 2
Goal 5.1: Understand Common Environmental Quality Issues, Both Natural and Human Induced	5.S.5.1.1 Identify issues for environmental studies. (611.01.a) CL: E Content Limit: Content should be limited to events in the local school or community environment including food waste from the hot lunch program, storm runoff entering a local stream, and the impact on grass color due to uneven watering of the school yard.	
Goal 5.2: Understand the Relationship between Science and Technology	5.S.5.2.1 Describe how science and technology are part of a student's life. (610.01.a) CL: Content Limit:	5.S.5.2.2 List examples of science and technology. (610.01.b) CL: Content Limit:
Goal 5.3: Understand the Importance of Natural Resources and the Need to Manage and Conserve Them	5.S.5.3.1 Identify the differences between renewable and nonrenewable resources. (611.03.a) CL: E Content Limit: Content should be limited to issues within a school or local community including recycling programs for paper and aluminum and landfill issues.	

IDAHO Cumulative Science Document
GRADE 6-7
SCIENCE

To be used as a guide for assessment and not as a guide of content at each grade level
Shaded objectives should be assessed in the classroom, but not included on the ISAT assessment.

Standard 1: Nature of Science

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Objective 6
Goal 1.1: Understand Systems, Order, and Organization	7.S.1.1.1 Define small systems as a part of a whole system. (633.01.a) CL: E Content Limit: Items should address content that the student has experience with such as fire drills, the organization of sports teams, an orchestra, or a band. Items can also address topics like organelles in protozoa or the role various plant cell types play in the survival of the plant. The idea is to draw learning together for students.	7.S.1.1.2 Determine how small systems contribute to the function of the whole. (633.01.a) CL: E Content Limit: Material should emphasize major body systems and their component parts including the circulatory, digestive, respiratory, and skeletal systems.	7.S.1.1.3 Identify the different structural levels of an organism (cells, tissues, organs, and organ systems). (633.01.b) CL: E Content Limit: Material should emphasize major body systems and their component parts including the circulatory, digestive, respiratory, and skeletal systems.			

Goal 1.2: Understand Concepts and Processes of Evidence, Models, and Explanations	7.S.1.2.1 Describe how observations and data are evidence on which to base scientific explanations and predictions. (633.02.a) CL: E Content Limit: Items should offer choices that have a direct link between the observation offered for consideration and the correct answer.	7.S.1.2.2 Use observations to make defendable inferences. (633.02.b) CL: Content Limit: Graphics or examples should be limited to natural history topics or observable reactions in living systems.	7.S.1.2.3 Use models to explain or demonstrate a concept. (633.02.c) CL: Content Limit: Material should emphasize major body systems and their component parts including the circulatory, digestive, respiratory, and skeletal systems. Cell models, the component parts of an eye, and the atomic positioning in solids, liquids, and gases are also suitable topics.			
Goal 1.3: Understand Constancy, Change, and Measurement	7.S.1.3.1 Identify concepts of science that have been stable over time. (633.03.a) CL: E Content Limit: Address concepts including the cell theory, germ theory of disease, molecular theory of matter, and similar topics.	7.S.1.3.2 Recognize changes that occur within systems. (633.03.b) CL: E Content Limit: Address topics such as the impact of exercise on breathing and heart rate and the impact of light from a window on the direction of plant growth, etc.	7.S.1.3.3 Make metric measurements using appropriate tools. (633.03.c) CL: C Content Limit: Use linear metric measures, volume measures of milliliter and liter, and mass measure of grams.			
Goal 1.4: Understand the Theory that Evolution is a Process that Relates to the Gradual Changes in the Universe and of Equilibrium as a Physical State	Reference to objective 7.S.3.2.1 CL: Content Limit:					
Goal 1.5: Understand Concepts of Form and Function	No objectives at this grade level.					

