Idaho Science Blueprint

Goal structure	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8/9 Earth Science-Middle School Standards	Grade 8/9 Earth Science--High School Standards	Grade 8/9 Physical Science--Middle School Standards	Grade 8/9 Physical Science--High School Standards	Biology
1. Unifying Concepts of Science										
a. Understand systems, order and organization	573.01.a--Recognize that a system is an organized group of related objects that form a whole	588.01.a--Recognize that a system is an organized group of related objects that form a whole.	603.01.a--Know that a system is an organized group of related objects that form a whole.	618.01.a--Know that a system is an organized group of related objects that form a whole		633.01a--Define and order small systems of a whole for the purpose of investigation.	648.01a--Know the scientific meaning and application of the concepts of system, order, and organization	633.01a--Define and order small systems of a whole for the purpose of investigation.	648.01.a--Know the scientific meaning and application of the concepts of system, order and organization	648.01.a--Know the scientific meaning and application of the concepts of system, order and organization
b. Understand concepts and processes of evidence, models and explanation	573.02.a--Develop skills in observation and data collection	588.02.a--Develop skills in observation and data collection	603.02.a--Know that observations and data are evidence on which to base scientific explanations and predictions	618.02.a--Know that observations and data are evidence on which to base scientific explanations and predictions	633.02.a--Use observations and data as evidence on which to base scientific explanations and predictions	633.02.a--Use observations and data as evidence on which to base scientific explanations and predictions	648.02a--Know that obserations and data are evidence on which to base scientific explanations	633.02.a--Use observations and data as evidence on which to base scientific explanations and predictions	648.02.a--Know that observations and data are evidence on which to base scientific explanations	648.02.a--Know that observations and data are evidence on which to base scientific explanations
		588.02.b--Recognize the difference between observations and inferences	603.02.b--Know the differences between observations and inference	618.02.b--Know the difference between observations and inference	633.02.b--Use observations to make defendable inferences	633.02.b--Use observations to make defendable inferences	648.02c--Develop scientific explanations based on scientific knowledge, logic and analysis	633.02.b--Use observations to make defendable inferences	648.02.c--Develop scientific explanations based on scientific knowledge, logic and analysis	648.02.c--Develop scientific explanations based on scientific knowledge, logic and analysis
	572.02c--Develop and or use models to explain how things work	588.02c--Develop and or use models to explain how things work	603.02.c--Use models to explain or demonstrate a concept	618.02.c--Use models to explain or demonstrate a concept	633.02.c--Develop and or use models to explain or demonstrate a concept	633.02.c--Develop and or use models to explain or demonstrate a concept	648.02b--Use models to explain how things work	633.02.c--Develop and or use models to explain or demonstrate a concept	648.02.b--Use models to explain how things work	648.02.b--Use models to explain how things work
c. Understand constancy, change and measurement						633.03.a--Identify concepts in science that do not change with time				
	573.03.b--Understand that changes occur and can be measured	588.03b--Understand that changes occur and can be measured	603.03.b--Analyze changes that occur in and among systems	618.03.b--Analyze changes that occur in and among systems	633.03b--Analyze changes that occur in and among systems	633.03b--Analyze changes that occur in and among systems	648.03b--Recognize that change occurs in and among systems and change can be measured	633.03b--Analyze changes that occur in and among systems	648.03.b--Recognize that change occurs in and among systems and change can be measured	648.03.b--Recognize that change occurs in and among systems and change can be measured
	573.03.c--Measure in both the standard and metric systems	588.03c--Measure using standard and metric systems	603.03.c--Measure using standard and metric systems with an emphasis on the metric system	618.03.c--Measure using standard and metric systems with an emphasis on the metric system	633.03.c--Measure precisely in metric units using appropriate tools	633.03.c--Measure precisely in metric units using appropriate tools	648.03c--Measure in both metric and U.S. customary system	633.03.c--Measure precisely in metric units using appropriate tools	648.03.c--Measure in both the metric and US customary system	648.03.c--Measure in both the metric and US customary system
d. Understand concepts of form and function	573.05.a--Discover the relationship between shape and use	588.05a--Discover the relationship between shape and use.	603.05.a--Understand that the shape or form of an object or system is frequently related to its use or function	618.05.a--Understand that the shape or form of an object is frequently related to its use or function						
