

Science Curriculum Physical
Cross County School

Science Skill	Concept	District Objective	Curricular Indicator	Performance Level	Pacing	Instructional Materials/ Class Activities	Intervention	Assessment Local	Assessment NeSA
Inquiry		Formulate a testable hypothesis supported by prior knowledge to guide an investigation	SC12.1.1.a	P					
Inquiry		Design and conduct logical and sequential scientific investigations with repeated trials and apply findings to new investigations	SC12.1.1.b	P					
Inquiry		Identify and manage variables and constraints	SC12.1.1.c	P					
Inquiry		Select and use lab equipment and technology appropriately and accurately	SC12.1.1.d	P					
Inquiry		Use tools and technology to make detailed qualitative and quantitative observations	SC12.1.1.e	P					
Inquiry		Represent and review collected data in a systematic, accurate, and objective manner	SC12.1.1.f	P					
Inquiry		Analyze and interpret data, synthesize ideas, formulate and evaluate models, and clarify concepts and explanations	SC12.1.1.g	P					
Inquiry		Use results to verify or refute a hypothesis	SC12.1.1.h	P					
Inquiry		Propose and/or evaluate possible revisions and alternate explanations	SC12.1.1.i	I,P					
Inquiry		Share information, procedures, results, conclusions, and defend findings to a scientific community (peers, science fair audience, policy makers)	SC12.1.1.j	P					
Inquiry		Evaluate scientific investigations and offer revisions and new ideas as appropriate	SC12.1.1.k	P					
Inquiry		Use appropriate mathematics in all aspects of scientific inquiry	SC12.1.1.l	P					
Inquiry		Recognize that scientific explanations must be open to questions, possible modifications, and must be based upon historical and current scientific knowledge	SC12.1.2.a	P					
Inquiry		Describe how society influences the work of scientists and how science, technology, and current scientific discoveries influence and change society	SC12.1.2.b	P					
Inquiry		Recognize that the work of science results in incremental advances, almost always building on prior knowledge, in our understanding of the world	SC12.1.2.c	P					

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Inquiry		Research and describe the difficulties experienced by scientific innovators who had to overcome commonly held beliefs of their times to reach conclusions that we now take for granted	SC12.1.2.d	I,P					
Inquiry		Propose designs and choose between alternative solutions of a problem	SC12.1.3.a	IP					
Inquiry		Assess the limits of a technological design	SC12.1.3.b	IP					
Inquiry		Implement the selected solution	SC12.1.3.c	P					
Inquiry		Evaluate the solution and its consequences	SC12.1.3.d	P					
Inquiry		Communicate the problem, process, and solution	SC12.1.3.e	P					
Inquiry		Compare and contrast the reasons for the pursuit of science and the pursuit of technology	SC12.1.3.f	IP					
Inquiry		Explain how science advances with the introduction of new technology	SC12.1.3.g	P					
Inquiry		Recognize creativity, imagination, and a good knowledge base are all needed to advance the work of science and engineering	SC12.1.3.h	P					
Physical	Matter	Associate bonding with the transfer or sharing of electrons (ionic or covalent respectively)	12.2.1.a	IP					
	Matter	Describe the energy transfer associated with phase changes between solids, liquids, and gases	12.2.1.b	I					
	Matter	Describe the three normal states of matter (solid, liquid, gas) in terms of energy, particle arrangement, particle motion, and strength of force of attraction between particles	12.2.1.c	IP					
	Matter	Compare and contrast acid/base reactions(transfer of hydrogen ion) and oxidation/reduction reactions(transfer of electrons) between ions, molecules, and atoms	12.2.1.d	IP					
	Matter	Identify factors affecting rates of chemical reactions (temperature, particle size, surface area)	12.2.1.e	IP					
	Matter	Recognize the charges and relative locations of subatomic particles (neutrons, protons, electrons)	12.2.1.f	IP					
	Matter	Describe properties of atoms, ions, isotopes	12.2.1.g	IP					
	Matter	Describe the organization of the periodic table of elements with respect to patterns of physical and chemical properties	12.2.1.h	PM					

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	Force and Motion	Describe motion with respect to displacement, velocity, and acceleration and be able to use related formulas	12.2.2.a	PM					
	Force and Motion	Describe how the law of inertia (Newton's 1st law) is evident in a real-world event	12.2.2b	PM					
	Force and Motion	Describe and apply the relationship between displacement, velocity, and acceleration, including the use of the formula $F=ma$	12.2.2c	PM					
	Force and Motion	Use an example to show how all forces occur in equal and opposite pairs	12.2.2.d	IP					
	Force and Motion	Describe how gravity relates to mass of two objects and the distance between them.	12.2.2.f	IP					
	Force and Motion	Describe how attractive or repulsive electric forces exist between two charged particles, and how that force depends on magnitude of the charges and distance between the particles	12.2.2.g	IP					
	Energy	Describe mechanical wave properties (speed, wavelength, frequency, amplitude) and how waves travel through a medium	12.2.3.a	IP					
	energy	Describe how energy in waves can be changed into other forms of energy	12.2.3.b	IP					
	Energy	Demonstrate how light can behave as a wave (diffraction and interference)	12.2.3.c	IP					
	Energy	Distinguish between temperature (a measure of the average kinetic energy of atomic or molecular motion) and heat (the quantity of thermal energy that transfers due to a change in temperature).	12.2.3.d	IP					
		Identify internal and external sources of the transfer of heat energy in Earth's systems	12.4.3.a	PM					
	Energy	Compare and contrast methods of heat transfer and the interaction of heat with matter via conduction, convection, and radiation	12.2.3.e	PM					
	Earth's Structures and Processes	Describe how heat convection in the mantle propels the plates comprising the Earth's surface across the face of the globe (plate tectonics)	12.4.2.b	PM					
	Earth's Structures and Processes	Describe how radiation, conduction, and convection transfer heat in the Earth's systems	12.4.3.b	PM					

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	Energy	Demonstrate the understanding that the production of electromagnetic waves is a result of changes in the motion of charges or by changing the magnetic field	12.2.3.f	IP					
	Energy	Compare and contrast segments of the electromagnetic spectrum (radio, micro, infrared, visible, ultraviolet, x-rays, gamma) based on frequency and wavelength	12.2.3.g	IP					
	Energy	Explain how nuclear reactions (fission, fusion, and radioactive decay) convert a fraction of the mass of interacting particles into energy, and this amount of energy is much greater than the energy in chemical interactions	12.2.3.h	IP					
	Energy	Interpret the law of conservation of energy to make predictions for the outcome of an event	12.2.3.i	PM					
	Energy	Identify that all energy can be considered to be either kinetic, potential, or energy contained by a field (e.g., as electromagnetic waves)	12.2.3.j	IP					
	Energy	Be able to describe when a system has more or less potential and kinetic energy, such as a swing, a pendulum, etc.	12.2.3.j.1	IP					
	Energy	Demonstrate how light, microwaves, radio waves, etc. are a form of energy	12.2.3.j.2	IP					
	Energy	Identify endothermic and exothermic reactions	12.2.3.k	IP					
Earth and Space		Describe the formation of the universe using the Big Bang Theory	12.4.1.a	IP					
Earth and Space		Demonstrate how stars, like the Sun, transform matter into energy by nuclear reactions, which leads to the formation of other elements	12.4.1.b	IP					
Earth and Space		Describe stellar evolution, including formation and life cycles of stars	12.4.1.c	IP					