Correlations of Reading Essentials in Science to NC Standard Course of Study Biology I Standards

Competency Goal 1: The learner will develop abilities necessary to do and understand scientific inquiry.	
1.01 Identify biological questions and problems that can be answered through scientific investigations.	Multiple Titles
1.02 Design and conduct scientific investigations to answer biological questions.	Multiple Titles
1.03 Formulate and revise scientific explanations and models of biological phenomena using logic and evidence to: • Explain observations. • Make inferences and predictions. • Explain the relationship between evidence and explanations	Multiple Titles
1.04 Apply safety procedures in the laboratory and in field studies: • Recognize and avoid potential hazards. • Safely manipulate materials and equipment needed for scientific investigations.	N/A
1.05 Analyze reports of scientific investigations from an informed, scientifically literate viewpoint including considerations of: • Appropriate sample. • Adequacy of experimental controls. • Replication of findings. • Alternative interpretations of the data.	Multiple Titles

Competency Goal 2: The learner will develop an understanding of the physical, chemical and cellular basis of life.	
2.01 Compare and contrast the structure and functions of the following organic molecules: • Carbohydrates. • Proteins. • Lipids. • Nucleic acids.	*Atoms, Molecules, and Compounds* *Cells* *Genetics*
2.02 Investigate and describe the structure and functions of cells including: • Cell organelles. • Cell specialization. • Communication among cells within an organism.	*Cells* *Cell Processes*
2.03 Investigate and analyze the cell as a living system including: • Maintenance of homeostasis. • Movement of materials into and out of cells. • Energy use and release in biochemical reactions.	*Cells* *Cell Processes*
2.04 Investigate and describe the structure and function of enzymes and explain their importance in biological systems.	*Cell Processes* *The Immune System*
2.05 Investigate and analyze the bioenergetic reactions: • Aerobic Respiration. • Anaerobic Respiration. • Photosynthesis.	*Chemical Reactions* *How Plants Grow*

Competency Goal 3: The learner will develop an understanding of the continuity of life and the changes of organisms over time.	
3.01 Analyze the molecular basis of heredity including: • DNA replication. • Protein synthesis (transcription, translation). • Gene regulation.	*Heredity* *Genetics*
3.02 Compare and contrast the characteristics of asexual and sexual reproduction.	*Life Cycles of Plants and Animals*
3.03 Interpret and predict patterns of inheritance. • Dominant, recessive and intermediate traits. • Multiple alleles. • Polygenic inheritance. • Sex-linked traits. • Independent assortment. • Test cross. • Pedigrees. • Punnett squares.	*Heredity* *Genetics*
3.04 Assess the impact of advances in genomics on individuals and society. • Human genome project. • Applications of biotechnology.	????
3.05 Examine the development of the theory of evolution by natural selection including: • Development of the theory. • The origin and history of life. • Fossil and biochemical evidence. • Mechanisms of evolution. • Applications (pesticide and antibiotic resistance).	*Adaptation and Survival* *Staying Alive* *Populations and Ecosystems*

Competency Goal 4: The learner will develop an understanding of the unity and diversity of life.	
4.01 Analyze the classification of organisms according to their evolutionary relationships. • The historical development and changing nature of classification systems. • Similarities and differences between eukaryotic and prokaryotic organisms. • Similarities and differences among the eukaryotic kingdoms: Protists, Fungi, Plants, Animals. • Classify organisms using keys.	*Classifying Plants and Animals* *Protists and Fungi* *How Plants Grow*
4.02 Analyze the processes by which organisms representative of the following groups accomplish essential life functions including: • Unicellular protists, annelid worms, insects, amphibians, mammals, non vascular plants, gymnosperms and angiosperms. • Transport, excretion, respiration, regulation, nutrition, synthesis, reproduction, and growth and development.	*Protists and Fungi* *Cnidarians and Worms* *Arthropods* *Human Reproduction, Growth, and Development*
4.03 Assess, describe and explain adaptations affecting survival and reproductive success. • Structural adaptations in plants and animals (form to function). • Disease-causing viruses and microorganisms. • Co-evolution.	*Staying Alive* *Bacteria and Viruses* *Adaptation and Survival* *Habitat Destruction* *Populations and Ecosystems*
4.04 Analyze and explain the interactive role of internal and external factors in health and disease: • Genetics. • Immune response. • Nutrition. • Parasites. • Toxins.	*The Immune system* *Tissues, Organs, and Systems* *Bacteria and Viruses* *Disease Prevention* *Nutrition* *Keeping our Food and Water Safe*
4.05 Analyze the broad patterns of animal behavior as adaptations to the environment. • Innate behavior. • Learned behavior. • Social behavior.	*Adaptations and Survival* *Staying Alive*

Competency Goal 5: The learner will develop an understanding of the ecological relationships among organisms.	
5.01 Investigate and analyze the interrelationships among organisms, populations, communities, and ecosystems. • Techniques of field ecology. • Abiotic and biotic factors. • Carrying capacity.	*Populations and Ecosystems*
5.02 Analyze the flow of energy and the cycling of matter in the ecosystem • Relationship of the carbon cycle to photosynthesis and respiration. • Trophic levels - direction and efficiency of energy transfer.	*Food Chains and Webs* *Life Cycles of Plants and Animals*
5.03 Assess human population and its impact on local ecosystems and global environments: • Historic and potential changes in population. • Factors associated with those changes. • Climate change. • Resource use. • Sustainable practices/stewardship.	*Consumption and Waste* *Energy Sources* *Global Warming* *Habitat Destruction*