

Science TEKS Transition Analysis Resources

November 2009

The State Board of Education (SBOE) adopted new K-12 science Texas Essential Knowledge and Skills (TEKS) in March 2009. The implementation date for these new science TEKS is the 2010-11 school year. These new curriculum standards are rigorous and include more specificity than previous standards. The new curriculum standards in grades 6-12 are also closely aligned with the College and Career Readiness Standards (CCRS).

As with all revised curriculum standards, teachers and other educators need time to prepare and to understand the changes in the standards. This document was prepared to show a number of important aspects to the new K-12 science TEKS, including the following:

1. New or expanded content in the 2010 science TEKS for a specific grade level or course
2. The outgoing movement of a science content from one grade level to another
3. The incoming movement of a science content from one grade level to another
4. Science content from the 1998 TEKS that are not included in the 2010 TEKS for a specific grade level or course

The Texas Education Agency (TEA) will provide professional development opportunities on the new science TEKS in spring/summer 2010.

We hope that these TEKS transition analysis resources will help educators prepare for the implementation of the new science TEKS in 2010-2011.

Elementary School TEKS Transition Analysis – Grades K-5
Middle School TEKS Transition Analysis – Grades 6-8
High School TEKS Transition Analysis – Biology, Chemistry, Physics, IPC

Science resource documents will be found in the science section of the TEA curriculum webpage:
http://www.tea.state.tx.us/index.aspx?id=3427&menu_id=720&menu_id2=785

Science TEKS – Elementary School TEKS Transition Analysis

Grade K

Please note that the Knowledge and Skills (KS) statements have been omitted from this list. It will be important for teacher to understand each Student Expectation in context of the KS statement.

New or Expanded Content for Kindergarten Found in New 2010 Science TEKS

- K.1A** identify and demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including wearing safety goggles, washing hands, and using materials appropriately;
- K.3B** make predictions based on observable patterns in nature such as the shapes of leaves; and
- K.4A** collect information using tools, including computers, hand lenses, primary balances, cups, bowls, magnets, collecting nets, and notebooks; timing devices, including clocks and timers; non-standard measuring items such as paper clips and clothespins; weather instruments such as demonstration thermometers and wind socks; and materials to support observations of habitats of organisms such as terrariums and aquariums; and
- K.5B** observe, record, and discuss how materials can be changed by heating or cooling.
- K.6A** use the five senses to explore different forms of energy such as light, heat, and sound;
- K.6B** explore interactions between magnets and various materials;
- K.6C** observe and describe the location of an object in relation to another such as above, below, behind, in front of, and beside;
- K.6D** observe and describe the ways that objects can move such as in a straight line, zigzag, up and down, back and forth, round and round, and fast and slow.
- K.8C** observe, describe, and illustrate objects in the sky such as the clouds, Moon, and stars, including the Sun.
- K.10C** identify ways that young plants resemble the parent plant; and

1998 Science Grade K Content **REVISED AND MOVED** to a Different Grade Level in 2010 TEKS

1998 TEKS	Content Being Moved to 2010 TEKS
K.6D identify parts that, when separated from the whole, may result in the part or the whole not working, such as cars without wheels and plants without roots; and	2.5D combine materials that when put together can do things that they cannot do by themselves such as building a tower or a bridge and justify the selection of those materials based on their physical properties.
K.9A identify basic needs of living organisms;	2.9A identify the basic needs of plants and animals;
K.10A observe and describe properties of rocks, soil, and water; and	2.7A observe and describe rocks by size, texture, and color;

1998 Content Moved from Other Grade Levels **INTO** 2010 TEKS – Grade K

1998 TEKS	Content Being Moved to 2010 TEKS
None	None

1998 Science TEKS Content NOT INCLUDED in the 2010 TEKS – Grade K

- K.2D** construct reasonable explanations using information; and
 - K.6D** identify parts that, when separated from the whole, may result in the part or the whole not working, such as cars without wheels and plants without roots; and
 - K.6E** manipulate parts of objects such as toys, vehicles, or construction sets that, when put together, can do things they cannot do by themselves.
 - K.7B** identify that heat causes change, such as ice melting or the Sun warming the air and compare objects according to temperature;
 - K.9C** identify ways that the Earth can provide resources for life.
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Science TEKS – Elementary School TEKS Transition Analysis

Grade 1

Please note that the Knowledge and Skills (KS) statements have been omitted from this list. It will be important for teacher to understand each Student Expectation in context of the KS statement.

New or Expanded Content for Grade 1 Found in New 2010 Science TEKS

- 1.1A** recognize and demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including wearing safety goggles, washing hands, and using materials appropriately
- 1.2C** collect data and make observations using simple equipment such as hand lenses, primary balances, and non-standard measurement tools;
- 1.3B** make predictions based on observable patterns; and
- 1.3C** describe what scientists do.
- 1.4A** collect, record, and compare information using tools, including computers, hand lenses, primary balances, cups, bowls, magnets, collecting nets, notebooks, and safety goggles; timing devices, including clocks and timers; non-standard measuring items such as paper clips and clothespins; weather instruments such as classroom demonstration thermometers and wind socks; and materials to support observations of habitats of organisms such as aquariums and terrariums; and
- 1.5B** predict and identify changes in materials caused by heating and cooling such as ice melting, water freezing, and water evaporating.
- 1.6A** identify and discuss how different forms of energy such as light, heat, and sound are important to everyday life;
- 1.6B** predict and describe how a magnet can be used to push or pull an object;
- 1.6C** describe the change in the location of an object such as closer to, nearer to, and farther from; and
- 1.6D** demonstrate and record the ways that objects can move such as in a straight line, zig zag, up and down, back and forth, round and round, and fast and slow.
- 1.8A** record weather information, including relative temperature, such as hot or cold, clear or cloudy, calm or windy, and rainy or icy;
- 1.8B** observe and record changes in the appearance of objects in the sky such as clouds, the Moon, and stars, including the Sun;
- 1.8D** demonstrate that air is all around us and observe that wind is moving air.
- 1.9C** gather evidence of interdependence among living organisms such as energy transfer through food chains and animals using plants for shelter.
- 1.10A** investigate how the external characteristics of an animal are related to where it lives, how it moves, and what it eats;
- 1.10C** compare ways that young animals resemble their parents; and

1998 Science Grade 1 Content REVISED AND MOVED to a Different Grade Level

1998 TEKS	Content Being Moved to 2010 TEKS
1.6C manipulate objects such as toys, vehicles, or construction sets so that the parts are separated from the whole which may result in the part or the whole not working; and	2.5D combine materials that when put together can do things that they cannot do by themselves such as building a tower or a bridge and justify the selection of those materials based on their physical properties.

1998 Content Moved from Other Grade Levels INTO 2010 TEKS – Grade 1

1998 TEKS	Content Being Moved to 2010 TEKS
2.7D observe, measure, and record changes in weather, the night sky, and seasons.	1.8B observe and record changes in the appearance of objects in the sky such as clouds, the Moon, and stars, including the Sun;
2.8A identify characteristics of living organisms; and	1.9A sort and classify living and nonliving things based upon whether or not they have basic needs and produce offspring;

1998 Science TEKS Content NOT INCLUDED in the 2010 Science TEKS – Grade 1

- 1.3A** make decisions using information;
 - 1.3B** discuss and justify the merits of decisions; and
 - 1.6C** manipulate objects such as toys, vehicles, or construction sets so that the parts are separated from the whole which may result in the part or the whole not working; and
 - 1.6D** identify parts that, when put together, can do things they cannot do by themselves, such as a working camera with film, a car moving with a motor, and an airplane flying with fuel.
 - 1.9A** identify characteristics of living organisms that allow their basic needs to be met; and
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Science TEKS – Elementary School TEKS Transition Analysis

Grade 2

Please note that the Knowledge and Skills (KS) statements have been omitted from this list. It will be important for teacher to understand each Student Expectation in context of the KS statement.

