

**SCIENCE MS COLLEGE AND CAREER READINESS STANDARDS  
SCOTT COUNTY SCHOOL DISTRICT  
7<sup>TH</sup> GRADE**

1 <sup>st</sup> Nine Weeks August 7 – October 5	2 <sup>nd</sup> Nine Weeks October 8 – December 21	3 <sup>rd</sup> Nine Weeks January 7 – March 8	4 <sup>th</sup> Nine Weeks March 18 – May 23
<p><b>Science and Engineering Practices</b> Scientific Methods Tools of Science Graphing Experimental Design</p> <p><b>Safety</b></p> <p><b>Norms of Scientific Investigations</b></p> <p><b><u>Properties of Matter</u></b> P.7.5A.1 – physical properties P.7.5A.2 – chemical properties P.7.5A.3 – compare and contrast physical and chemical properties</p> <p><b><u>Effects of Temperature and Pressure on Physical State, Molecular Motion and Interactions</u></b> P.7.5b.1 – effects of temperature and pressure on motions of molecules relative to polymers P.7.5B.2 – relationship between pressure, volume, density, and temperature of a gas P.7.5B.3 – how heat and/or pressure affect density</p>	<p><b><u>Atomic Structure/Periodic Table</u></b> P.7.5C.1 – atomic structure P.7.5C.2 – discoveries leading to current atomic model P.7.5C.3 – properties of elements, atoms, molecules, compounds, solutions, mixtures P.7.5C.4 – use the periodic table to predict properties and interactions of elements P.7.5D.5 – chemical formulas P.7.5C.6 – bonding</p> <p><b><u>Chemical Formulas/Chemical Reactions</u></b> P.7.5D.1 – chemical reactions P.7.5D.2 – scientific investigations on chemical reactions P.7.5D.3 – acids and bases P.7.5D.4 – energy in bonds</p> <p><b><u>Law of Conservation of Mass/Balancing Equations</u></b> P.7.5E.1 – Law of Conservation of Mass in closed systems; Lavoisier’s discovery P.7.5E.2 – Open Systems P.7.5E.3 – balancing equations</p>	<p><b><u>Photosynthesis/Cellular Respiration</u></b> L.7.3.2. and L.7.3.3 – photosynthesis and cellular respiration</p> <p><b><u>Earth’s Tilt/Seasons</u></b> E.7.9C.1 – model Earth’s Tilt E.7.9C.2 – Seasons</p> <p><b><u>Weather/Climate/Models/Maps</u></b> E.7.9A.1 – weather vs climate E.7.9A.2 – movement of water and air masses E.7.9A.3 – atmospheric data and weather maps E.7.9A.4 – climate E.7.9A.5 – Solar energy, convection and weather patterns E.7.9A.6 – air masses, pressure systems and frontal boundaries E.7.9A.7 – topographic maps to predict weather patterns</p> <p><b><u>Abiotic Cycles</u></b> L.7.3.1 – cycling of water, oxygen, carbon and nitrogen through ecosystems</p>	<p><b><u>Ecology and Interdependence</u></b> L.7.3.4 – explain how disruptions affect biodiversity</p> <p>L.7.3.5 – design solutions for sustaining healthy ecosystems</p> <p><b><u>The relationship between natural phenomena, human activity and global climate change</u></b> E.7.9B.1 – Causes and effects of climate change E.7.9B.2 – Interpret data about the relationship between carbon dioxide and the presence of greenhouse gases E.7.9B.3 – natural and man-made causes of climates change</p>

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<p><b>Science and Engineering Practices</b> Scientific Methods Tools of Science Organizing Data Experimental Data Safety Norms of Scientific Investigations</p> <p><b>Reproduction and Heredity</b> L.8.2A.1 (genes, chromosomes, DNA; heredity) L.8.2A.2 (mitosis/asexual reproduction) L.8.2A.3 (meiosis) L.8.2A.4 (sexual reproduction/genetic variation) L.8.2A.5 (compare and contrast asexual and sexual reproduction) L.8.2B.1 (inherited vs. acquired traits) L.8.2B.2 (Mendelian genetics; basic principles of heredity) L.8.2B.3 (Punnett squares) L.8.2B.4 (debate the ethics of artificial selection) L.8.2C.1 (Chromosomes, genes, protein production, mutations, traits) L.8.2C.2 (arguments/claims of pros and cons of genetic mutations)</p>	<p><b>Natural Selection</b> L.8.4A.1 (Darwin; principles of natural selection) L.8.4A.2 (natural selection) L.8.4B.1 (how natural selection may increase or decrease specific traits in a population over time) L.8.4B.2 (construct scientific explanation on how natural selection may increase or decrease specific traits in a population over time)</p> <p><b>Evolution</b> L.8.4B.3 (speciation) L.8.4B.4 (comparing embryological, homologous and analogous structures to identify relationships)</p> <p><b>Earth’s Structure and History</b> E.8.7.2 (rock cycle as it relates to the fossil record) E.8.7.1 (timeline of Earth’s History using fossil and rocks) E.8.7.3 (fossil; diversity of life past and present) E.8.7.4 (process of evolution-gradual and/or punctuated)</p>	<p><b>Earth’s Systems and Cycles</b> E.8.9A.1 (cycling of matter) E.8.9A.2 (theories of plate tectonics) E.8.9A.3 (fossil/rock evidence of plate tectonics) E.8.9A.4(Constructive/destructive process) E.8.9A.5 (constructive/divergent plate movements)</p> <p><b>Earth’s Systems and Cycles</b> E.8.9A.6 (formation of soils) E.8.9A.7(surface and groundwater) E.8.9B.1(natural hazards) E.8.9B.2 (predicting natural hazards) E.8.9B.3(design safeguards against a natural hazard)</p> <p><b>Earth’s Resource</b> E.8.10.1 (renewable and nonrenewable resources) E.8.10.2 (human impacts on the environment) E.8.10.3 (debate advantages and disadvantages of technological advancements in renewable energy) E.8.10.4 (design a system to capture and distribute thermal energy)</p>	<p><b>Light Waves</b> P.8.6.1 (collect data; construct explanations) P.8.6.3 (conduct simple investigations) P.8.6.6 (explain relationships between behavior of light waves in various materials)</p> <p><b>Sound</b> P.8.6.1 (collect data; construct explanations) P.8.6.4 (investigate sound as a wave phenomenon) P.8.6.5 (investigate the behavior of sound)</p> <p><b>Waves</b> P.8.6.2 (capturing and converting wave energy into electrical energy) P.8.6.7 (wave technology) P.8.6.8 (compare and contrast behavior of sound and light waves)</p>