Goal 1.6: Understand Scientific Inquiry and Develop Critical Thinking Skills	7.S.1.6.1 Identify controls and variables used in scientific investigations. (634.01.b) CL: E Content Limit: Items should stress the students' ability to distinguish between a control and a variable.	7.S.1.6.2 Use appropriate tools and techniques to gather and display data. (634.01c) CL: C Content Limit: Line graphs, bar graphs, pie charts, and tables are all suitable for use and interpretation.	7.S.1.6.3 Evaluate data in order to form conclusions. (634.01.d) CL: E Content Limit: Data offered for consideration should be linear or tied to a focused topic.	7.S.1.6.4 Use evidence and critical thinking to accept or reject a hypothesis. (634.01.e) CL: E Content Limit: Material offered for consideration should be single-faceted and include topics like the impact of over-watering potted plants or growing plants in light or darkness.	7.S.1.6.5 Evaluate alternative explanations or predictions. (634.01.f) CL: E Content Limit: Students should be able to identify two explanations and/or predictions that are reasonable for a topic.	7.S.1.6.6 Communicate and defend scientific procedures and explanations. (634.01.g) CL: E Content Limit: Items should address pieces of data or evidence that will support or refute an explanation.
Goal 1.7: Understand That Interpersonal Relationships Are Important in Scientific Endeavors	No objectives at this grade level.					
Goal 1.8: Understand Technical Communication	7.S.1.8.1 Read and evaluate technical instructions. (643.02.a) CL: E Content Limit: Items indicate that students can read and follow the instructions for lab procedures and textbook activities.					

Standard 2: Physical Science

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
Goal 2.1 Understand the Structure and Function of Matter, and Molecules and their interactions	6.S.2.1.1* Compare and contrast the differences among elements compounds and mixtures. (620.01.a) CL: D Content Limit: Items can address that there are more than 100 unique elements. Elements bond to make compounds and can be physically combined to make mixtures. The properties of elements change when compounds are formed. Elements can be physically separated from mixtures.	6.S.2.1.2* Define the properties of matter. (620.01.b) CL: B Content Limit: Items can address ideas like a solid has definite volume and shape, a liquid has a definite volume and an indefinite shape, and a gas has no definite shape or volume.	6.S.2.1.3* Compare densities of equal volumes of a solid, a liquid, or a gas. (619.01.c) CL: D Content Limit: Items must address atomic or molecular spacing in each state of matter.	6.S.2.1.4* Describe the effect of temperature on density. (620.01.c) CL: D Content Limit: Items should address the impact that temperature has on the density of a material.	6.S.2.1.5* Explain the nature of physical change and how it relates to physical properties (the distance between molecules as water changes from ice to liquid water and to water vapor). (620.01.d) CL: D Content Limit: Items address the effect of temperature on the spacing and movement of atoms or molecules.
Goal 2.2 Understand Concepts of Motion and Forces	6.S.2.2.1* Describe the effects of different forces (gravity and friction) on the movement, speed, and direction of an object. (620.03.d) CL: D Content Limit: Items will address friction's effect on motion and that gravity is an attractive force between objects.				
Goal 2.3: Understand the Total Energy in the Universe is Constant	No objectives at this grade level.				
Goal 2.4: Understand the Structure of Atoms	No objectives at this grade level.				
Goal 2.5: Understand Chemical Reactions	No objectives at this grade level.				

*Depends upon when content is taught.