New or Expanded Content for Grade 2 Found in New 2010 Science TEKS

- 2.1A identify and demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including wearing safety goggles, washing hands, and using materials appropriately;
- 2.2D record and organize data using pictures, numbers, and words;
- 2.3B make predictions based on observable patterns; and
- 2.3C identify what a scientist is and explore what different scientists do.
- 2.4A collect, record, and compare information using tools, including computers, hand lenses, rulers, primary balances, plastic beakers, magnets, collecting nets, notebooks, and safety goggles; timing devices, including clocks and stopwatches; weather instruments such as thermometers, wind vanes, and rain gauges; and materials to support observations of habitats of organisms such as terrariums and aquariums; and
- 2.5D combine materials that when put together can do things that they cannot do by themselves such as building a tower or a bridge and justify the selection of those materials based on their physical properties.
- 2.6B observe and identify how magnets are used in everyday life;
- 2.7A observe and describe rocks by size, texture, and color;
- 2.7C distinguish between natural and manmade resources.
- 2.8A measure, record, and graph weather information, including temperature, wind conditions, precipitation, and cloud coverage, in order to identify patterns in the data;
- 2.8B identify the importance of weather and seasonal information to make choices in clothing, activities, and transportation;
- 2.9B identify factors in the environment, including temperature and precipitation, that affect growth and behavior such as migration, hibernation, and dormancy of living things; and

1998 Science Grade 2 Content **REVISED AND MOVED** to a Different Grade Level in 2010 TEKS

1998 TEKS	Content Being Moved to 2010 TEKS
2.7D observe, measure, and record changes in weather, the night sky, and seasons.	1.8B observe and record changes in the appearance of objects in the sky such as clouds, the Moon, and stars, including the Sun;

1998 Content Moved from Other Grade Levels INTO 2010 TEKS – Grade 2

1998 TEKS	Content Being Moved to 2010 TEKS
K.6D identify parts that, when separated from the whole, may result in the part or the whole not working, such as cars without wheels and plants without roots; and 1.6C manipulate objects such as toys, vehicles, or construction sets so that the parts are separated from the whole which may result in the part or the whole not working; and	2.5D combine materials that when put together can do things that they cannot do by themselves such as building a tower or a bridge and justify the selection of those materials based on their physical properties.
K.10A observe and describe properties of rocks, soil, and water; and	2.7A observe and describe rocks by size, texture, and color;

1998 Science TEKS Content NOT INCLUDED in the 2010 Science TEKS – Grade 2

- 2.3A** make decisions using information;
 - 2.6C** observe and record the functions of plant parts; and
 - 2.6D** observe and record the functions of animal parts.
 - 2.8B** identify characteristics of nonliving objects.
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Science TEKS – Elementary School TEKS Transition Analysis

Grade 3

Please note that the Knowledge and Skills (KS) statements have been omitted from this list. It will be important for teacher to understand each Student Expectation in context of the KS statement.

New or Expanded Content for Grade 3 Found in New 2010 Science TEKS

- 3.1A** demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including observing a schoolyard habitat; and
- 3.3A** in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;
- 3.4A** collect, record, and analyze information using tools, including microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, wind vanes, rain gauges, pan balances, graduated cylinders, beakers, spring scales, hot plates, meter sticks, compasses, magnets, collecting nets, notebooks, sound recorders, and Sun, Earth, and Moon system models; timing devices, including clocks and stopwatches; and materials to support observation of habitats of organisms such as terrariums and aquariums; and
- 3.5C** predict, observe, and record changes in the state of matter caused by heating or cooling; and
- 3.5D** explore and recognize that a mixture is created when two materials are combined such as gravel and sand and metal and plastic paper clips.
- 3.6A** explore different forms of energy, including mechanical, light, sound, and heat/thermal in everyday life;
- 3.6B** demonstrate and observe how position and motion can be changed by pushing and pulling objects to show work being done such as swings, balls, pulleys, and wagons; and.
- 3.6C** observe forces such as magnetism and gravity acting on objects.
- 3.7C** identify and compare different landforms, including mountains, hills, valleys, and plains; and
- 3.7D** explore the characteristics of natural resources that make them useful in products and materials such as clothing and furniture and how resources may be conserved.
- 3.8A** observe, measure, record, and compare day-to-day weather changes in different locations at the same time that include air temperature, wind direction, and precipitation;
- 3.8B** describe and illustrate the Sun as a star composed of gases that provides light and heat energy for the water cycle;
- 3.8C** construct models that demonstrate the relationship of the Sun, Earth, and Moon, including orbits and positions; and

1998 Science Grade 3 Content REVISED AND MOVED to a Different Grade Level

1998 TEKS	Content Being Moved to 2010 TEKS
3.6B identify that the surface of the Earth can be changed by forces such as earthquakes and glaciers.	4.7B observe and identify slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice; and
3.8B observe and identify organisms with similar needs that compete with one another for resources such as oxygen, water, food, or space;	5.9A observe the way organisms live and survive in their ecosystem by interacting with the living and non-living elements;
3.9B analyze how adaptive characteristics help individuals within a species to survive and reproduce.	4.10A explore how adaptations enable organisms to survive in their environment such as comparing birds' beaks and leaves on plants;
3.11A identify and describe the importance of earth materials including rocks, soil, water, and gases of the atmosphere in the local area and classify them as renewable, nonrenewable, or inexhaustible resources;	4.7C identify and classify Earth's renewable resources, including air, plants, water, and animals; and nonrenewable resources, including coal, oil, and natural gas; and the importance of conservation.

1998 Content Moved from Other Grade Levels INTO 2010 TEKS – Grade 3

1998 TEKS	Content Being Moved to 2010 TEKS
5.12D identify gravity as the force that keeps planets in orbit around the Sun and the moon in orbit around the Earth.	3.6C observe forces such as magnetism and gravity acting on objects.

1998 Science TEKS Content NOT INCLUDED in the 2010 Science TEKS – Grade 3

- 3.3D** evaluate the impact of research on scientific thought, society, and the environment; and
- 3.5A** observe and identify simple systems such as a sprouted seed and a wooden toy car; and
- 3.5B** observe a simple system and describe the role of various parts such as a yo-yo and string.
- 3.8D** describe how living organisms modify their physical environment to meet their needs such as beavers building a dam or humans building a home.
- 3.11B** identify and record properties of soils such as color and texture, capacity to retain water, and ability to support the growth of plants;

Science TEKS – Elementary School TEKS Transition Analysis

Grade 4

Please note that the Knowledge and Skills (KS) statements have been omitted from this list. It will be important for teacher to understand each Student Expectation in context of the KS statement.