2. Concepts of Scientific Inquiry										
a. Understand scientific inquiry and develop critical thinking skills	574.01.a--Identify questions that can be answered by conducting scientific tests	589.01a--Identify questions that can be answered by conducting scientific tests.	604.01.a--Develop questions that can be answered by conducting scientific experiments	619.01.a--Develop questions that can be answered by conducting scientific experiments			649.01a. Identify questions and concepts that guide scientific investigations		649.01.a--Identify questions and concepts that guide scientific investigations	649.01.a--Identify questions and concepts that guide scientific investigations
	574.01.b--Conduct scientific tests	589.01.b--Conduct scientific tests.	604.01.b--Conduct scientific investigations using controls and variables when appropriate	619.01.b--Conduct scientific investigations using controls and variables when appropriate	634.01.b--Design and conduct scientific investigations using controls and variables when appropriate	634.01.b--Design and conduct scientific investigations using controls and variables when appropriate	649.01b--Design and conduct scientific investigations	634.01.b--Design and conduct scientific investigations using controls and variables when appropriate	649.01.b--Design and conduct scientific investigations	649.01.b--Design and conduct scientific investigations
	574.01.c--Use appropriate tools to gather and display data	589.01c--Use appropriate tools and techniques to gather and display data	604.01.c--Select and use appropriate tools and techniques to gather and display data	619.01.c--Select and use appropriate tools and techniques to gather and display data	634.01.c--Select and use appropriate tools and techniques to gather and display data	634.01.c--Select and use appropriate tools and techniques to gather and display data	649.01c--Use technology and mathematics to improve investigations and communication	634.01.c--Select and use appropriate tools and techniques to gather and display data	649.01.c--Use technology and mathematics to improve investigations and communication	649.01.c--Use technology and mathematics to improve investigations and communication
	574.01.d--Use data to construct a reasonable explanation	589.01d--Use data to construct a reasonable explanation	604.01.d--Analyze data in order to develop descriptions, explanations, predictions and models using evidence	619.01.d--Analyze data in order to develop descriptions, explanations, predictions and models using evidence	634.01.d--Analyze data in order to form conclusions	634.01.d--Analyze data in order to form conclusions	649.01d--Formulate and revise scientific explanations and models using logic and evidence	634.01.d--Analyze data in order to form conclusions	649.01.d--Formulate and revise scientific explanations and models using logic and evidence	649.01.d--Formulate and revise scientific explanations and models using logic and evidence

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	574.01.e--Make simple predictions based on data	589.01e--Make simple predicitons based on data	604.01.e--Develop a hypothesis based on observations	619.01.e--Develop a hypothesis based on observations	634.01.e--Think critically and logically to accept or reject a hypothesis	634.01.e--Think critically and logically to accept or reject a hypothesis		634.01.e--Think critically and logically to accept or reject a hypothesis		
	574.01.f--Explore alternative explanations	589.01f--Explore alternative explanations	604.01.f--Compare alternative explanations and predictions		634.01.f--Analyze alternative explanations and predictions	634.01.f--Analyze alternative explanations and predictions	649.01e--Recognize and analyze alternative explanations and models.	634.01.f--Analyze alternative explanations and predictions	649.01.e--Rcognize and analyze alternative explanations and models	649.01.e--Rcognize and analyze alternative explanations and models
	574.01.g--Communicate the results of tests to others	589.01g--Communicate the results of tests to others	604.01.g--Communicate scientific procedures and explanations	619.01.g--Communicate scientific procedures and explanations	634.01.g--Communicate and defend scientific procedures and explanations	634.01.g--Communicate and defend scientific procedures and explanations	649.01f--Communicate and defend a scientific argument	634.01.g--Communicate and defend scientific procedures and explanations	649.01.f--Communicate and defend a scientific argument	649.01.f--Communicate and defend a scientific argument
							649.01g--Know the difference among observations, hypotheses, and theories		649.01.g--Know the differences among observations, hypotheses and theories	649.01.g--Know the differences among observations, hypotheses and theories