Standard 3: Biology

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
Goal 3.1: Understand the Theory of Biological Evolution	7.S.3.1.1 Describe how natural selection explains species change over time. (637.01.a) CL: D Content Limit: Items should address environments in flux (new volcanic islands, lakes being impacted by pollution, the margins of a hot spring), and give insights into how life forms would respond to environmental pressure over time.				
Goal 3.2: **Understand the Relationship between Matter and Energy in Living Systems**	7.S.3.2.1 Describe how energy stored in food is primarily derived from the Sun through photosynthesis. (638.01.a) CL: D Content Limit: Items should probe the basic photosynthetic reaction and the role of producers in the food web.	7.S.3.2.2 Describe how the availability of resources (matter and energy) limits the distribution and abundance of organisms. (638.01.b) CL: E Content Limit: Use the food web and interaction of trophic levels to probe this content.	7.S.3.2.3 Illustrate how atoms and molecules cycle among the living and nonliving components of the biosphere. (638.01.c) CL: D Content Limit: Assessed in the classroom, not on the ISAT.	7.S.3.2.4 Identify how energy flows through ecosystems in one direction, from photosynthetic organisms to herbivores, carnivore, and decomposers. (638.01.d) CL: D Content Limit: Use the food web as the basis for items.	
Goal 3.3: Understand the Cell is the Basis of Form and Function for All Living Things	7.S.3.3.1 Explain the relationships among specialized cells, tissues, organs, organ systems, and organisms. (636.01.a) CL: E Content Limit: Items should address the components of an individual system, such as the digestive system.	7.S.3.3.2 Identify the parts of specialized plant and animal cells. (636.01.b) CL: B Content Limit: Include neurons, skeletal muscle, smooth muscle, cardiac muscle, stomata, and root hairs.	7.S.3.3.3 Identify the functions of cell structures. (636.01.b) CL: D Content Limit: Organelles that are visible with a light microscope, like vacuoles, chloroplasts, and the nucleus are suitable. Organelles that require an electron microscope for observation (endoplasmic reticulum, ribosomes, etc.) should not be addressed.	7.S.3.3.4 Describe cell functions that involve chemical reactions. (630.01.c) CL: D Content Limit: Include organelles that are visible with a light microscope: nucleus, vacuoles, chloroplasts, and the cell membrane.	7.S.3.3.5 Describe how dominant and recessive traits are inherited. (636.01.e) CL: D Content Limit: Include traits easily observed: hair color, eye color, and skin color.

Standard 4: Earth and Space Systems

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
Goal 4.1 Understand Scientific Theories of Origin and Subsequent Changes in the Universe and Earth's Systems	6.S.4.1.1* Explain the interactions among the solid earth, oceans, atmosphere, and organisms. (624.01.a) CL: D Content Limit: Items will address layers of Earth, the effect of weathering on rocks, and the impact bodies of water have on weather.	6.S.4.1.2* Explain the water cycle and its relationship to weather and climate. (624.01.b) CL: D Content Limit: Items should address the water cycle and its impact on the movement of water in the system (precipitation).	6 S.4.1.3* Identify cumulus, cirrus, and stratus clouds and how they relate to weather changes. (624.01.c) CL: D Content Limit: Items should address cloud types and the weather patterns associated with each.		
Goal 4.2: Understand the Geo-chemical Cycles and Energy in the Earth System	No objectives at this grade level.				

*Depends upon when content is taught.

Standard 5: Personal and Social Perspectives; Technology

Goals:	Objective 1	Objective 2
Goal 5.1: Understand Common Environmental Quality Issues, Both Natural and Human Induced	No objectives at this grade level.	
Goal 5.2: Understand the Relationship between Science and Technology	7.S.5.2.1 Explain how science and technology are interrelated. (640.01.a) CL: Content Limit:	7.S.5.2.2 Explain how science advances technology. (640.01.b) CL: Content Limit:
Goal 5.3: Understand the Importance of Natural Resources and the Need to Manage and Conserve Them	7.S.5.3.1 Identify alternative sources of energy. (641.03.a) CL: D Content Limit: Content may include solar and wind power and hybrid vehicles.	

IDAHO Cumulative Science Document
GRADE 8, 9, 10
Science

To be used as a guide for assessment and not as a guide of content at each grade level
Shaded objectives should be assessed in the classroom, but not included on the ISAT assessment.