New or Expanded Content for Grade 4 Found in New 2010 Science TEKS

- 4.1A** demonstrate safe practices and the use of safety equipment as described in the Texas Safety Standards during classroom and outdoor investigations; and
- 4.3A** in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;
- 4.4A** collect, record, and analyze information using tools, including calculators, microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, mirrors, spring scales, pan balances, triple beam balances, graduated cylinders, beakers, hot plates, meter sticks, compasses, magnets, collecting nets, and notebooks; timing devices, including clocks and stopwatches; and materials to support observation of habitats of organisms such as terrariums and aquariums; and
- 4.5C** compare and contrast a variety of mixtures and solutions such as rocks in sand, sand in water, or sugar in water.
- 4.6A** differentiate among forms of energy, including mechanical, sound, electrical, light, and heat/thermal;
- 4.6B** differentiate between conductors and insulators;
- 4.6C** demonstrate that electricity travels in a closed path, creating an electrical circuit, and explore an electromagnetic field; and
- 4.6D** design an experiment to test the effect of force on an object such as a push or a pull, gravity, friction, or magnetism.
- 4.7C** identify and classify Earth's renewable resources, including air, plants, water, and animals; and nonrenewable resources, including coal, oil, and natural gas; and the importance of conservation.
- 4.8A** measure and record changes in weather and make predictions using weather maps, weather symbols, and a map key;
- 4.8C** collect and analyze data to identify sequences and predict patterns of change in shadows, tides, seasons, and the observable appearance of the Moon over time.
- 4.9A** investigate that most producers need sunlight, water, and carbon dioxide to make their own food, while consumers are dependent on other organisms for food; and
- 4.9B** describe the flow of energy through food webs, beginning with the Sun, and predict how changes in the ecosystem affect the food web such as a fire in a forest.

1998 Science Grade 4 Content REVISED AND MOVED to a Different Grade Level

1998 TEKS	Content Being Moved to 2010 TEKS
4.8C identify the kinds of species that lived in the past and compare them to existing species.	5.7D identify fossils as evidence of past living organisms and the nature of the environments at the time using models.
4.11B summarize the effects of the oceans on land; and	5.8B explain how the Sun and the ocean interact in the water cycle;
4.11 C identify the Sun as the major source of energy for the Earth and understand its role in the growth of plants, in the creation of winds, and in the water cycle.	5.9B describe how the flow of energy derived from the Sun, used by producers to create their own food, is transferred through a food chain and food web to consumers and decomposers;

1998 Content Moved from Other Grade Levels INTO 2010 TEKS – Grade 4

1998 TEKS	Content Being Moved to 2010 TEKS
5.8A differentiate among forms of energy including light, heat, electrical, and solar energy;	4.6A differentiate among forms of energy, including mechanical, sound, electrical, light, and heat/thermal;
3.11B identify and record properties of soils such as color and texture, capacity to retain water, and ability to support the growth of plants;	4.7A examine properties of soils, including color and texture, capacity to retain water, and ability to support the growth of plants;
3.6B identify that the surface of the Earth can be changed by forces such as earthquakes and glaciers.	4.7B observe and identify slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice; and
3.11A identify and describe the importance of earth materials including rocks, soil, water, and gases of the atmosphere in the local area and classify them as renewable, nonrenewable, or inexhaustible resources;	4.7C identify and classify Earth's renewable resources, including air, plants, water, and animals; and nonrenewable resources, including coal, oil, and natural gas; and the importance of conservation.
5.11C identify past events that led to the formation of the Earth's renewable, non-renewable, and inexhaustible resources.	
5.6A identify events and describe changes that occur on a regular basis such as in daily, weekly, lunar, and seasonal cycles;	4.8C collect and analyze data to identify sequences and predict patterns of change in shadows, tides, seasons, and the observable appearance of the Moon over time.
3.9B analyze how adaptive characteristics help individuals within a species to survive and reproduce.	4.10A explore how adaptations enable organisms to survive in their environment such as comparing birds' beaks and leaves on plants;
5.6C describe and compare life cycles of plants and animals.	4.10C explore, illustrate, and compare life cycles in living organisms such as butterflies, beetles, radishes, or lima beans.

1998 Science TEKS Content NOT INCLUDED in the 2010 Science TEKS – Grade 4

- 4.3D** evaluate the impact of research on scientific thought, society, and the environment; and
- 4.5A** identify and describe the roles of some organisms in living systems such as plants in a schoolyard, and parts in nonliving systems such as a light bulb in a circuit; and
- 4.5B** predict and draw conclusions about what happens when part of a system is removed.
- 4.6B** illustrate that certain characteristics of an object can remain constant even when the object is rotated like a spinning top, translated like a skater moving in a straight line, or reflected on a smooth surface; and
- 4.6C** use reflections to verify that a natural object has symmetry.
- 4.11B** summarize the effects of the oceans on land; and

Science TEKS – Elementary School TEKS Transition Analysis

Grade 5

Please note that the Knowledge and Skills (KS) statements have been omitted from this list. It will be important for teacher to understand each Student Expectation in context of the KS statement.

New or Expanded Content for Grade 5 Found in New 2010 Science TEKS

- 5.1A** demonstrate safe practices and the use of safety equipment as described in the Texas Safety Standards during classroom and outdoor investigations; and
- 5.2C** collect information by detailed observations and accurate measuring;
- 5.3A** in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;
- 5.4A** collect, record, and analyze information using tools, including calculators, microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, prisms, mirrors, pan balances, triple beam balances, spring scales, graduated cylinders, beakers, hot plates, meter sticks, magnets, collecting nets, and notebooks; timing devices, including clocks and stopwatches; and materials to support observations of habitats or organisms such as terrariums and aquariums; and
- 5.6A** explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy;
- 5.7C** identify alternative energy resources such as wind, solar, hydroelectric, geothermal, and biofuels; and
- 5.7D** identify fossils as evidence of past living organisms and the nature of the environments at the time using models.
- 5.8A** differentiate between weather and climate;
- 5.8B** explain how the Sun and the ocean interact in the water cycle
- 5.8C** demonstrate that Earth rotates on its axis once approximately every 24 hours causing the day/night cycle and the apparent movement of the Sun across the sky; and
- 5.9B** describe how the flow of energy derived from the Sun, used by producers to create their own food, is transferred through a food chain and food web to consumers and decomposers;
- 5.9C** predict the effects of changes in ecosystems caused by living organisms, including humans, such as the overpopulation of grazers or the building of highways; and
- 5.10C** describe the differences between complete and incomplete metamorphosis of insects.

1998 Science Grade 5 Content REVISED AND MOVED to a Different Grade Level

1998 TEKS	Content Being Moved to 2010 TEKS
5.6A identify events and describe changes that occur on a regular basis such as in daily, weekly, lunar, and seasonal cycles;	4.8C collect and analyze data to identify sequences and predict patterns of change in shadows, tides, seasons, and the observable appearance of the Moon over time.
5.6C describe and compare life cycles of plants and animals.	4.10C explore, illustrate, and compare life cycles in living organisms such as butterflies, beetles, radishes, or lima beans.
5.8A differentiate among forms of energy including light, heat, electrical, and solar energy;	4.6A differentiate among forms of energy, including mechanical, sound, electrical, light, and heat/thermal;
5.11C identify past events that led to the formation of the Earth's renewable, non-renewable, and inexhaustible resources.	4.7C identify and classify Earth's renewable resources, including air, plants, water, and animals; and nonrenewable resources, including coal, oil, and natural gas; and the importance of conservation.
5.12C identify the physical characteristics of the Earth and compare them to the physical characteristics of the moon; and	3.7C identify and compare different landforms, including mountains, hills, valleys, and plains; and
5.12D identify gravity as the force that keeps planets in orbit around the Sun and the moon in orbit around the Earth.	3.6C observe forces such as magnetism and gravity acting on objects.