b. Understand the relationship between science and technology and develop the abilities of technological design and application	580.01.a--Know that technology is the means by which people use knowledge, tools and systems to make their lives easier		610.01.a--Know that science and technology are human endeavors interrelated to each other, to society, and to the work place	625.01.a-- Know that science and technology are human endeavors interrelated to each other, to society, and to the work place	640.01.a--Know that science and technology are human endeavors interrelated to each other, to society, and to the work place	640.01.a--Know that science and technology are human endeavors interrelated to each other, to society, and to the work place	655.01.a--Know the ways that science advances technology and technology advances science	640.01.a--Know that science and technology are human endeavors interrelated to each other, to society, and to the work place	655.01.a--Know the ways that science advances technology and technology advances science	655.01.a--Know the ways that science advances technology and technology advances science
	580.01.b--Recognize that people have invented tools for everyday life and for scientific investigations	595.01.b--Recognize that people have invented tools for everyday life and for scientific investigations	610.01.b--Compare scientific inquiry and technological design in terms of activities, results, and influences on individuals and society: know that science enables technology and vice versa	625.01.b--Compare scientific inquiry and technological design in terms of activities, results, and influences on individuals and society: know that science enables technology and vice versa	640.01b--Compare and contrast scientific inquiry and technological design in terms of activities, results, and influences on individuals and society: know that science enables technology and vice versa	640.01b--Compare and contrast scientific inquiry and technological design in terms of activities, results, and influences on individuals and society: know that science enables technology and vice versa	655.01b--Recognize that science and technology are pursued for different purposes and that scientific inquiry is driven by the desire to understand the natural world and technological design is driven by the need to meet human needs and solve human problems	640.01b--Compare and contrast scientific inquiry and technological design in terms of activities, results, and influences on individuals and society: know that science enables technology and vice versa	655.01b--Recognize that science and technology are pursued for different purposes and that scientific inquiry is driven by the desire to understand the natural world and technological design is driven by the need to meet human needs and solve human problems	655.01b--Recognize that science and technology are pursued for different purposes and that scientific inquiry is driven by the desire to understand the natural world and technological design is driven by the need to meet human needs and solve human problems
3. Concepts of Physical Science	575.01.a--Use simple instruments to measure properties		605.01.a--Explore and describe the differences among elements, compounds and mixtures	620.01a--Explore and describe the differences among elements, compounds and mixtures						
a. Understand the structure and function of matter and molecules and their interactions	575.01.b--Explore the properties of solids, liquids and gases	590.01.b--Explore the properties of solids, liquids and gases	605.01.b--Explore and calculate properties of matter	620.01.b--Explore and calculate properties of matter	635.01b--Use properties to identify matter	635.01b--Use properties to identify matter		635.01b--Use properties to identify matter		
	575.01.c--Know that heating and cooling can cause changes of state in common materials		605.01.c--Compare differences among solids, liquids, and gases using the concept of density: Explore the effect of temperature on density	620.01c--Compare differences among solids, liquids, and gases using the concept of density: Explore the effect of temperature on density						
			605.01d--Understand the nature of physical change and how it relates to physical properties	620.01d--Understand the nature of physical change and how it relates to physical properties	635.01c--Identify physical properties and know the nature of a physical change			635.01c--Identify physical properties and know the nature of a physical change		
b. Understand the structure of atoms					635.01a Understand that all matter is made up of atoms, which may be combined in various kinds, ways and numbers		650.01.a-- Know the function and location of protons, neutrons, and electrons	635.01a Understand that all matter is made up of atoms, which may be combined in various kinds, ways and numbers	650.01.a-- Know the function and location of protons, neutrons, and electrons	
							650.01.b--Understand the processes of fission and fusion		650.01.b--Understand the processes of fission and fusion	650.01.b--Understand the processes of fission and fusion

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							650.01.c--Know the characteristics of isotopes		650.01.c--Know the characteristics of isotopes 650.01d Know the basic electrical properties of matter	
c. Understand chemical reactions									650.03a--Know that chemical reactions may release or consume energy	
d. Understand concepts of motion and forces				620.03a--Observe the effects of different forces (gravity and friction) on the movement, speed and direction of an object	635.03a--Know how an object's position, direction of motion, and speed can be measured.			635.03a--Know how an object's position, direction of motion, and speed can be measured.		