Standard 1: Nature of Science

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Objective 6	Objective 7
Goal 1.1: Understand Systems, Order, and Organization	9-10.B.1.1.1 Explain the scientific meaning of system, order, and organization. (648.01a) CL: E Content Limit: Students should be able to identify the components of a system and how the components interact to allow the system to function. Suitable systems to test include the structure of an electric motor, the Earth-Moon system, the solar system, the respiratory system, and the cell as a system.	9-10.B.1.1.2 Apply the concepts of order and organization to a given system. (648.01a) CL: E Content Limit: Students should be able to identify the components of a system and the role each component has in the system's function.					

Goal 1.2: Understand Concepts and Processes of Evidence, Models, and Explanations	9-10.B.1.2.1 Use observations and data as evidence on which to base scientific explanations. (648.02a) CL: E Content Limit: When presented observations and data (including different cell types, genetic traits, or environmental changes over time), students will be able to select the most reasonable explanation from a list of possibilities.	9-10.B.1.2.2 Develop models to explain concepts or systems. (648.02b) CL: Content Limit: Assessed in the classroom, not on the ISAT.	9-10.B.1.2.3 Develop scientific explanations based on knowledge, logic and analysis. (648.02c) CL: Content Limit: Assessed in the classroom, not on the ISAT.				
Goal 1.3: Understand Constancy, Change, and Measurement	9-10.B.1.3.1 Measure changes that can occur in and among systems. (648.03b) CL: E Content Limit: Students should be able to explain changes that occur in systems. Topics may include heart rate, breathing rate, dilation of pupils, cells, ecosystems, biogeochemical cycles, and chemical reactions.	9-10.B.1.3.2 Analyze changes that can occur in and among systems. (648.03b) CL: E Content Limit: Students should be able to analyze changes that take place in system performance due to external or environmental changes. Topics may include heart rate, breathing rate, and dilation of pupil changes.	9-10.B.1.3.3 Measure and calculate using the metric system. (648.03c) CL: C Content Limit: Students should be able to use metric units to record and analyze data.				

Goal 1.4: Understand the Theory that Evolution is a Process that Relates to the Gradual Changes in the Universe and of Equilibrium as a Physical State	Reference to 7.S.3.2.1 CL: Content Limit:						
Goal 1.5: Understand Concepts of Form and Function	No objectives in Biology.						
Goal 1.6: Understand Scientific Inquiry and Develop Critical Thinking Skills	9-10.B.1.6.1 Identify questions and concepts that guide scientific investigations. (649.01a) CL: E Content Limit: When presented a number of questions, students will be able to identify questions that can be investigated.	9-10.B.1.6.2 Utilize the components of scientific problem solving to design, conduct, and communicate results of investigations. (649.01b) CL: E Content Limit: Items should address experimental design.	9-10.B.1.6.3 Use appropriate technology and mathematics to make investigations. (649.01c) CL: C Content Limit: Students should be able to identify suitable forms of technology and mathematics needed to solve a problem presented in the question stem.	9-10.B.1.6.4 Formulate scientific explanations and models using logic and evidence. (649.01d) CL: E Content Limit: Assessed in the classroom, not on the ISAT.	9-10.B.1.6.5 Analyze alternative explanations and models. (649.01e) CL: E Content Limit: When offered a variety of possible explanations, students should be able to identify the most logical option to fit with the question stem.	9-10.B.1.6.6 Communicate and defend a scientific argument. (649.01f) CL: D Content Limit: When offered a variety of possible explanations, students should be able to identify the option that will fit with the question stem.	9-10.B.1.6.7 Explain the differences among observations, hypotheses, and theories. (649.01g) CL: D Content Limit: Students should be able to distinguish between observations, hypotheses, and theories.
Goal 1.7: Understand That Interpersonal Relationships Are Important in Scientific Endeavors	No objectives in Biology.						

Goal 1.8: Understand Technical Communication	9-10.B.1.8.1 Analyze technical writing, graphs, charts, and diagrams. (658.02a) CL: E Content Limit: Students should be asked to derive information from graphs, charts, and diagrams.						