1998 Content Moved from Other Grade Levels INTO 2010 TEKS – Grade 5

1998 TEKS	Content Being Moved to 2010 TEKS
4.8C identify the kinds of species that lived in the past and compare them to existing species. 4.10B draw conclusions about "what happened before" using fossils or charts and tables.	5.7D identify fossils as evidence of past living organisms and the nature of the environments at the time using models.
4.11C identify the Sun as the major source of energy for the Earth and understand its role in the growth of plants, in the creation of winds, and in the water cycle.	5.9B describe how the flow of energy derived from the Sun, used by producers to create their own food, is transferred through a food chain and food web to consumers and decomposers;
3.8D describe how living organisms modify their physical environment to meet their needs such as beavers building a dam or humans building a home.	5.9C predict the effects of changes in ecosystems caused by living organisms, including humans, such as the overpopulation of grazers or the building of highways; and

1998 Science TEKS Content NOT INCLUDED in the 2010 Science TEKS – Grade 5

- 5.3D** evaluate the impact of research on scientific thought, society, and the environment; and
- 5.5A** describe some cycles, structures, and processes that are found in a simple system; and
- 5.5B** describe some interactions that occur in a simple system.

Science TEKS – Middle School TEKS Transition Analysis

Grade 6

Please note that the Knowledge and Skills (KS) statements have been omitted from this list. It will be important for teachers to understand each Student Expectation in context of the KS statement.

New or Expanded Content for Grade 6 Found in New 2010 Science TEKS

The cohort of 6th grade students in 2009-2010 will not have IPC available to them on the Recommended graduation plan. This cohort will be taking biology, chemistry, and physics. These Student Expectations represent new content found in the newly adopted TEKS that this cohort of students will be missing.

- 6.2C** collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers;
- 6.2E** analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.
- 6.3A** in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;
- 6.4A** use appropriate tools to collect, record, and analyze information, including journals/notebooks, beakers, Petri dishes, meter sticks, graduated cylinders, hot plates, test tubes, triple beam balances, microscopes, thermometers, calculators, computers, timing devices, and other equipment as needed to teach the curriculum; and
- 6.4B** use preventative safety equipment, including chemical splash goggles, aprons, and gloves, and be prepared to use emergency safety equipment, including an eye/face wash, a fire blanket, and a fire extinguisher.
- 6.5A** know that an element is a pure substance represented by chemical symbols;
- 6.5B** recognize that a limited number of the many known elements comprise the largest portion of solid Earth, living matter, oceans, and the atmosphere;
- 6.5C** differentiate between elements and compounds on the most basic level; and
- 6.5D** identify the formation of a new substance by using the evidence of a possible chemical change such as production of a gas, change in temperature, production of a precipitate, or color change.
- 6.6B** calculate density to identify an unknown substance; and
- 6.7A** research and debate the advantages and disadvantages of using coal, oil, natural gas, nuclear power, biomass, wind, hydropower, geothermal, and solar resources; and
- 6.7B** design a logical plan to manage energy resources in the home, school, or community.
- 6.8A** compare and contrast potential and kinetic energy;
- 6.8C** calculate average speed using distance and time measurements;
- 6.9A** investigate methods of thermal energy transfer, including conduction, convection, and radiation;
- 6.9B** verify through investigations that thermal energy moves in a predictable pattern from warmer to cooler until all the substances attain the same temperature such as an ice cube melting; and
- 6.10A** build a model to illustrate the structural layers of Earth, including the inner core, outer core, mantle, crust, asthenosphere, and lithosphere;
- 6.10C** identify the major tectonic plates, including Eurasian, African, Indo-Australian, Pacific, North American, and South American; and

- 6.10D** describe how plate tectonics causes major geological events such as ocean basins, earthquakes, volcanic eruptions, and mountain building.
- 6.11B** understand that gravity is the force that governs the motion of our solar system; and
- 6.12B** recognize that the presence of a nucleus determines whether a cell is prokaryotic or eukaryotic;
- 6.12C** recognize that the broadest taxonomic classification of living organisms is divided into currently recognized Domains;
- 6.12D** identify the basic characteristics of organisms, including prokaryotic or eukaryotic, unicellular or multicellular, autotrophic or heterotrophic, and mode of reproduction, that further classify them in the currently recognized Kingdoms;
- 6.12E** describe biotic and abiotic parts of an ecosystem in which organisms interact; and
- 6.12F** diagram the levels of organization within an ecosystem, including organism, population, community, and ecosystem.

1998 Science Grade 6 Content REVISED AND MOVED to a Different Grade Level

1998 TEKS	Content Being Moved to 2010 TEKS
6.8B explain and illustrate the interactions between matter and energy in the water cycle and in the decay of biomass such as in a compost bin; and	7.5B demonstrate and explain the cycling of matter within living systems such as in the decay of biomass in a compost bin; and
6.8C describe energy flow in living systems including food chains and food webs.	7.5C diagram the flow of energy through living systems, including food chains, food webs, and energy pyramids.
6.10A differentiate between structure and function;	7.12D differentiate between structure and function in plant and animal cell organelles, including cell membrane, cell wall, nucleus, cytoplasm, mitochondrion, chloroplast, and vacuole;
6.10B determine that all organisms are composed of cells that carry on functions to sustain life; and	7.12F recognize that according to cell theory all organisms are composed of cells and cells carry on similar functions such as extracting energy from food to sustain life.
6.11A identify some changes in traits that can occur over several generations through natural occurrence and selective breeding;	7.11C identify some changes in genetic traits that have occurred over several generations through natural selection and selective breeding such as the Galapagos Medium Ground Finch (<i>Geospiza fortis</i>) or domestic animals.
6.11B identify cells as structures containing genetic material; and 6.11C interpret the role of genes in inheritance.	7.14A define heredity as the passage of genetic instructions from one generation to the next generation;
6.12A identify responses in organisms to internal stimuli such as hunger or thirst;	7.13B describe and relate responses in organisms that may result from internal stimuli such as wilting in plants and fever or vomiting in animals that allow them to maintain balance.
6.12B identify responses in organisms to external stimuli such as the presence or absence of heat or light; and	7.13A investigate how organisms respond to external stimuli found in the environment such as phototropism and fight or flight; and
6.14B identify relationships between groundwater and surface water in a watershed; and	7.8C model the effects of human activity on groundwater and surface water in a watershed.

* 1998 Content Moved **INTO** 2010 TEKS – Grade 6

1998 TEKS	Content Being Moved to 2010 TEKS
7.7C recognize that compounds are composed of elements.	6.5C differentiate between elements and compounds on the most basic level; and
7.7B describe physical properties of elements and identify how they are used to position an element on the periodic table; and	6.6A compare metals, nonmetals, and metalloids using physical properties such as luster, conductivity, or malleability; 8.5C interpret the arrangement of the Periodic Table, including groups and periods, to explain how properties are used to classify elements;
7.8A illustrate examples of potential and kinetic energy in everyday life such as objects at rest, movement of geologic faults, and falling water; and	6.8A compare and contrast potential and kinetic energy;
7.6A demonstrate basic relationships between force and motion using simple machines including pulleys and levers;	6.8E investigate how inclined planes and pulleys can be used to change the amount of force to move an object.
8.12A analyze and predict the sequence of events in the lunar and rock cycles;	6.10B classify rocks as metamorphic, igneous, or sedimentary by the processes of their formation;

* **NOTE:** The 2009-2010 cohort of 6th grade students will miss this content.

1998 Science TEKS Content **NOT INCLUDED** in the 2010 Science TEKS – Grade 6

- 6.4B** identify patterns in collected information using percent, average, range, and frequency.
- 6.5A** identify and describe a system that results from the combination of two or more systems such as in the solar system; and
- 6.5B** describe how the properties of a system are different from the properties of its parts.

