

RICHLAND Science Curriculum Map

I= Introduce, E= Emphasize, M= Master, P= Pretest

FINAL DRAFT

May, 2002

Content Area	Kindergarten	1 st Grade	2 nd Grade
Life Science			
<i>Scientific Process/ Technical Writing</i>	I-Utilize scientific processes such as predicting/ observing/gathering data/ drawing conclusions I-Participate in shared and guided reading	E-Utilize scientific processes such as predicting/ observing/gathering data/ drawing conclusions I-Participate in shared and guided reading	E-Predict what will happen in experiments demonstrated I-Summarize material read or steps in an experiment with teacher guidance I-Categorize measurement terms according to length, mass, weight, capacity/volume I-Estimate/measure length, weight, capacity/volume using standard units of measure (English and metric)
<i>Plants and Animals</i>	I-Illustrate plant parts I-Identify animals by habitat M-Differentiate among humans, plants and other animals I-Compare similarities between parents/offspring	I-Examine function of plant parts I-Illustrate parts of a seed I-Observe and sequence life cycle of plants I-Classify plants according to external features I-Identify plants indigenous to Mississippi I-Compare plants in Mississippi with those found in jungle, desert, arctic regions I-Identify animals indigenous to Mississippi	I-Explain how plants are used as a food source E-Explain function of parts of a seed
<i>Genetics</i>			I-Identify 3 types of fingerprints
<i>Systems</i>	M-Name the 5 senses and describe their function M-Match each body part with each sense M-Identify major external human body parts M-Draw a man with 6 body parts	I-Identify major organs of the human body such as heart, lungs, brain, intestines, stomach	I-Describe the function of human body parts: brain, lungs, liver, kidneys, intestine, digestive system
<i>Classification</i>	M-Classify objects as living/nonliving based on their characteristics M-Classify animals as farm, zoo, pet, or wild according to appearance and action	I-Classify animals according to external features (scales, feathers, fur, etc.)	I-Research the diversity and interaction of living things (vertebrates: fish, birds, mammals, reptiles, amphibians)
<i>Environment</i>		I-Explain the term extinct as related to animals I-Study dinosaurs	I-Define/recognize endangered species Units: Ocean, Arizona Desert, Bats
Physical Science			
<i>Scientific Process/ Technical Writing</i>	I-Utilize scientific processes such as predicting/ observing/gathering data/ drawing conclusions I-Participate in shared and guided reading	E-Utilize scientific processes such as predicting/ observing/gathering data/ drawing conclusions I-Participate in shared and guided reading	E-Predict what will happen in experiments demonstrated I-Summarize material read or steps in an experiment with teacher guidance I-Categorize measurement terms according to length, mass, weight, capacity/volume I-Estimate/measure length, weight, capacity/volume using standard units of measure (English and metric)
<i>Motion</i>	I-Identify/recognize differences in volume, tone, quality, type of sound	I-Discuss various modes of transportation	I-Demonstrate how sound travels through different media
<i>Energy</i>	I-Demonstrate use and care of magnets I-Demonstrate interactions between magnets & objects	I-Manipulate magnets to demonstrate the interaction of magnets and other objects	I-Demonstrate light and heat as forms of energy I-Predict/explore effects of forces and energy on matter

