SRPSD Science 10 Rubrics

Career Investigation

SCI10-CI1 Investigate career paths related to various branches and sub-branches of science.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I can identify relevant and/or undersubscribed science related career options locally, regionally, and/or nationally.	I have an understanding of a science related career and the possible paths I could take to achieve such a career	I have an understanding of a science related career and how suited I am to such a career.	I have an understanding of a science related career by including personal interviews/ discussions with professionals in my research

Climate and Ecosystem Dynamics

SCI10-CD1 Assess the implications of human actions on the local and global climate and the sustainability of ecosystems.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I can define the sustainability of ecosystems.	I can recognize and explain the things that I do that impact the sustainability of ecosystems either positively or negatively. I can briefly describe human actions that help and harm an ecosystem.	I can explain the views of another culture on the sustainability of ecosystems. I can explain how these views impact the environment and climate.	I can fully describe and give examples of human actions that help and harm ecosystems. I can explain some things that would have to change in our country (economically and politically) if we were to adopt a more sustainable view.

SCI10-CD2 Investigate the implications that influence Earth's climate system, including the role of the natural greenhouse effect.

Mastery (4)	Proficiency (3)	Approaching (2)	Beginning (1)
I can define the term weather climate, greenhouse effect, and greenhouse gas. I can give examples of greenhouse gases.	I can describe the natural greenhouse effect, what it does for our planet, and factors that contribute to it. I can explain the three types of heat transfer on the planet (conduction, convection and radiation).	I can explain how heating and cooling on the planet drives weather, and which types of heat transfer are involved. I can explain how temperatures on Earth are kept more moderate.	I can explain high and low pressure systems (what they are and how they are caused) and what type of weather they are most likely to create. I can look at a weather map and predict generally what the weather will be.

SCI10-CD3 Examine biodiversity through the analysis of interactions among populations within communities.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I can describe an ecosystem using the basic terms biodiversity, biotic, abiotic, aquatic, terrestrial, food chain, food web, population and community.	I can analyze the interactions among populations and communities (food chains, food webs and competition) I know the difference between producers, consumers and decomposers. I can give examples of some limiting factors that influence the growth of populations.	I can describe how the health of an ecosystem relies on biodiversity and the flow of energy, using proper ecological terms. I can interpret and explain population dynamics I can describe the factors that influence the size of a population (natality, mortality, immigration and emigration) and the carrying capacity of populations.	I can discuss the importance of biodiversity within ecosystems, biomes and the entire planet I understand how humans' actions and environmental changes affect populations (invasive species, habitat loss, climate change, bioaccumulation, bio magnification, species at risk etc.)

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SCI10-CD4 Investigate the role of feedback mechanisms in biogeochemical cycles and in maintaining stability in ecosystems.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I can describe the type of systems (open, closed). I can define the cycling of matter.	I can explain why the cycling of matter is important to ecosystems. I can explain the role of photosynthesis, respiration, and sinks in the cycling of carbon through the environment. I can describe what a stable ecosystem looks like.	I can compare the processes of nitrification and denitrification. I understand the agricultural practices on the cycling of phosphorus, nitrogen, and other nutrients in the ecosystem. I can explain what a feedback mechanism is.	I can describe examples of feedback in any of the cycles (water, phosphorus, carbon and nitrogen).

Chemical Reactions

SCI10-CR1 Explore the properties of chemical reactions, including the role of energy changes, and applications of acids and bases.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I can differentiate between reactants and products and provide examples. I can identify most physical and chemical changes given situations.	I can define endothermic and exothermic in terms of chemical reactions.	I can identify an endothermic and exothermic reaction through either observation of chemical reactions or in written formula equations. I can identify chemical and physical changes in a given situation by providing the specific reason/indicators for that change.	I can identify endothermic and exothermic reactions by providing my own examples from everyday life. I can explain what happens to the energy in both endothermic and exothermic reactions. I can identify chemical and physical changes in a given situation by providing specific reasons/indicators for that change and discuss why it may be difficult to differentiate between the two.

SCI10-CR2 Name and write formulas for common ionic and molecular chemical compounds, including acids and bases.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I can identify metals and non-metals on the periodic table. I can identify common ionic and covalent compounds.	I can name common binary ionic and covalent compounds given the formulas, if I am told if it is ionic or covalent. I can write formulas for common binary ionic and covalent compounds given their name and if I am told if it is ionic or covalent. I can identify acids and bases.	I can name and write formulas for common ionic and covalent compounds given the formulas (including polyatomic). I can name and write formulas for acids and bases.	I can explain the importance of valence electrons to bonding. I can write the names and formulas of mixed ionic and covalent compounds.

SCI10-CR3 Represent chemical reactions and the conservation of mass symbolically using models, word and skeleton equations, and balanced chemical equations.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I know the law of conservation of mass. I can identify the parts of a chemical equation (reactants, products, yield signs).	I can write word and skeleton equations.	I can balance chemical equations given the skeleton equation.	I can explain why it is important to balance chemical equations. I can write and balance chemical equations.

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SCI10-CR4 Investigate the rates of chemical reactions, including factors that affect the rate.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I can explain what the term rate of reaction means.	I can provide examples of reactions that happen at different rates. I can list some factors that affect the rate of chemical reactions.	I can predict how different factors might affect the rate of a chemical reaction.	I can explain using the collision theory and the particle theory of matter how the factors affect the rate of chemical reactions.

Forces and Motion in Our World

SCI10-FM1 Explore the development of motion-related technologies and their impacts on self and society.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I can define the term motion related technology. I can provide examples of motion related technologies from my life.	I can identify how motion related technologies have changed over time and provide a basic description of how that change has impacted self and society.	I can compare and contrast the same motion related technology in different time periods in relation to certain criteria such as cost, safety, availability, impact on everyday life etc.	I can apply my understanding of motion related technologies to provide a design for a future model that will benefit society and improve our ability to move.

SCI10-FM2 Investigate and represent the motion of objects that travel at a constant speed in a straight line.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I can describe the motion of an object from a graph or diagram (distance-time, position-time, speed- time, velocity-time). I can define the terms constant speed and uniform motion.	I can represent the motion of objects by constructing and analyzing a graph. I can solve for speed using the equation $v = \frac{\Delta d}{\Delta t}$ with data provided.	I can manipulate the equation $v = \frac{\Delta d}{\Delta t}$ to solve motion related problems.	I can design and/or carry out an experiment that could demonstrate constant speed. I can analyze my data and use it to describe motion.

SCI10-FM3 Investigate and represent the motion of objects that undergo acceleration.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I can describe the motion of an object from a graph or diagram (distance-time, position-time, speed- time, velocity-time). I can define the terms constant acceleration and uniform acceleration.	I can represent the motion of objects by constructing and analyzing a graph. I can solve for acceleration using the equation $a = \frac{\Delta v}{\Delta t}$ with data provided.	I can manipulate motion equations to solve acceleration problems including $v_f = v_i + at$	I can design and/or carry out an experiment that could demonstrate constant acceleration. I can analyze my data and use it to describe motion.

SCI10-FM4 Explore the relationship between force and motion for objects moving in one and two dimensions.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I can describe the motion of an object given a free body diagram. I can define the term force and provide an example.	I can find the net force using Newton's Second Law (Fnet =ma) either from a word problem or a free body diagram. I can describe some of the forces that act on an object (force of gravity, normal force, force of friction, etc.)	I can describe all forces that act on an object. I can analyze how frictional forces affect the motion of an object.	I can apply my knowledge to a real life situation to describe how forces affect the motion of everyday objects.