Science TEKS – Middle School TEKS Transition Analysis

Grade 7

Please note that the Knowledge and Skills (KS) statements have been omitted from this list. It will be important for teachers to understand each Student Expectation in context of the KS statement.

New or Expanded Content for Grade 7 Found in New 2010 Science TEKS

- 7.2A** plan and implement comparative and descriptive investigations by making observations, asking well-defined questions, and using appropriate equipment and technology;
- 7.2B** design and implement experimental investigations by making observations, asking well-defined questions, formulating testable hypotheses, and using appropriate equipment and technology;
- 7.2C** collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers;
- 7.2E** analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.
- 7.3A** in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;
- 7.3B** use models to represent aspects of the natural world such as human body systems and plant and animal cells;
- 7.3C** identify advantages and limitations of models such as size, scale, properties, and materials; and
- 7.4A** use appropriate tools to collect, record, and analyze information, including life science models, hand lens, stereoscopes, microscopes, beakers, Petri dishes, microscope slides, graduated cylinders, test tubes, meter sticks, metric rulers, metric tape measures, timing devices, hot plates, balances, thermometers, calculators, water test kits, computers, temperature and pH probes, collecting nets, insect traps, globes, digital cameras, journals/notebooks, and other equipment as needed to teach the curriculum; and
- 7.4B** use preventative safety equipment, including chemical splash goggles, aprons, and gloves, and be prepared to use emergency safety equipment, including an eye/face wash, a fire blanket, and a fire extinguisher.
- 7.5B** demonstrate and explain the cycling of matter within living systems such as in the decay of biomass in a compost bin; and
- 7.5C** diagram the flow of energy through living systems, including food chains, food webs, and energy pyramids
- 7.6A** identify that organic compounds contain carbon and other elements such as hydrogen, oxygen, phosphorus, nitrogen, or sulfur;
- 7.6B** distinguish between physical and chemical changes in matter in the digestive system; and
- 7.6C** recognize how large molecules are broken down into smaller molecules such as carbohydrates can be broken down into sugars.
- 7.7A** contrast situations where work is done with different amounts of force to situations where no work is done such as moving a box with a ramp and without a ramp, or standing still;
- 7.7B** illustrate the transformation of energy within an organism such as the transfer from chemical energy to heat and thermal energy in digestion; and
- 7.7C** demonstrate and illustrate forces that affect motion in everyday life such as emergence of seedlings, turgor pressure, and geotropism.
- 7.8C** model the effects of human activity on groundwater and surface water in a watershed.

- 7.9A** analyze the characteristics of objects in our solar system that allow life to exist such as the proximity of the Sun, presence of water, and composition of the atmosphere; and
- 7.9B** identify the accommodations, considering the characteristics of our solar system, that enabled manned space exploration.
- 7.10B** describe how biodiversity contributes to the sustainability of an ecosystem; and
- 7.11A** examine organisms or their structures such as insects or leaves and use dichotomous keys for identification;
- 7.11C** identify some changes in genetic traits that have occurred over several generations through natural selection and selective breeding such as the Galapagos Medium Ground Finch (*Geospiza fortis*) or domestic animals.
- 7.12A** investigate and explain how internal structures of organisms have adaptations that allow specific functions such as gills in fish, hollow bones in birds, or xylem in plants;
- 7.12B** identify the main functions of the systems of the human organism, including the circulatory, respiratory, skeletal, muscular, digestive, excretory, reproductive, integumentary, nervous, and endocrine systems;
- 7.12C** recognize levels of organization in plants and animals, including cells, tissues, organs, organ systems, and organisms;
- 7.12D** differentiate between structure and function in plant and animal cell organelles, including cell membrane, cell wall, nucleus, cytoplasm, mitochondrion, chloroplast, and vacuole;
- 7.12E** compare the functions of a cell to the functions of organisms such as waste removal; and
- 7.12F** recognize that according to cell theory all organisms are composed of cells and cells carry on similar functions such as extracting energy from food to sustain life.
- 7.14A** define heredity as the passage of genetic instructions from one generation to the next generation;

1998 Grade 7 Content REVISED AND MOVED to a Different Grade Level in 2010 TEKS

1998 TEKS	Content Being Moved to 2010 TEKS
7.6A demonstrate basic relationships between force and motion using simple machines including pulleys and levers;	6.8E investigate how inclined planes and pulleys can be used to change the amount of force to move an object.
7.6B demonstrate that an object will remain at rest or move at a constant speed and in a straight line if it is not being subjected to an unbalanced force; and	8.6C investigate and describe applications of Newton's law of inertia, law of force and acceleration, and law of action-reaction such as in vehicle restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches.
7.7A identify and demonstrate everyday examples of chemical phenomena such as rusting and tarnishing of metals and burning of wood;	8.5E investigate how evidence of chemical reactions indicate that new substances with different properties are formed; and
7.7B describe physical properties of elements and identify how they are used to position an element on the periodic table; and	8.5C interpret the arrangement of the Periodic Table, including groups and periods, to explain how properties are used to classify elements; 6.6A compare metals, nonmetals, and metalloids using physical properties such as luster, conductivity, or malleability;
7.7C recognize that compounds are composed of elements.	6.5C differentiate between elements and compounds on the most basic level; and
7.8A illustrate examples of potential and kinetic energy in everyday life such as objects at rest, movement of geologic faults, and falling water; and	6.8A compare and contrast potential and kinetic energy;
7.12A identify components of an ecosystem;	6.12E describe biotic and abiotic parts of an ecosystem in which organisms interact; and
7.12B observe and describe how organisms including producers, consumers, and decomposers live together in an environment and use existing resources;	8.11A describe producer/consumer, predator/prey, and parasite/host relationships as they occur in food webs within marine, freshwater, and terrestrial ecosystems;

7.13A identify and illustrate how the tilt of the Earth on its axis as it rotates and revolves around the Sun causes changes in seasons and the length of a day; and	8.7A model and illustrate how the tilted Earth rotates on its axis, causing day and night, and revolves around the Sun causing changes in seasons;
7.13B relate the Earth's movement and the moon's orbit to the observed cyclical phases of the moon.	8.7B demonstrate and predict the sequence of events in the lunar cycle; and

1998 Content Moved INTO 2010 TEKS – Grade 7

1998 TEKS	Content Being Moved to 2010 TEKS
6.8B explain and illustrate the interactions between matter and energy in the water cycle and in the decay of biomass such as in a compost bin; and	7.5B demonstrate and explain the cycling of matter within living systems such as in the decay of biomass in a compost bin; and
6.8C describe energy flow in living systems including food chains and food webs.	7.5C diagram the flow of energy through living systems, including food chains, food webs, and energy pyramids.
6.14B identify relationships between groundwater and surface water in a watershed; and	7.8C model the effects of human activity on groundwater and surface water in a watershed.
6.11A identify some changes in traits that can occur over several generations through natural occurrence and selective breeding;	7.11C identify some changes in genetic traits that have occurred over several generations through natural selection and selective breeding such as the Galapagos Medium Ground Finch (<i>Geospiza fortis</i>) or domestic animals.
6.10A differentiate between structure and function;	7.12D differentiate between structure and function in plant and animal cell organelles, including cell membrane, cell wall, nucleus, cytoplasm, mitochondrion, chloroplast, and vacuole;
6.10B determine that all organisms are composed of cells that carry on functions to sustain life; and	7.12F recognize that according to cell theory all organisms are composed of cells and cells carry on similar functions such as extracting energy from food to sustain life.
6.12B identify responses in organisms to external stimuli such as the presence or absence of heat or light; and	7.13A investigate how organisms respond to external stimuli found in the environment such as phototropism and fight or flight; and
6.12A identify responses in organisms to internal stimuli such as hunger or thirst;	7.13B describe and relate responses in organisms that may result from internal stimuli such as wilting in plants and fever or vomiting in animals that allow them to maintain balance.
6.11B identify cells as structures containing genetic material; and	7.14A define heredity as the passage of genetic instructions from one generation to the next generation;
6.11C interpret the role of genes in inheritance.	