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Content Area	Kindergarten	1 st Grade	2 nd Grade
			I-Understand that magnets are attracted to certain metals
Earth & Space Science			
<i>Scientific Process/ Technical Writing</i>	I-Utilize scientific processes such as predicting/ observing/gathering data/ drawing conclusions I-Participate in shared and guided reading	E-Utilize scientific processes such as predicting/ observing/gathering data/ drawing conclusions I-Participate in shared and guided reading	E-Predict what will happen in experiments demonstrated I-Summarize material read or steps in an experiment with teacher guidance I-Categorize measurement terms according to length, mass, weight, capacity/volume I-Estimate/measure length, weight, capacity/volume using standard units of measure (English and metric)
<i>Space/ Weather</i>	M-Identify earth as a planet M-Describe the Earth according to its shape I-Compare/contrast characteristics of night/day I-Distinguish characteristics of the seasons I-Use weather terms I-Distinguish between warmer/cooler	I-Describe changing position of the sun in the daytime sky I-Describe the changing position of the stars and moon in the nighttime sky I-Record/graph/compare weather differences including sunshine, clouds, rain, wind, snow I-Name the 9 planets I-Identify the sun as the major energy source I-Measure temperature with non-mercury thermometer and discuss hot/cold I-Use nonstandard and standard measures to explore length	I-Collect seasonal temperatures using a Fahrenheit thermometer E-List/describe the planets in order E-Describe the sun as a star E-Illustrate the shape of the moon I-Describe the different clouds and weather associated with each I-Read <i>The Night of the Stars</i> (AR trade book)
<i>Earth History</i>	I-Describe the Earth according to its physical make-up I-Distinguish between continents/oceans	I-Identify features of the Earth's surface such as mountains, lakes, oceans, rivers I-Describe difference between oceans and continents on map	I-Recognize that the Earth is made up of layers
<i>Cycles</i>			I-Identify the water cycle
<i>Ecology</i>	I-Explain the term pollution , its forms and causes I-Identify substances that can be recycled I-Define environment I-Identify ways to control pollution	I-Examine pollution and how recycling helps I-Identify ways to reduce the amount of wastes thrown away	I-Design/construct a compost pile
Chemistry			
<i>Scientific Process/ Technical Writing</i>	I-Utilize scientific processes such as predicting/ observing/gathering data/ drawing conclusions I-Participate in shared and guided reading	E-Utilize scientific processes such as predicting/ observing/gathering data/ drawing conc I-Participate in shared and guided reading	E-Predict what will happen in experiments demonstrated I-Summarize material read or steps in an experiment with teacher guidance I-Categorize measurement terms according to length, mass, weight, capacity/volume I-Estimate/measure length, weight, capacity/volume using standard units of measure (English and metric)

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<i>Matter</i>	I-Identify a solid/liquid I-Classify objects that sink/float	I-Observe/discuss transformation of solids, liquids, gas I-Identify solid/liquid/gas as states of matter I-Compare/contrast objects according to size, shape, color, texture, use I-Compare weights of objects I-Explore/estimate capacity/volume of various containers in nonstandard units	E-Classify solids, liquids, gases as state of matter
<i>Elements</i>			

Content Area	3 rd Grade	4 th Grade	5 th Grade
Life Science			
<i>Scientific Process/ Technical Writing</i>	I-Predict what will happen in experiments I-Identify/compare differences among length, weight/mass, capacity/volume using English and metric measures I-Choose appropriate units of measure for length, weight, volume I-Compare metric to English measurements	E-Predict what will happen in experiment demonstrated I-Conduct simple experiments and write findings in simple sentence format	E-Explain steps in experiments E-Predict outcomes of experiments E-Use various simple measuring devices (metric and standard units)
<i>Plants and Animals</i>	I-Illustrate food chain I-Illustrate pollination on a flow chart I-Classify/identify/count/grow seeds I-Explain germination of seeds I-Demonstrate photosynthesis I-Label parts/functions of a flower	E-Explain the food chain/web I-Describe different habitats E-Explore the 4 requirements of photosynthesis I-Compare/contrast flowering/nonflowering things E-Name parts of a flower	I-Identify/describe/illustrate roles among producers, consumers, decomposers on a food web/food chain M-Discuss/draw/label food chains I-Describe different habitats I-Describe ecosystems
<i>Genetics</i>	I-Show that plants grow from other parts and explain the germination of seeds		I-Identify/describe heredity of organisms I-Examine cell and cell parts I-Discuss asexual and sexual reproduction (mitosis/meiosis)
<i>Systems</i>	I-Label skeletal system and major bones of the human body I-Explore the components of living systems	E-Identify parts and basic functions of various body systems I-Analyze circulatory system	E-Discuss/describe 9 body systems
<i>Classification</i>	I-Classify and identify different types of seeds	I-Group animals as invertebrates/vertebrates	I-Investigate levels of organization of organisms (cell, tissue, organs, organisms)
<i>Environment</i>	I-Illustrate causes of endangerment and extinction I-Discover how internal and external forces affect the Earth's surface	I-Describe adaptation	I-Explore/explain biological adaptations in a particular environment I-Investigate ways organisms adapt to their environment