e. Understand that the total energy in the universe is constant		590.03.a--Compare and constrast potential and kinetic energy			650.05.a--Understand that energy can be transferred but it can neither be destroyed nor created 650.05.b--Know that energy can be classified as either potential energy, kinetic energy, or energy contained by a field		650.05.a--Understand that energy can be transferred but it can neither be destroyed nor created 650.05.b--Know that energy can be classified as either potential energy, kinetic energy, or energy contained by a field		650.05.a--Understand that energy can be transferred but it can neither be destroyed nor created 650.05.b--Know that energy can be classified as either potential energy, kinetic energy, or energy contained by a field	650.05.a--Understand that energy can be transferred but it can neither be destroyed nor created 650.05.b--Know that energy can be classified as either potential energy, kinetic energy, or energy contained by a field
4. Cellular and Molecular Concepts/Matter and Energy and Organization in Living Systems *a. Understand the cell is the basis of form and function for all living things and how living things carry out their life functions*	**not taught at this level**	**not taught at this level**	606.01b--Recognize the structural differences between plant and animal cells 606.01c--Explore the concept that traits are passed down from parents to offspring	621.01.a--Explore the different structural levels of organization of which an organism is comprised: cells, tissues, organs, organ systems and organisms 621.01.b--Recognize the structural differences between plant and animal cells 621.01.c--Explore the concept that traits are passed from parents to offspring	633.01b--Know the different structural levels of organization of which an organism is comprised: cells, tissues, organs, organ systems and organisms 636.01.a--Know the relationship among specialized cells, tissues, organs, organ systems and organisms 636.01.b--Know the parts of plant and animal cells and the functions of the various cell structures 636.01.c--Know that most cell functions involve chemical reactions 636.01.e--Know that traits are inherited, including dominant and recessive traits					651.01.a--Know that cells have particular structures that underlie their functions 651.01.b--Know that most cell functions involve chemical reactions 651.01.c--Know that cells store and use information in the form of DNA to guide their functions

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										651.01.e--Know that cellular differentiation is regulated through the expression of different genes. A single cell can differentiate to form the many specialized cells, tissues, and organs
b. Understand the relationship between matter, energy and organization to trace matter as it cycles and energy as it flows through living systems and between living systems and the environment	578.01a-- Know that living systems require energy to survive 578.01b-- Understand the food chain and know that organisms both cooperate and compete in ecosystems	593.01.a--Know that living systems require energy to survive 593.01b--Understand the food chain and know that organisms both cooperate and compete in ecosystems	608.01.a--Know that the energy for photosynthesis is derived from the Sun through photosynthesis		638.01.a--Know that energy stored in food is primarily derived from the Sun through photosynthesis 638.01.b--Know that the distribution of organisms and populations in ecosystems are limited by the availability of matter and energy 638.01.c--Know that atoms and molecules cycle among the living and nonliving components of the biosphere 638.01.d--Trace energy flows through ecosystems in one direction, from photosynthetic organisms to herbivores to carnivores and decomposers	638.01.a--Know that energy stored in food is primarily derived from the Sun through photosynthesis 638.01.c--Know that atoms and molecules cycle among the living and nonliving components of the biosphere 638.01.d--Trace energy flows through ecosystems in one direction, from photosynthetic organisms to herbivores to carnivores and decomposers	653.01.c--Know that energy for life is derived from the sun through photosynthesis 653.01.h--Trace how matter cycles and energy flows through different levels of organization of living systems--cells, organs, organisms, communities-- and between living systems and the physical environment		653.01a--Know that all matter tends toward more disorganized states	653.01a--Know that all matter tends toward more disorganized states 653.01b--Know that living systems require a continuous input of energy to maintain their chemical and physical organization 653.01.c--Know that energy for life is derived from the sun trhough photosynthesis 653.01.d--Understand cellular respiration and the synthesis of macromolecules. 653.01.h--Trace how matter cycles and energy flows through different levels of organization of living systems--cells, organs, organisms, communities-- and between living systems and the physical environment
5. Interdependence of Organisms and Biological Change/Personal and Social Perspectives										