1998 Science TEKS Content NOT INCLUDED in the 2010 Science TEKS – Grade 7

- 7.4B** collect and analyze information to recognize patterns such as rates of change.
- 7.5A** describe how systems may reach an equilibrium such as when a volcano erupts; and
- 7.5B** observe and describe the role of ecological succession in maintaining an equilibrium in an ecosystem.
- 7.14C** make inferences and draw conclusions about effects of human activity on Earth's renewable, non-renewable, and inexhaustible resources.

Science TEKS – Middle School TEKS Transition Analysis

Grade 8

Please note that the Knowledge and Skills (KS) statements have been omitted from this list. It will be important for teachers to understand each Student Expectation in context of the KS statement.

New or Expanded Content for Grade 8 Found in New 2010 Science TEKS

- 8.2A** plan and implement comparative and descriptive investigations by making observations, asking well-defined questions, and using appropriate equipment and technology;
- 8.2B** design and implement comparative and experimental investigations by making observations, asking well-defined questions, formulating testable hypotheses, and using appropriate equipment and technology;
- 8.2C** collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers;
- 8.2E** analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.
- 8.3A** in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;
- 8.3C** identify advantages and limitations of models such as size, scale, properties, and materials; and
- 8.4A** use appropriate tools to collect, record, and analyze information, including lab journals/notebooks, beakers, meter sticks, graduated cylinders, anemometers, psychrometers, hot plates, test tubes, spring scales, balances, microscopes, thermometers, calculators, computers, spectrosopes, timing devices, and other equipment as needed to teach the curriculum; and
- 8.5B** identify that protons determine an element's identity and valence electrons determine its chemical properties, including reactivity;
- 8.5F** recognize whether a chemical equation containing coefficients is balanced or not and how that relates to the law of conservation of mass.
- 8.6A** demonstrate and calculate how unbalanced forces change the speed or direction of an object's motion;
- 8.6B** differentiate between speed, velocity, and acceleration; and
- 8.6C** investigate and describe applications of Newton's law of inertia, law of force and acceleration, and law of action-reaction such as in vehicle restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches.
- 8.7C** relate the position of the Moon and Sun to their effect on ocean tides.
- 8.8C** explore how different wavelengths of the electromagnetic spectrum such as light and radio waves are used to gain information about distances and properties of components in the universe;
- 8.9A** describe the historical development of evidence that supports plate tectonic theory;
- 8.9B** relate plate tectonics to the formation of crustal features; and
- 8.9C** interpret topographic maps and satellite views to identify land and erosional features and predict how these features may be reshaped by weathering.
- 8.10B** identify how global patterns of atmospheric movement influence local weather using weather maps that show high and low pressures and fronts; and
- 8.11D** recognize human dependence on ocean systems and explain how human activities such as runoff, artificial reefs, or use of resources have modified these systems.

1998 Grade 8 Content REVISED AND MOVED to a Different Grade Level in 2010 TEKS

1998 TEKS	Content Being Moved to 2010 TEKS
8.12A analyze and predict the sequence of events in the lunar and rock cycles;	6.10B classify rocks as metamorphic, igneous, or sedimentary by the processes of their formation; 8.7B demonstrate and predict the sequence of events in the lunar cycle; and
8.14C describe how human activities have modified soil, water, and air quality.	7.8C model the effects of human activity on groundwater and surface water in a watershed.

1998 Content Moved INTO 2010 TEKS – Grade 8

1998 TEKS	Content Being Moved to 2010 TEKS
7.7B describe physical properties of elements and identify how they are used to position an element on the periodic table; and	8.5C interpret the arrangement of the Periodic Table, including groups and periods, to explain how properties are used to classify elements;
6.7A demonstrate that new substances can be made when two or more substances are chemically combined and compare the properties of the new substances to the original substances; and 7.7A identify and demonstrate everyday examples of chemical phenomena such as rusting and tarnishing of metals and burning of wood;	8.5E investigate how evidence of chemical reactions indicate that new substances with different properties are formed; and
7.6B demonstrate that an object will remain at rest or move at a constant speed and in a straight line if it is not being subjected to an unbalanced force; and	8.6C investigate and describe applications of Newton's law of inertia, law of force and acceleration, and law of action-reaction such as in vehicle restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches.
7.13A identify and illustrate how the tilt of the Earth on its axis as it rotates and revolves around the Sun causes changes in seasons and the length of a day; and	8.7A model and illustrate how the tilted Earth rotates on its axis, causing day and night, and revolves around the Sun causing changes in seasons;
7.13B relate the Earth's movement and the moon's orbit to the observed cyclical phases of the moon.	8.7B demonstrate and predict the sequence of events in the lunar cycle; and
7.12B observe and describe how organisms including producers, consumers, and decomposers live together in an environment and use existing resources;	8.11A describe producer/consumer, predator/prey, and parasite/host relationships as they occur in food webs within marine, freshwater, and terrestrial ecosystems;

1998 Science TEKS Content NOT INCLUDED in the 2010 Science TEKS – Grade 8

- 8.3B** draw inferences based on data related to promotional materials for products and services;
- 8.7B** recognize that waves are generated and can travel through different media.
- 8.9D** identify that physical and chemical properties influence the development and application of everyday materials such as cooking surfaces, insulation, adhesives, and plastics.
- 8.10A** illustrate interactions between matter and energy including specific heat;
- 8.10C** identify and demonstrate that loss or gain of heat energy occurs during exothermic and endothermic chemical reactions.
- 8.11B** distinguish between inherited traits and other characteristics that result from interactions with the environment; and
- 8.11C** make predictions about possible outcomes of various genetic combinations of inherited characteristics
- 8.12B** relate the role of oceans to climatic changes; and
- 8.12C** predict the results of modifying the Earth's nitrogen, water, and carbon cycles.
- 8.14B** analyze how natural or human events may have contributed to the extinction of some species; and
- 8.14C** describe how human activities have modified soil, [water,] and air quality.

Science TEKS – High School TEKS Transition Analysis

Biology – Chemistry – Physics – Integrated Physics and Chemistry

Biology

Please note that the Knowledge and Skills (KS) statements have been omitted from this list. It will be important for teachers to understand each Student Expectation in context of the KS statement.