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Physical Science			
<i>Scientific Process/ Technical Writing</i>	I-Predict what will happen in experiment I-Identify/compare differences among length, weight/mass, capacity/volume using English and metric measures E-Choose appropriate units of measure for length, weight, volume	E-Predict what will happen in experiment demonstrated I-Conduct simple experiments and write findings in simple sentence format	E-Explain steps in experiments E-Predict outcomes of experiments E-Use various simple measuring devices (metric and standard units)
<i>Motion</i>	E-Analyze changes caused by motion		I-Explore/measure/graph motion of objects I-Explore/measure effects of force on an object
<i>Energy</i>	I-Identify/demonstrate physical changes	E-Differentiate between solar, heat, light, sound I-Differentiate energy as potential or kinetic E-Demonstrate use of the sun as energy source E-Identify physical changes	E-Differentiate between kinetic and potential energy I-Explore circuits I-Design/construct simple/ compound machines I-Design/construct an electromagnet
Earth & Space Science			
<i>Scientific Process/ Technical Writing</i>	I-Predict what will happen in experiment E-Identify/compare differences among length, weight/mass, capacity/volume using English and metric measures E-Choose appropriate units of measure for length, weight, volume	E-Predict what will happen in experiment demonstrated I-Conduct simple experiments and write findings in simple sentence format	E-Explain steps in experiments E-Predict outcomes of experiments E-Use various simple measuring devices (metric and standard units)
<i>Space/ Weather</i>	I-Use various types of weather instruments I-Convert miles to feet and yards I-Locate/identify constellations I-Describe the nature of stars as distant suns E-Collect/graph weather data	I-Explain the apparent size of an object as dependent on distance from the observer E-Explore planets, sun, moon E-Describe motion of constellations I-Use a telescope I-Analyze/predict weather conditions I-Forecast weather I-Explore extreme weather conditions E-Use weather instruments I-Discover effects of external forces on Earth's surface	M-Understand concepts of rotation, revolution, gravity I-Illustrate tilt of Earth's axis and revolution around sun to create seasons I-Explore gravity and moon with relationship to tides (phases of moon) I-Describe layers of the atmosphere
<i>Earth History</i>	I-Illustrate the 3 major layers of the Earth I-Examine different types of rocks I-Identify fossils using charts and other resource materials I-Discuss places fossils can be found I-Differentiate between volcanoes/earthquakes	E-Examine rocks E-Examine landforms	E-Explore fossils I-Analyze processes that change Earth – weathering and erosion M-Name 3 types of rocks
<i>Cycles</i>	I-Label and illustration of the water cycle		E-Investigate water cycle
<i>Ecology</i>	I-Distinguish between harmful and helpful human actions on the environment		E-Examine how organisms affect composition of Earth (pollution)

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Content Area	3 rd Grade	4 th Grade	5 th Grade
	E- Investigate interactions of objects and organisms I- Identify major causes of endangerment and extinction I- Distinguish between harmful and helpful human actions on the environment I- Describe methods to prevent pollution of the environment		
Chemistry			
<i>Scientific Process/ Technical Writing</i>	I- Predict what will happen in experiment E- Identify/compare differences among length, weight/mass, capacity/volume using English and metric measures E- Choose appropriate units of measure for length, weight, volume	E- Predict what will happen in experiment demonstrated I- Conduct simple experiments and write findings in simple sentence format	E- Explain steps in experiments E- Predict outcomes of experiments E- Use various simple measuring devices (metric and standard units)
<i>Matter</i>	I- Identify/demonstrate chemical change I- Convert pints, quarts, gallons I- Analyze changes in matter I- Identify the three forms of matter	E- Demonstrate transformations of states of matter I- Define matter, space, mass, volume E- Identify chemical changes	E- Observe/explore chemical and physical changes and properties I- Discuss difference between mixtures and solutions I- Explore density, boiling and freezing points, solubility of a substance E- Explore/observe/discuss physical and chemical changes using everyday substances
<i>Elements</i>	I- Identify/demonstrate chemical change		I- Illustrate atoms and molecules I- Explore periodic table and elements

Content Area	6 th Grade	7 th Grade	8 th Grade
Life Science			
<i>Scientific Process/ Technical Writing</i>	E- Draw hypothesis using scientific method E- Predict what will happen in an experiment	I- Complete a science project using the scientific method I- Write lab reports using the scientific method I- Use a microscope	I- Complete a science project using the scientific method I- Write lab reports using the scientific method I- Use a microscope and other lab equipment
<i>Plants and Animals</i>	E- Compare/contrast roles among producers, consumers, decomposers in a food web E- Manipulate resources and other factors (living/non-living) that promote and limit growth of populations in an ecosystem	E- Understand photosynthesis, reactants and products E- Describe plant behavior in response to water, gravity and light I- Label plant and animal cells and understand organelles I- Understand cell transport and processes	