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a. Understand the theory of biological evolution	577.01a-- Investigate diversity of plants and animals and how they adapt in order to survive in their environment	592.01.a--Investigate diversity of plants and animals and how they adapt in order to survive in their environment	**not taught at this level**	**not taught at this level**	637.01.a--Know that species change over time when random variations in individuals enhance their survival and reproductive success in a particular environment					652.01.a--Know that the theory of evolution is the consequence of interactions of: Potential of a species to increase its numbers, genetic variability, a finite supply of resources, selection by the environment of those offspring better able to survive and reproduce
b. Understand common environmental quality issues, both natural and human-induced	581.01.a--identify issues in the local environment		611.01.a--Identify issues for environmental studies	626.01.a--Identify issues for environmental studies			656.01.a Identify issues, including but not limited to water quality, air quality, hazardous waste, forest health		656.01.a Identify issues, including but not limited to water quality, air quality, hazardous waste, forest health	656.01.a Identify issues, including but not limited to water quality, air quality, hazardous waste, forest health
c. Understand the importance of natural resources and the need to manage and conserve them	581.03.a--Understand the concept of recycling		611.03.a--Understand the differences between renewable and non-renewable resources	626.03.a--Understand the differences between renewable and non-renewable resources	641.03a--Explore alternative sources of energy	641.03a--Explore alternative sources of energy	656.03.a Understand the difference between renewable and nonrenewable resources	641.03a--Explore alternative sources of energy	656.03.a Understand the difference between renewable and nonrenewable resources	656.03.a Understand the difference between renewable and nonrenewable resources
6. Earth and Space Systems *a. Understand scientific theories of origin and subsequent changes in the universe and Earth systems*		594.01.a--Explore the length of a day, the seasons, the year, phases of the moon, and eclipses	609.01a--Investigate the interactions between the solid earth, oceans, atmosphere and organisms	624.01.a--Investigate the interactions between the solid earth, oceans, atmosphere and organisms			654.01.a--Know that current scientific theory suggests that the Sun, the Earth and the rest of the solar system formed from a nebular cloud of dust and gas			
	579.01b--Compare and contast the contents of the solar system	594.01b--Compare and contast the contents of the solar system	609.01b--Know the water cycle and its relationship to weather and climate	624.01.b--Know the water cycle and its relationship to weather and climate	639.01a--Know that there are interactions among the solid earth, oceans, atmosphere, and organisms, which result in a change in the Earth's system. (Some interactions are observable, such as earthquakes and volcanic eruptions, but many take place over hundreds of millions of years)	639.01a--Know that there are interactions among the solid earth, oceans, atmosphere, and organisms, which result in a change in the Earth's system. (Some interactions are observable, such as earthquakes and volcanic eruptions, but many take place over hundreds of millions of years)	654.01.b--Know methods used to estimate geologic time (observing rock sequences and using fossils to correlate the sequences at various locations)			
		594.01c--Explore the effect of gravity on the solar system: include elements within the solar system such as the Earth, Moon and tides		624.01.c--identify cumulus, cirrus, and stratus clouds and their relationship to weather changes	639.01b--Compare earth with other planets with emphasis on conditions necessary for life	639.01b--Compare earth with other planets with emphasis on conditions necessary for life	654.01.c--Know that interactions among the solid earth, the oceans, the atmosphere, and organisms have resulted in the ongoing change of the earth system. Some activities are observable (earthquakes and volcanic eruptions) but many take place over hundreds of millions of years			

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					639.01c--Understand the motions that explain such occurences as the day, the seasons, the year,phases of the moon, eclipses and tides	639.01c--Understand the motions that explain such occurences as the day, the seasons, the year,phases of the moon, eclipses and tides				
b. Understand geo-chemical cycles and energy in the Earth system			609.02.a--Know the rock cycle and identify the three classifications of rock	624.02.a--Know the rock cycle and identify the three classifications of rock	639.02a--Know that earth's systems have internal and external sources of energy	639.02a--Know that earth's systems have internal and external sources of energy	654.02.a--Know that the earth systems have internal and external sources of energy, both of which create heat. The sun is the major external source of energy			654.02.a Know that earth systems have internal and external sources of energy, both of which create heat. Sun is major external source of energy

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