New or Expanded Content for Biology Found in New 2010 Science TEKS

- 2A** know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section;
- 2B** know that hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power which have been tested over a wide variety of conditions are incorporated into theories;
- 2C** know scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but they may be subject to change as new areas of science and new technologies are developed;
- 2D** distinguish between scientific hypotheses and scientific theories;
- 2E** plan and implement descriptive, comparative, and experimental investigations, including asking questions, formulating testable hypotheses, and selecting equipment and technology;
- 2F** collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, gel electrophoresis apparatuses, micropipettors, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, cameras, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures;
- 2H** communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports
- 3A** in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;
- 3B** communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials;
- 3C** draw inferences based on data related to promotional materials for products and services;
- 4A** compare and contrast prokaryotic and eukaryotic cells;
- 5A** describe the stages of the cell cycle, including deoxyribonucleic acid (DNA) replication and mitosis, and the importance of the cell cycle to the growth of organisms;
- 5C** describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation; and
- 5D** recognize that disruptions of the cell cycle lead to diseases such as cancer.
- 6B** recognize that components that make up the genetic code are common to all organisms;
- 6D** recognize that gene expression is a regulated process;

- 6F predict possible outcomes of various genetic combinations such as monohybrid crosses, dihybrid crosses and non-Mendelian inheritance;
- 6H describe how techniques such as DNA fingerprinting, genetic modifications, and chromosomal analysis are used to study the genomes of organisms.
- 7A analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental;
- 7B analyze and evaluate scientific explanations concerning any data of sudden appearance, stasis, and sequential nature of groups in the fossil record;
- 7C analyze and evaluate how natural selection produces change in populations, not individuals;
- 7D analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success;
- 7E analyze and evaluate the relationship of natural selection to adaptation and to the development of diversity in and among species;
- 7F analyze and evaluate the effects of other evolutionary mechanisms, including genetic drift, gene flow, mutation, and recombination; and
- 7G analyze and evaluate scientific explanations concerning the complexity of the cell.
- 8A define taxonomy and recognize the importance of a standardized taxonomic system to the scientific community;
- 9D analyze and evaluate the evidence regarding formation of simple organic molecules and their organization into long complex molecules having information such as the DNA molecule for self-replicating life.
- 10B describe the interactions that occur among systems that perform the functions of transport, reproduction, and response in plants; and
- 10C analyze the levels of organization in biological systems and relate the levels to each other and to the whole system.
- 11C summarize the role of microorganisms in both maintaining and disrupting the health of both organisms and ecosystems; and
- 11D describe how events and processes that occur during ecological succession can change populations and species diversity.
- 12B compare variations and adaptations of organisms in different ecosystems;
- 12E describe the flow of matter through the carbon and nitrogen cycles and explain the consequences of disrupting these cycles; and
- 12F describe how environmental change can impact ecosystem stability.

1998 Biology Content NOT INCLUDED (or partial deletions) from 2010 TEKS – Biology

- 3D describe the connection between biology and future careers;
 - 11C analyze the importance of nutrition, environmental conditions, and physical exercise on health; and
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Science TEKS – High School TEKS Transition Analysis

Chemistry

Please note that the Knowledge and Skills (KS) statements have been omitted from this list. It will be important for teachers to understand each Student Expectation in context of the KS statement.

New or Expanded Content for Chemistry Found in New 2010 Science TEKS

- 1A** demonstrate safe practices during laboratory and field investigations, including the appropriate use of safety showers, eyewash fountains, safety goggles, and fire extinguishers;
- 2A** know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section;
- 2B** know that hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power which have been tested over a wide variety of conditions are incorporated into theories;
- 2C** know that scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but may be subject to change as new areas of science and new technologies are developed;
- 2D** distinguish between scientific hypotheses and scientific theories;
- 2E** plan and implement investigative procedures, including asking questions, formulating testable hypotheses, and selecting equipment and technology, including graphing calculators, computers and probes, sufficient scientific glassware such as beakers, Erlenmeyer flasks, pipettes, graduated cylinders, volumetric flasks, safety goggles, and burettes, electronic balances, and an adequate supply of consumable chemicals;
- 2I** communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphs, journals, summaries, oral reports, and technology-based reports.
- 3A** in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;
- 3B** communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials;
- 4A** differentiate between physical and chemical changes and properties;
- 4B** identify extensive and intensive properties;
- 5A** explain the use of chemical and physical properties in the historical development of the Periodic Table;
- 5B** use the Periodic Table to identify and explain the properties of chemical families, including alkali metals, alkaline earth metals, halogens, noble gases, and transition metals; and
- 5C** use the Periodic Table to identify and explain periodic trends, including atomic and ionic radii, electronegativity, and ionization energy.
- 6A** understand the experimental design and conclusions used in the development of modern atomic theory, including Dalton's Postulates, Thomson's discovery of electron properties, Rutherford's nuclear atom, and Bohr's nuclear atom;

- 6B** understand the electromagnetic spectrum and the mathematical relationships between energy, frequency, and wavelength of light;
- 6C** **calculate** the wavelength, frequency, and energy of light using Planck's constant and the speed of light;
- 6D** use isotopic composition to **calculate** average atomic mass of an element; and
- 6E** express the arrangement of electrons in atoms through electron configurations and Lewis valence electron dot structures.
- 7A** name ionic compounds containing main group or transition metals, covalent compounds, acids, and bases, using International Union of Pure and Applied Chemistry (IUPAC) nomenclature rules;
- 7B** write the chemical formulas of common polyatomic ions, ionic compounds containing main group or transition metals, covalent compounds, acids, and bases;
- 7C** construct electron dot formulas to illustrate ionic and covalent bonds;
- 7D** describe the nature of metallic bonding and apply the theory to explain metallic properties such as thermal and electrical conductivity, malleability, and ductility; and
- 7E** predict molecular structure for molecules with linear, trigonal planar, or tetrahedral electron pair geometries using Valence Shell Electron Pair Repulsion (VSEPR) theory.
- 8A** define and use the concept of a mole;
- 8B** use the mole concept to **calculate** the number of atoms, ions, or molecules in a sample of material;
- 8C** **calculate** percent composition and empirical and molecular formulas;
- 8E** perform stoichiometric calculations, including determination of mass relationships between reactants and products, calculation of limiting reagents, and percent yield.
- 9A** describe and **calculate** the relations between volume, pressure, number of moles, and temperature for an ideal gas as described by Boyle's law, Charles' law, Avogadro's law, Dalton's law of partial pressure, and the ideal gas law;
- 9B** perform stoichiometric calculations, including determination of mass and volume relationships between reactants and products for reactions involving gases; and
- 9C** describe the postulates of kinetic molecular theory.
- 10C** **calculate** the concentration of solutions in units of molarity;
- 10D** use molarity to **calculate** the dilutions of solutions;
- 10E** distinguish between types of solutions such as electrolytes and nonelectrolytes and unsaturated, saturated, and supersaturated solutions;
- 10G** define acids and bases and distinguish between Arrhenius and Bronsted-Lowry definitions and predict products in acid base reactions that form water;
- 10H** understand and differentiate among acid-base reactions, precipitation reactions, and oxidation-reduction reactions;
- 10I** define pH and use the hydrogen or hydroxide ion concentrations to **calculate** the pH of a solution; and
- 10J** distinguish between degrees of dissociation for strong and weak acids and bases.

- 11A understand energy and its forms, including kinetic, potential, chemical, and thermal energies;
- 11B understand the law of conservation of energy and the processes of heat transfer;
- 11C use thermochemical equations to **calculate** energy changes that occur in chemical reactions and classify reactions as exothermic or endothermic;
- 10D perform calculations involving heat, mass, temperature change, and specific heat; and
- 11E use calorimetry to **calculate** the heat of a chemical process.
- 12A describe the characteristics of alpha, beta, and gamma radiation;

1998 Chemistry Content NOT INCLUDED (or partial deletions) from 2010 TEKS – Chemistry

- 8B investigate and compare the physical and chemical properties of ionic and covalent compounds;
 - 8D describe the influence of intermolecular forces on the physical and chemical properties of covalent compounds.
 - 9B investigate radioactive elements to determine half-life;
 - 9C evaluate the commercial use of nuclear energy and medical uses of radioisotopes; and
 - 9D evaluate environmental issues associated with the storage, containment, and disposal of nuclear wastes.
 - 10B demonstrate and document the effects of a corrosion process and evaluate the importance of electroplating metals.
 - 13B interpret relationships among ionic and covalent compounds, electrical conductivity, and colligative properties of water;
 - 13C measure and compare the rates of reaction of a solid reactant in solutions of varying concentration.
 - 14A analyze and measure common household products using a variety of indicators to classify the products as acids or bases;
 - 14D describe effects of acids and bases on an ecological system.
 - 15B relate the rate of a chemical reaction to temperature, concentration, surface area, and presence of a catalyst.
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Science TEKS – High School TEKS Transition Analysis

Physics

Please note that the Knowledge and Skills (KS) statements have been omitted from this list. It will be important for teachers to understand each Student Expectation in context of the KS statement.