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<i>Genetics</i>	E-Differentiate between sexual and asexual reproduction I-Determine how traits are used to classify individual inherited patterns	I-Describe cell division I- Understand the function of DNA and its structure I-Complete Punnett Squares I-Comprehend Mendelian genetics	I-Compare genotype and phenotype E- Understand the function of DNA and its structure E-Differentiate between hybrid and purebred E-Understand stages of meiosis
<i>Systems</i>	E-Describe all body systems	E-Describe the digestive, respiratory, circulatory and excretory systems	E-Name/describe body systems and functions E-Describe the interaction between the endocrine and reproductive systems I-Understand immunity and diseases
<i>Classification</i>	I-Identify family E-Explore phylum in relation to kingdom	I-Discuss the classification system	
<i>Environment</i>	E-Compare/contrast patterns and interactions of ecosystems and biomes	E-Understand term ecosystem I-Discuss environmental problems E-Understand survival strategies and extinction	E-Describe environmental degradation including regulation and protection measures E-Compare aquatic and terrestrial ecosystems M-Understand the food web M-Understand small scale changes in ecosystems
Physical Science			
<i>Scientific Process/ Technical Writing</i>	E-Draw hypothesis using scientific method E-Predict what will happen in an experiment	I-Complete a science project using the scientific method I-Write lab reports using the scientific method I-Use a microscope	I-Complete a science project using the scientific method I-Write lab reports using the scientific method I-Use a microscope and other lab equipment
<i>Motion</i>	E-Measure/analyze/graph motion of objects E-Experiment/measure effect of force on an object	I-Understand Newton's Laws I-Define friction I-Graph SI units	I-Use the factor label method and SI units M-Apply Newton's Laws using simple machines E-Design/construct simple and complex machines I-Explore wave motion
<i>Energy</i>	E-Observe/manipulate energy as kinetic or potential E-Investigate forms of energy such as heat, sound, light and electricity E-Recognize sun as major source of energy	I-Describe forms of energy I-Define energy transfer	E-Explore energy transformations E-Take measurements of energy E-Compare mechanical and electromagnetic waves
Earth & Space Science			
<i>Scientific Process/ Technical Writing</i>	E-Draw hypothesis using scientific method E-Predict what will happen in an experiment	I-Complete a science project using the scientific method I-Write lab reports using the scientific method I-Use a microscope	I-Complete a science project using the scientific method I-Write lab reports using the scientific method I-Use a microscope and other lab equipment
<i>Space/ Weather</i>	I-Investigate the Earth in relation to the solar system	M-Illustrate eclipses E-Understand gravity M-Label lunar phases M-Name/describe the seasons E-Describe weather forces and cloud formations	I-Explore speed of light and distance M-Describe the life cycle of a star E-Compare galaxies and components E-Use weather maps to forecast

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<i>Earth History</i>	E-Model the structure of the earth system past and present	M-Identify minerals I-Define plate tectonics and earth movements E- Describe weathering and erosion I-Describe Mississippi landforms and fossils	I-Explore the geological timetable E-Explore fossils I-Describe methods and tools for dating E-Label Mississippi geological areas
<i>Cycles</i>	I-Explore rock cycle E-Explore water cycle	I-Explore the carbon dioxide, oxygen and nitrogen cycles	E-Describe the carbon dioxide, oxygen and nitrogen cycles
<i>Ecology</i>	I-Explore importance of taking care of the environment		
Chemistry			
<i>Scientific Process/ Technical Writing</i>	E-Draw hypothesis using scientific method E-Predict what will happen in an experiment	I-Complete a science project using the scientific method I-Write lab reports using the scientific method I-Use a microscope	I-Complete a science project using the scientific method I-Write lab reports using the scientific method I-Use a microscope and other lab equipment
<i>Matter</i>	I-Investigate structure, properties, changes of matter E-Name physical/chemical properties	I-Compare chemical/physical properties E-Explore density, boiling point, melting point, Solubility I-Understands density as it relates to mass and volume	M-Understand experimental determination of physical and chemical properties I-Differentiate between acids and bases E-Describe density
<i>Elements</i>	E-Differentiate between common elements that combine chemically to produce compounds	I-Compare metals, nonmetals, metalloids I-Understand chemical compounds	E-Use the periodic table to predict reactions E-Distinguish between atoms, molecules, ions