Standard 2: Physical Science

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
Goal 2.1 Understand the Structure and Function of Matter and Molecules and Their Interactions	No objectives at this grade level.				
Goal 2.2 Understand the Concepts of Motion and Forces	8-9*.PS.2.2.1 Explain motion using Newton's Laws of Motion. (650.04 b) CL: E Content Limit: Items should cover the relationship between force, mass, and acceleration. Inertia, balanced and unbalanced forces, action and reaction should also be addressed.				
Goal 2.3: Understand the Total Energy in the Universe is Constant	8-9.PS.2.3.1* Explain that energy can be transformed but cannot be created nor destroyed. (650.05a) CL: D Content Limit: Items can address energy conversions including the impact of friction on the total amount of energy available.	8-9. PS.2.3.2* Classify energy as potential and/or kinetic and as energy contained in a field. (650.05b) CL: C Content Limit: Items should be able to distinguish between different forms of potential and kinetic energy. The relationship between magnetic fields and electrical fields can be addressed. The structure or organization of the electromagnetic spectrum can also be addressed.			

*Depends upon when content is taught.

Goal 2.4: Understand the Structure of Atoms	8-9.PS.2.4.1 Describe the properties, function, and location of protons, neutrons, and electrons. (650.01a) CL: D Content Limit: Items can address electrical charges, locations in the atom of each particle and relative mass of each particle. For an atom, students should know that the proton determines the element, the neutron determines the isotope, and the electron determines the chemical properties.	8-9 PS.2.4.2. Explain the processes of fission and fusion. (650.01b) CL: D Content Limit: Both processes release energy. Fission results in smaller particles. Fusion results in larger particles.	8-9.PS.2.4.3 Describe the characteristics of isotopes. (650.01c) CL: D Content Limit: Items should address that isotopes are atoms of the same element that have a different number of neutrons.	8-9.PS.2.4.4 State the basic electrical properties of matter. (650.01d) CL: B Content Limit: Items should address that like charges repel and opposite charges attract, and that some forms of matter are insulators and others are conductors.	8-9.PS.2.4.5 Describe the relationships between electricity and magnetism. CL: D Content Limit: Items should address how generators and motors work.
Goal 2.5: Understand Chemical Reactions	8-9.PS.2.5.1 Explain how chemical reactions may release or consume energy while the quantity of matter remains constant. (650.03a) CL: D Content Limit: Items should address the law of conservation of mass and exothermic and endothermic reactions.				

*Depends upon when content is taught.

Standard 3: Biology

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
Goal 3.1: Understand the Theory of Biological Evolution	9-10.B.3.1.1 Use the theory of evolution to explain how species change over time. (652.01a) CL: D Content Limit: Items could address isolation of sub-populations within a species.	9-10.B.3.1.2 Explain how evolution is the consequence of interactions among the potential of a species to increase its numbers, genetic variability, a finite supply of resources, and the selection by the environment of those offspring better able to survive and reproduce. (652.01a) CL: D Content Limit: Items should address genetic variability in a species, competition for environmental resources within a species, and environmental natural selection.			
Goal 3.2: Understand the Relationship between Matter and Energy in Living Systems	9-10.B.3.2.1 Explain how matter tends toward more disorganized states (entropy). (653.01a) CL: D Content Limit: Items should probe the concept of entropy.	9-10.B.3.2.2 Explain how organisms use the continuous input of energy and matter to maintain their chemical and physical organization. (653.01b) CL: E Content Limit: Food webs would be an appropriate way to probe this understanding.	9-10.B.3.2.3 Show how the energy for life is primarily derived from the Sun through photosynthesis. (653.01c) CL: D Content Limit: The basic photosynthetic reaction should be covered in depth.	9-10.B.3.2.4 Describe cellular respiration and the synthesis of macromolecules. (653.01d) CL: D Content Limit: Students should understand and be responsible for the basic reaction, the exchange/production of oxygen and carbon dioxide for respiration, and the steps involved in production of macromolecules by living cells.	9-10.B.3.2.5 Show how matter cycles and energy flows through the different levels of organization of living systems (cells, organs, organisms, communities and their environment). (653.01h) CL: D Content Limit: Energy flow through food webs can be used to assess this objective.