New or Expanded Content for Physics Found in New 2010 Science TEKS

- 2A** know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section;
- 2B** know that scientific hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power which have been tested over a wide variety of conditions are incorporated into theories;
- 2C** know that scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but may be subject to change as new areas of science and new technologies are developed;
- 2D** distinguish between scientific hypotheses and scientific theories;
- 2E** design and implement investigative procedures, including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness;
- 2F** demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectrometers, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers;
- 2G** use a wide variety of additional course apparatus, equipment, techniques, materials, and procedures as appropriate such as ripple tank with wave generator, wave motion rope, micrometer, caliper, radiation monitor, computer, ballistic pendulum, electroscope, inclined plane, optics bench, optics kit, pulley with table clamp, resonance tube, ring stand screen, four inch ring, stroboscope, graduated cylinders, and ticker timer;
- 2H** make measurements with accuracy and precision and record data using scientific notation and International System (SI) units;
- 2I** identify and quantify causes and effects of uncertainties in measured data;
- 2K** communicate valid conclusions supported by the data through various methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports; and
- 2L** express and manipulate relationships among physical variables quantitatively, including the use of graphs, charts, and equations.
- 3A** in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;

- 3B** communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials;
- 3C** draw inferences based on data related to promotional materials for products and services;
- 3F** express and interpret relationships symbolically in accordance with accepted theories to make predictions and solve problems mathematically, including problems requiring proportional reasoning and graphical vector addition.
- 4B** describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, average velocity, instantaneous velocity, and acceleration;
- 4C** analyze and describe accelerated motion in two dimensions using equations, including projectile and circular examples;
- 4D** **calculate** the effect of forces on objects, including the law of inertia, the relationship between force and acceleration, and the nature of force pairs between objects;
- 5A** research and describe the historical development of the concepts of gravitational, electromagnetic, weak nuclear, and strong nuclear forces;
- 5B** describe and **calculate** how the magnitude of the gravitational force between two objects depends on their masses and the distance between their centers;
- 5C** describe and **calculate** how the magnitude of the electrical force between two objects depends on their charges and the distance between them;
- 5E** characterize materials as conductors or insulators based on their electrical properties;
- 5F** design, construct, and **calculate** in terms of current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations;
- 5G** investigate and describe the relationship between electric and magnetic fields in applications such as generators, motors, and transformers; and
- 5H** describe evidence for and effects of the strong and weak nuclear forces in nature.
- 6C** **calculate** the mechanical energy of, power generated within, impulse applied to, and momentum of a physical system;
- 6E** describe how the macroscopic properties of a thermodynamic system such as temperature, specific heat, and pressure are related to the molecular level of matter, including kinetic or potential energy of atoms;
- 7A** examine and describe oscillatory motion and wave propagation in various types of media;
- 7B** investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and **calculate** using the relationship between wavespeed, frequency, and wavelength;
- 7D** investigate behaviors of waves, including reflection, refraction, diffraction, interference, resonance, and the Doppler effect;
- 7E** describe and predict image formation as a consequence of reflection from a plane mirror and refraction through a thin convex lens; and
- 8A** describe the photoelectric effect and the dual nature of light;
- 8C** describe the significance of mass-energy equivalence and apply it in explanations of phenomena such as nuclear stability, fission, and fusion; and
- 8D** give examples of applications of atomic and nuclear phenomena such as radiation therapy, diagnostic imaging, and nuclear power and examples of applications of quantum phenomena such as digital cameras.

1998 Physics Content NOT INCLUDED in 2010 TEKS – Physics

- 3E** research and describe the history of physics and contributions of scientists.

Science TEKS – High School TEKS Transition Analysis

Integrated Physics and Chemistry (IPC)

Please note that the Knowledge and Skills (KS) statements have been omitted from this list. It will be important for teachers to understand each Student Expectation in context of the KS statement.

New or Expanded Content for IPC Found in New 2010 Science TEKS

- 2A** know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section;
- 3A** in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;
- 3B** communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials;
- 4B** measure and graph distance and speed as a function of time using moving toys;
- 4D** assess the relationship between force, mass, and acceleration, noting the relationship is independent of the nature of the force, using equipment such as dynamic carts, moving toys, vehicles, and falling objects;
- 4F** describe the gravitational attraction between objects of different masses at different distances, including satellites; and
- 4G** examine electrical force as a universal force between any two charged objects and compare the relative strength of the electrical force and gravitational force.
- 5A** recognize and demonstrate that objects and substances in motion have kinetic energy such as vibration of atoms, water flowing down a stream moving pebbles, and bowling balls knocking down pins;
- 5B** demonstrate common forms of potential energy, including gravitational, elastic, and chemical, such as a ball on an inclined plane, springs, and batteries;
- 5C** demonstrate that moving electric charges produce magnetic forces and moving magnets produce electric forces;
- 5F** evaluate the transfer of electrical energy in series and parallel circuits and conductive materials;
- 5H** analyze energy conversions such as those from radiant, nuclear, and geothermal sources; fossil fuels such as coal, gas, oil; and the movement of water or wind; and
- 6A** examine differences in physical properties of solids, liquids, and gases as explained by the arrangement and motion of atoms, ions, or molecules of the substances and the strength of the forces of attraction between those particles;
- 6B** relate chemical properties of substances to the arrangement of their atoms or molecules;
- 6C** analyze physical and chemical properties of elements and compounds such as color, density, viscosity, buoyancy, boiling point, freezing point, conductivity, and reactivity;
- 6E** relate the structure of water to its function as a solvent and investigate the properties of solutions and factors affecting gas and solid solubility, including nature of solute, temperature, pressure, pH, and concentration.
- 7A** investigate changes of state as it relates to the arrangement of particles of matter and energy transfer;

- 7B** recognize that chemical changes can occur when substances react to form different substances and that these interactions are largely determined by the valence electrons;
- 7C** demonstrate that mass is conserved when substances undergo chemical change and that the number and kind of atoms are the same in the reactants and products;

1998 IPC Content NOT INCLUDED (or partial deletions) from 2010 TEKS – IPC

- 4D** investigate and demonstrate mechanical advantage and efficiency of various machines such as levers, motors, wheels and axles, pulleys, and ramps.
 - 5C** identify uses of electromagnetic waves in various technological applications such as fiber optics, optical scanners, and microwaves; and
 - 5D** demonstrate the application of acoustic principles such as in echolocation, musical instruments, noise pollution, and sonograms.
 - 7B** research and describe the historical development of the atomic theory;
 - 7C** identify constituents of various materials or objects such as metal salts, light sources, fireworks displays, and stars using spectral-analysis techniques;
 - 8A** distinguish between physical and chemical changes in matter such as oxidation, digestion, changes in states, and stages in the rock cycle;
 - 9B** relate the concentration of ions in a solution to physical and chemical properties such as pH, electrolytic behavior, and reactivity;
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