

Northampton Area High School
 “Year at a Glance” Physical Science



NORTHAMPTON AREA
 SCHOOL DISTRICT
Learn, Listen, and Lead

Common Units of Study with Sample Lesson Topics	Estimated Time	Big Idea (s)	PA Academic Standard(s)	DATE Completed /INITIALS
Unit 1: Methods and Measurements* <ul style="list-style-type: none"> • Observation, Inference • Methods of problem solving • Hypothesis, theory, scientific law • Variables • Metric conversions, significant digits 	2 weeks <i>*concepts integrated throughout course</i>	How do you conduct a proper scientific experiment?	3.2.10.B6 3.2.7.B7	
Unit 2: Forces <ul style="list-style-type: none"> • Mass, weight • Speed • Force, velocity, acceleration/deceleration, friction 	3 weeks	How do the Laws of Newton apply to the world around us?	3.2.10.B1.	
Unit 3: Newton’s Laws of Motion <ul style="list-style-type: none"> • Laws of motion • Acceleration of gravity • Centripetal force • Projectiles 	3 weeks	How do the Laws of Newton apply to the world around us?	3.2.10.B1.	
Unit 4: Energy and Work <ul style="list-style-type: none"> • Types of energy • Work calculations • Simple machines 	3 weeks	What is the relationship between energy, work, and power?	3.2.10.B2.	
Unit 5: Waves, Light, & Color <ul style="list-style-type: none"> • Properties of Waves • Refraction/Reflection** • Electromagnetic spectrum** • Color** 	2 weeks	How does energy affect the world around you?	3.2.10.B5 Biology Keystone Anchor: BIO.A.3 Bioenergetics	
Unit 6: Properties of Matter <ul style="list-style-type: none"> • Physical and chemical properties • Four states of matter 	5 weeks	What makes up matter and how is it affected by temperature?	3.2.C.10.A1 3.2.10.A3. 3.2.C.A3	

<ul style="list-style-type: none"> • Kinetic theory – state changes, characteristics of solids, liquids, gas • Classification of matter, mixtures • Introduction to solutions 				
Unit 7: Elements and the Periodic Table <ul style="list-style-type: none"> • Atoms and atomic structure** • Introduction to scale and the levels of biological organization** • Protons, neutrons and electrons** • Elements • Periodic table trends/patterns • Ions** 	4 weeks	What is the structure of an atom and how does it affect the properties of matter?	3.2.10.A1 3.2.10.A2 Biology Keystone Anchor: BIO.A.1 Basic Biological Principles	
Unit 8: Compounds and Bonding <ul style="list-style-type: none"> • Ionic and covalent bonds** • Polymers, monomers** • Bonding theories • Formulas and naming compounds 	4 weeks	What is the structure of an atom and how does it affect the properties of matter?	3.2.10.A2 Biology Keystone Anchor: BIO.A.2 The Chemical Basis for Life	
Unit 9: Solutions <ul style="list-style-type: none"> • Solvents, solutes** • Factors that affect dissolving rates • Solution concentration** • Saturated, unsaturated, supersaturated solutions** • pH, acids and bases** • Properties of water, hydrogen bonding** • Diffusion, osmosis** 	4 weeks	What makes up a solution and how does one type of matter dissolve into another?	3.2.10.A1 Biology Keystone Anchor: BIO.A.2 The Chemical Basis for Life	
Unit 10: Chemical Reactions <ul style="list-style-type: none"> • Interpret chemical equations and formulas** • Products and reactants** • Biochemical reactions (photosynthesis and cellular respiration)** • Laws of conservation of mass, energy 	4 weeks	Why do chemical reactions occur and how do they operate?	3.2.10.A2 3.2.10.A4 3.2.C.A4 Biology Keystone Anchor: BIO.A.3 Bioenergetics	