

MONTH	CONTENT	NYS STANDARD/KEY IDEA/PERFORMANCE INDICATOR	LAB THEMES	SKILLS	ASSESSMENTS
<b>September</b>	Scientific Method	Standard 1 KI-1-3 PI- 1-4	Lab Safety  Measurements  Scientific Method Prepare wet mounts/ Observe with microscope  Measure in metric units  Design experiment to test hypothesis	Explain what the goal of science is  List and explain the parts of the scientific method  Define and explain these scientific process skills: Inquiry Reasoning Inferring Observing Graphing <ul style="list-style-type: none"> <li>• Scale/plot points on data tables/graphs</li> <li>• Interpret graphs/charts</li> </ul> Describe the measurement system most scientists use  Identify independent, dependent, and constant variables in an experiment  Define and differentiate between experimental and control groups in a controlled experiment	Written assessment which encompasses problem solving, comprehension, synthesis and evaluation of performance.  Evaluation of lab write ups

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<b>September/October</b>	<p>Characteristics of living things and life processes</p> <p>Enzymes Acids/bases Molecules</p>	<p>Standard 4 KI-1 PI-1.2a – j</p>	<p>Chemistry</p> <ul style="list-style-type: none"> <li>• Analysis of food/nutrients using chemical indicators</li> </ul> <p>Acids/bases: pH</p> <p>Enzymes</p> <ul style="list-style-type: none"> <li>• Measuring energy from enzymes</li> <li>• Catalase</li> </ul> <p>Building Molecules</p>	<p>Identify essential life functions</p> <p>Define homeostasis</p> <p>Identify reactants and products in a chemical reaction</p> <p>Identify the three parts of an atom</p> <p>Explain what chemical compounds are</p> <p>Explain the difference between ionic and covalent bonds</p> <p>Explain how a hydrogen bond forms between oppositely charged particles (like between water molecules and DNA)</p>	<p>Written assessment which encompasses problem solving, comprehension, synthesis and evaluation of performance.</p> <p>Evaluation of lab write ups</p>

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<b>September/October cont.</b>				<p>Identify the role of energy in chemical reactions</p> <p>List, give examples, and describe the functions of the four organic macromolecules: Carbs, lipids, proteins, nucleic acids</p> <p>Understand/identify differences between acids and bases</p> <p>Use different chemical indicators to find pH</p> <p>Define catalyst and enzyme</p> <p>Explain the lock and key hypothesis as it pertains to enzymes and substrates</p>	

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<b>September/October cont.</b>				<p>Explain how enzymes speed up chemical reactions by lowering the activation energy needed to start a reaction</p> <p>Identify the active site of an enzyme substrate complex</p>	

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<b>October</b>	Cells – Theory Structure Function Transport	Standard 4 KI-1 PI- 1.2a – b 1.2f – j 1.3a	Microscope Slides/Wet mounts  Cell analysis  Osmosis lab  *Diffusion <ul style="list-style-type: none"> <li>• Test with chemical indicators for starch/glucose</li> </ul> Measurement with microscope	Identify the parts and function of a microscope  Distinguish between plant and animal cells, cell parts  Define, differentiate, and give examples of prokaryote and eukaryote cells  List the three parts of the cell theory  Define the term organelle  Name the basic cell structures  Describe the functions of the major cell organelles  Explain Similarities/differences between single and multi-cellular organisms  Identify the organization levels of multicellular organisms  Explain the process of osmosis, diffusion, facilitated diffusion, and active transport	Written assessment which encompasses problem solving, comprehension, synthesis and evaluation of performance.  Evaluation of lab write ups

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<b>October/November</b>	Photosynthesis Cell Respiration	Standard 4 KI – 5 PI – 5.1 a-g	Photosynthesis <ul style="list-style-type: none"> <li>• Paper over leaf</li> <li>• Chromatography</li> </ul> Cell Respiration <ul style="list-style-type: none"> <li>• Titration</li> </ul> Carbon Dioxide analysis	Explain where plants get the energy they need to produce food Describe the role of ATP in cellular activities State the overall equation for photosynthesis and cellular respiration Identify the different steps involved in photosynthesis Describe the structure of a chloroplast Identify factors that affect the rate at which photosynthesis occurs Explain what cellular respiration is Describe what happens during the process of glycolysis Define aerobic and anaerobic Name two types of fermentation Identify and describe the three pathways the human body uses to release energy Compare photosynthesis and cellular respiration Calculate the total amount of ATP energy from cellular respiration	Written assessment which encompasses problem solving, comprehension, synthesis and evaluation of performance.  Evaluation of lab write ups.

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<b>November/December</b>	Cell growth/ Cell Division		Mitosis/Meiosis <ul style="list-style-type: none"> <li>• Microscope slides</li> <li>• Onion/root tip Mitosis</li> <li>• Modeling</li> </ul>	Explain why cells need to divide  Name the main events of the cell cycle  Describe the four phases of mitosis  Define mitosis  Describe the events of meiosis  Identify the relationship between chromosome number of body cells and chromosome number of sex cells  Contrast mitosis and meiosis	Written assessment which encompasses problem solving, comprehension, synthesis and evaluation of performance.  Evaluation of lab write ups.