Goal 3.3: Understand the Cell is the Basis of Form and Function for All Living Things	9-10.B.3.3.1 Identify the particular structures that underlie the cellular functions. (651.01a) CL: D Content Limit: Items should probe the function of organelles including chloroplasts, the nucleus, and vacuoles.	9-10.B.3.3.2 Explain cell functions involving chemical reactions. (651.01b) CL: D Content Limit: Items should probe the function of organelles including chloroplasts, the nucleus, and vacuoles.	9-10.B.3.3.3 Explain how cells use DNA to store and use information for cell functions. (651.01c) CL: D Content Limit: Items should address DNA replication and mitosis as the mechanism for transferring DNA to the next generation of cells.	9-10.B.3.3.4 Explain how selective expression of genes can produce specialized cells from a single cell. (651.01e) CL: D Content Limit: Items should address the role genes play in differentiation.	

Standard 4: Earth and Space Systems

Goals:	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
Goal 4.1: Understand Scientific Theories of Origin and Subsequent Changes in the Universe and Earth Systems	8-9.ES.4.1.1* Explain the current scientific theory that suggests that the solar system formed from a nebular cloud of dust and gas. (654.01a) CL: B Content Limit: Items should address current theories of the formation of the solar system.	8-9.ES.4.1.2* Identify methods used to estimate geologic time. (654.01b) CL: B Content Limit: Items should include the Law of Superposition and radioactive decay.	8-9.ES.4.1.3* Show how interactions among solid earth, oceans, atmosphere, and organisms have changed the earth system over time. (650.01c) CL: D Content Limit: Items should address continental drift, ice ages, global warming , and fossil fuel formation.		
Goal 4.2: Understand the Geo-chemical Cycles and Energy in the Earth System	8-9.ES.4.2.1* Explain the internal and external energy sources of the earth. (654.02a) CL: D Content Limit: Items should address the impact of solar heating, radioactivity, and geothermal activity.				

*Depends upon when content is taught.

Standard 5: Personal and Social Perspectives; Technology

Goals:	Objective 1	Objective 2	Objective 3
Goal 5.1: Understand Common Environmental Quality Issues, Both Natural and Human Induced	9-10.B.5.1.1 Analyze environmental issues such as water and air quality, hazardous waste, forest health, and agricultural production. (656.01a) CL: E Content Limit: Issues relevant to Idaho should be addressed: stream degradation, logging, mining, dams, and wind turbines.		
Goal 5.2: Understand the Relationship between Science and Technology	9-10.B.5.2.1 Explain how science advances technology. (655.01a) CL: E Content Limit: Use scientists whose discoveries have significance and ramifications in today's world to frame items.	9-10.B.5.2.2 Explain how technology advances science. (655.01a) CL: E Content Limit: Use common pieces of technology (lenses, electricity, computers, etc.) as the foundation for items that lead students to see the role technology has in advancing science.	9-10.B.5.2.3 Explain how science and technology are pursued for different purposes. (656.01b) CL: E Content Limit: Items should address the role of technology in applying science to improve some aspect of human life, and the role of science in answering questions and extending knowledge.
Goal 5.3: Understand the Importance of Natural Resources and the Need to Manage and Conserve Them	9-10.B.5.3.1 Describe the difference between renewable and nonrenewable resources. (656.03a) CL: D Content Limit: Topics like oil, metallic ores, and wood products are suitable for consideration.		

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TITLE 33
EDUCATION
CHAPTER 1
STATE BOARD OF EDUCATION

33-105. RULES -- EXECUTIVE DEPARTMENT. (1) The state board shall have power to make rules for its own government and the government of its executive departments and offices; and, upon recommendations of its executive officers, to appoint to said departments and offices such specialists, clerks and other employees as the execution of duties may require, to fix their salaries and assign their duties.