**SCIENCE MS COLLEGE AND CAREER READINESS STANDARDS  
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BIOLOGY I**

<b>1<sup>st</sup> Nine Weeks August 7 – October 5</b>	<b>2<sup>nd</sup> Nine Weeks October 8 – December 21</b>	<b>3<sup>rd</sup> Nine Weeks January 7 – March 8</b>	<b>4<sup>th</sup> Nine Weeks March 18 – May 23</b>
<p>Science and Engineering Practices Scientific Method Organizing and Analyzing Data Experimental Design <b>Safety</b> <b>Norms of Scientific Investigations</b></p> <p><b><u>Characteristics of Life/Cell Theory</u></b>            BIO.1A.1 – living vs nonliving            BIO.1A.2 – cell theory; scientists            BIO.1A.3 – levels of organizations            BIO.1B.1 – macromolecules            BIO.1B.2 – enzymes            BIO.1A.4 – viruses            BIO.1C.3 – comparing viruses to cells</p> <p><b><u>Cellular Organelles</u></b>            BIO.1C.1 – cell organelles            BIO.1C.2 – prokaryotic/eukaryotic cells; plant/animal/fungal cells</p> <p><b><u>Cellular Transport</u></b>            BIO.1D.1 – cell membrane; active and passive transport            BIO.1D.2 – regulating cellular transport; homeostasis</p>	<p><b><u>Energy Transfer</u></b>            BIO.2.1 – ATP/ADP            BIO.2.2 – photosynthesis            BIO.2.3 – cellular respiration            BIO.2.4 – aerobic vs anaerobic            BIO.2.5 – enrichment – variables that affect anaerobic respiration            BIO.2.6 – enrichment-fermentation</p> <p><b><u>Cell Growth and Division</u></b>            BIO.1E.1 – mitosis            BIO.1E.2 – cell cycle; replication; cancer            BIO.1E.3 – asexual reproduction            BIO.1E.4 – enrichment – stem cells            BIO.3A.1 – meiosis            BIO.3A.2 – comparing mitosis/meiosis            BIO.3A.3 – chromosomal abnormalities</p> <p><b><u>DNA and Protein Synthesis</u></b>            BIO.3C.1 – DNA/genes/chromosomes            BIO.3C.2 – protein synthesis            BIO.3C.3 nucleotide sequence; mutations            BIO.3C.4 – DNA technology            BIO.3C.5 – enrichment biotechnology</p>	<p><b><u>Genetics</u></b>            BIO.3B.1 – Mendel’s Law of Dominance/Punnett Squares            BIO.3B.2 – Mendel’s Law of Independent Assortment/Punnett Squares            BIO.3B.4 – non-Mendelian inheritance patterns            BIO.3B.4 – Analyze and interpret data (pedigrees, family/population studies)</p> <p><b><u>Ecology</u></b>            BIO.5.1 – levels of ecological hierarchy            BIO.5.2 – abiotic/biotic factors; cycling of matter            BIO.5.3 – effects of greenhouse gases            BIO.5.4. – flow of energy/food chains/food webs/energy pyramids            BIO.5.5 – ecological relationships            BIO.5.6 – population studies/limiting factors/carrying capacity            BIO.5.7 – ecological succession            BIO.5.8 enrichment – design solutions to address ecological conditions            BIO.5.9 enrichment -biomimicry</p>	<p><b><u>Adaptations and Evolutions</u></b>            BIO.4.1 – organic/chemical evolution            BIO.4.4 – natural selection            BIO.4.7 (enrichment) how various disease agents can influence natural selection            BIO.4.5 – Darwin’s theory of evolution by natural selection            BIO.4.6 – mechanisms of speciation            BIO.4.2 – evidence for biological evolution (homologous structures, embryological similarities, fossil record, molecular/biochemical similarities, biogeographical distribution)            BIO.4.3 - cladograms</p>