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<b>January</b>	Nervous system Skeletal system	4.1.2a-4.1.2e  4.5.3a 4.4.1h	Senses  Reflexes  Taste/Smell  Sight	Describe how the human body is organized  Explain homeostasis  Identify the structures and function of the nervous system  Describe how a nerve impulse is transmitted  Identify the parts of the central nervous system  Name the different types of sensory receptors Identify the five senses Name the different classes of drugs that affect the body  Identify feedback mechanisms  Understand sensory pathways  State the function of the skeletal system  Explain how bones develop Identify different types of joints	Written assessment which encompasses problem solving, comprehension, synthesis and evaluation of performance.  Evaluation of lab write ups.

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<p><b>January/February</b></p>	<p>Muscular system Integumentary system</p>		<p>Reflexes Cardio lab Flexibility</p>	<p>Describe the different types of muscle</p> <p>Explain how muscles contract</p> <p>Explain how muscles and bones interact</p> <p>State the functions and structures of the integumentary system</p> <p>Describe the structure of hair and nails</p>	

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<b>February/March</b>	Circulatory/ Respiratory Systems	4.5.2h 4.5.2j 4.5.3b	Heart Rate  Pulse  Blood Pressure  Lung Capacity	<p>Identify the structures and functions of the human circulatory system Name three types of blood vessels Describe blood pressure Explain the function of the heart muscle Describe the different functions of blood Explain the functions of RBC's, WBC's, and platelets Describe the role of the lymphatic system Describe respiration</p> <p>Identify structures of the respiratory system</p> <p>Define gas exchange</p> <p>Explain how smoking affects the respiratory system</p> <p>Discuss causes and symptoms of several common lung diseases</p> <p>Explain how the respiratory and circulatory work together to maintain homeostasis</p>	<p>Written assessment which encompasses problem solving, comprehension, synthesis and evaluation of performance.</p> <p>Evaluation of lab write ups</p>

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<b>March</b>	Digestive/Excretory /Endocrine Systems	4.5.1c 4.1.2d 4.5.2a 4.5.3b	Making connections*  Food analysis  Urine specific gravity	<p>Explain how food provides energy</p> <p>Describe the nutrients your body needs</p> <p>Explain why water is an important nutrient</p> <p>Identify the organs of the digestive system</p> <p>Describe the function of the digestive system and each organ</p> <p>Name the organs of the excretory system</p> <p>Define metabolic waste</p> <p>Explain how the kidneys maintain homeostasis</p>	<p>Written assessment which encompasses problem solving, comprehension, synthesis and evaluation of performance.</p> <p>Evaluation of lab write ups.</p>

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<b>April</b>	Immune System	Standard 4 KI 5 PI 5.2a –j 5.3a-b	Antigen/antibody reactions	<p>Identify disease as failure to maintain homeostasis</p> <p>Identify the causes of disease</p> <p>Explain how diseases can be transmitted</p> <p>Describe how antibiotics fight infection</p> <p>Discuss the difference between bacteria and viruses</p> <p>Identify the structures of the immune system</p> <p>Explain acquired and natural immunity</p> <p>Explain what happens when the immune system fails to work</p> <p>Describe how HIV affects the human body</p> <p>Define vaccine, antibiotics</p>	<p>Written assessment which encompasses problem solving, comprehension, synthesis and evaluation of performance.</p> <p>Evaluation of lab write ups.</p> <p>Research cause/symptoms/treatment of various diseases</p>

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<b>April/May</b>	Endocrine system Reproductive system	Standard 4 KI 4 PI a-h	Fetal Development	<p>State the function of the endocrine system</p> <p>Describe hormones and glands</p> <p>List the names/functions of common glands and hormones</p> <p>Explain how the endocrine system maintains homeostasis</p> <p>Describe sexual development</p> <p>Explain the role of the male and female reproductive systems</p> <p>Describe the major phases of the female menstrual cycle</p> <p>Describe fertilization</p> <p>Define zygote, embryo, fetus</p>	<p>Written assessment which encompasses problem solving, comprehension, synthesis and evaluation of performance.</p> <p>Evaluation of lab write ups. Research specific animal reproductive information</p>

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<b>May/June</b>	Intro Genetics		Karyotype Probability Punnett Squares Inherited traits	Summarize Mendel's rules of inheritance Explain the principle of dominance Explain how the principles of probability can be used to solve genetics problems Explain how to use a Punnett Square Explain heredity	Written assessment which encompasses problem solving, comprehension, synthesis and evaluation of performance. Evaluation of lab write ups.

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<b>June</b>	Review			Explain how different cell structures and body structures are coordinated to work together to maintain life	Practice Regents Exams