Content Area	BIOLOGY I	PHYSICAL SCIENCE	SCIENCE SKILLS AND REASONING
Life Science			
<i>Scientific Process/ Technical Writing</i>	E-Complete experiments/project using scientific method E- Write lab reports E-Read and produce technical writings	Use Lab Report and write statement of the problem, hypothesis, method, results with graphs, conclusion	M-Read and produce technical writings
<i>Plants and Animals</i>	M-Understand photosynthesis and cellular respiration M-Identify characteristics of living things M-Differentiate between eukaryote and prokaryote M-Describe organelle functions M-Understand cell transport mechanisms E-Describe biological macromolecules		E-Distinguish between plant and animal eukaryotic cells E-Investigate cell structures, functions, and methods of reproduction E-Compare and contrast the basic processes of photosynthesis and cellular respiration E-Identify characteristics of kingdoms including monerans, protists, fungi, plants and animals E-Analyze how organisms are classified into hierarchy of groups and subgroups based on similarities and differences

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<i>Genetics</i>	M-Describe cell reproduction M-Illustrate meiosis M-Investigate DNA structure and replication M-Explore RNA, transcription, translation E-Describe DNA changes and technology M-Understand Mendelian genetics E-Determine inheritance patterns experimentally		E-Apply the principles of genetics to solve simple inheritance problems
<i>Systems</i>			
<i>Classification</i>	E-Describe the classification system I-Understand the structure and function of viruses and bacteria		E-Identify characteristics of kingdoms including monerans, protists, fungi, plants and animals E-Analyze how organisms are classified into hierarchy of groups and subgroups based on similarities and differences
<i>Environment</i>	M-Describe energy transfer in ecosystems E-Inspect interactions among organisms E-Compare major biomes M-Investigate nitrogen, oxygen and carbon dioxide cycles		
Physical Science			
<i>Scientific Process/ Technical Writing</i>		Use Lab Report and write statement of the problem, hypothesis, method, results with graphs, conclusion	Use Lab Report and write statement of the problem, hypothesis, method, results with graphs, conclusion
<i>Motion</i>		E-Explain the basic principles of Newton's Three Laws of Motion I-Calculate average speed I-Determine net force and resulting motion of objects I-Define fundamental forces of nature	M-Show how motion involves a frame of reference I-Differentiate between magnitude, scalar, and vector quantities I-Identify the importance of forces such as friction, gravity, centripetal and centrifugal E-Define speed, velocity, acceleration E-Explain physical dynamics in terms of Newton's Three Laws of Motion
<i>Energy</i>		M-Differentiate between kinetic and potential energy E-Understand the Law of Conservation of Energy I-Define entropy E-Define heat and temperature and their effect on particle motion I-Discuss general properties and characteristics of waves I-Explain the continuum of electromagnetic spectrum I-Recognize the interrelationships of electricity and magnetism	I-Identify terminology associated with work, power, and energy E-Classify the forms of energy I-Examine the relationship among work, power and energy E-Investigate electricity, circuit components and magnetism

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<i>Earth & Space Science</i>			
<i>Scientific Process/ Technical Writing</i>			
<i>Space/ Weather</i>			
<i>Earth History</i>			
<i>Cycles</i>			
<i>Ecology</i>			
Chemistry			
<i>Scientific Process/ Technical Writing</i>	Write up experiments using scientific method	Use Lab Report and write statement of the problem, hypothesis, method, results with graphs, conclusion	Use Lab Report and write statement of the problem, hypothesis, method, results with graphs, conclusion
<i>Matter</i>		I-Define and locate the basic components of an atom I-Compare and contrast atoms, ions, isotopes I-Write chemical formulas for compounds I-Distinguish between acids, bases and salts M-Investigate physical and chemical changes in matter	E-Compare the structure, properties and functions of carbohydrates, lipids, proteins, and nucleic acids in living organisms E-Analyze the subatomic, atomic, and molecular structure of matter E-Investigate chemical compounds and the reactions they can undergo I-Classify given samples of matter as an elements, compound, or mixture M-Differentiate between chemical and physical change properties E-Investigate acid/base reactions
<i>Elements</i>	E-Differentiate between covalent and ionic bonds I-List characteristics of water M-Use pH scale E-Discuss function of enzymes E-Describe ATP structure and function	I-Use the periodic table to determine atomic composition of elements and periodic patterns I-Differentiate between elements, compounds, solutions and mixtures	E-Interpret the periodic table in terms of atomic number, groups and families E-Identify the chemical symbols of elements