(2) Statements of the state board of education and board of regents of the university of Idaho which relate to the curriculum of public educational institutions, to students attending or applicants to such institutions, or to the use and maintenance of land, equipment and buildings controlled by the respective institutions, are not rules and are not statements of general applicability for the purposes of chapter 52, title 67, Idaho Code.

(3) Notwithstanding any other provision of chapter 52, title 67, Idaho Code, the state board of education and board of regents of the university of Idaho shall be deemed to be in full compliance with the notice requirements of section 67-5221, Idaho Code, if:

(a) Notice is given by including the intended action in the official written agenda for a regularly scheduled meeting of the board, and the agenda is available for public inspection at the central office of the board not less than five (5) days prior to the meeting; and

(b) Notice of the intended action, accompanied by the full text of the rule under consideration prepared so as to indicate words added or deleted from the presently effective text, if any, is transmitted to the director of the legislative services office at the same time that notice is given under paragraph (a) of this subsection. The director of the legislative services office shall refer the material under consideration to the germane joint subcommittee created in section 67-454, Idaho Code, to afford the subcommittee opportunity to submit data, views or arguments in writing to the board prior to the time for receiving comment as provided in paragraph (d) of this subsection; and

(c) The intended action is discussed but not acted upon during the regularly scheduled meeting for which the agenda was prepared, but instead is held for final action at the next regularly scheduled or later meeting of the board; and

(d) At least fifteen (15) days prior to the scheduled date for final action, the board shall mail to all persons who have made timely request in writing to the board and shall publish in an issue of the Idaho administrative bulletin a brief description of the intended action, or a concise summary of any statement of economic impact required pursuant to section 67-5223(2), Idaho Code, and shall note the time when, the place where, and the manner in which interested persons may present their views thereon; and

(e) Upon adoption of a rule, the board, if requested in writing to do so by an interested person either prior to adoption or within twenty-eight (28) days thereafter, shall issue a concise statement of the principal reasons for and against its adoption, incorporating therein its reasons for overruling the considerations urged against its adoption.

TITLE 33
EDUCATION
CHAPTER 16
COURSES OF INSTRUCTION

33-1612. THOROUGH SYSTEM OF PUBLIC SCHOOLS. The constitution of the state of Idaho, section 1, article IX, charges the legislature with the duty to establish and maintain a general, uniform and thorough system of public, free common schools. In fulfillment of this duty, the people of the state of Idaho have long enjoyed the benefits of a public school system, supported by the legislature, which has recognized the value of education to the children of this state.

In continuing recognition of the fundamental duty established by the constitution, the legislature finds it in the public interest to define thoroughness and thereby establish the basic assumptions which govern provision of a thorough system of public schools.

A thorough system of public schools in Idaho is one in which:

1. A safe environment conducive to learning is provided;
2. Educators are empowered to maintain classroom discipline;
3. The basic values of honesty, self-discipline, unselfishness, respect for authority and the central importance of work are emphasized;
4. The skills necessary to communicate effectively are taught;
5. A basic curriculum necessary to enable students to enter academic or professional-technical postsecondary educational programs is provided;
6. The skills necessary for students to enter the work force are taught;
7. The students are introduced to current technology; and
8. The importance of students acquiring the skills to enable them to be responsible citizens of their homes, schools and communities is emphasized.

The state board shall adopt rules, pursuant to the provisions of chapter 52, title 67, Idaho Code, and section 33-105(3), Idaho Code, to establish a thorough system of public schools with uniformity as required by the constitution, but shall not otherwise impinge upon the authority of the board of trustees of the school districts. Authority to govern the school district, vested in the board of trustees of the school district, not delegated to the state board, is reserved to the board of trustees. Fulfillment of the expectations of a thorough system of public schools will continue to depend upon the vigilance of district patrons, the dedication of school trustees and educators, the responsiveness of state rules, and meaningful oversight by the legislature.