Danville Area School District
Course Overview and Scope and Sequence

Course Title: Physical Science
Content Area: Science
Grade Level: 8th Grade
Date Developed: Summer 2023 using the PA Curriculum Framework and STEELS Standards

COURSE OVERVIEW: Physical Science focuses on the relationship between matter and energy. Throughout the course students will study chemical and physical properties of matter, forces and motion, and how energy interacts with the natural world. Students will also explore how physical science applies to their everyday life.
ANCHOR STANDARDS: 1. Structure and Properties of Matter 2. Chemical Reactions 3. Forces and Motion 4. Types of Interactions 5. Definitions of Energy 6. Conservation of Energy and Energy Transfer 7. Relationship Between Energy and Energy Forces 8. Wave Properties 9. Electromagnetic Radiation 10. Information Technologies and Instrumentation
KEY COURSE TEXT AND MATERIALS: Teacher Created Materials, Labs and Supplies
KEY ASSESSMENTS: Diagnostic: CDT, 8th Grade PSSA Formative: Labs and activities, simulations and model construction, Gizmo, bell ringers, exit tickets, CER and class discussions

Summative: Projects, Unit Test

SCOPE AND SEQUENCE					
Unit	PRIORITY STANDARDS	SUPPORTING STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Structure and Properties of Matter	3.2.6-8.A Develop Models to describe the atomic composition of simple molecules and extended structures 3.2.6-8.B Develop a model that predicts and describes changes in the particle motion, temperature and state of a pure substance when thermal energy is removed.	PS1.A PS3.A 3.2.5.A 3.2.5.B 3.2.5.C ELA: CC.3.5.6-8.G Math: MP.2 MP.4 CC.2.1.6.D.1 CC.2.2.8.B.1 CC.2.1.6.E.4	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	Content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom.	6 weeks
Chemical Reactions	3.2.6-8.C Gather and make sense of information to describe how synthetic materials come from natural resources and	PS1.A PS1.B ETS1.B ETS1.C 3.2.5.D 3.2.5.E	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	Content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom.	9 Weeks

	impact society. 3.2.6-8.D Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. 3.2.6-8.E Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved. 3.2.6-8.F Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.	ELA: CC.3.5.6-8.A CC.3.5.6-8.C CC.3.6.6-8.G CC.3.5.6-8.G CC.3.6.6-8.F Math: CC.2.4.6.B.1 CC.2.4.7.B.3 CC.2.4.8.B.1 CC.2.4.8.B.2 CC.2.1.6.D.1 MP.2 MP.4			
Conservation of Energy and Energy Transfer	3.2.6-8.M Apply scientific principles to design,	PS3.A PS3.B	Interactive Notebook, CER, Response Sheet,	Content is teacher created. In addition lab/project supplies,	4 Weeks

	construct, and test a device that either minimizes or maximizes thermal energy transfer. 3.2.6-8.N Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample. 3.2.6-8.O Construct, use, and present arguments to support the claim that when energy of an object changes, energy is transferred to or from the object.	ETS1.A ETS1.B 3.2.4.B ELA: CC.3.5.6-8.C CC.3.6.6-8.F CC.3.5.6-8.A CC.3.6.6-8.A Math: CC.2.4.6.B.1 CC.2.1.6.D.1 CC.2.1.7.D.1	Labs,Projects, Quizzes and Tests	materials are posted in Google Classroom.	
Forces and Motion	3.2.6-8.G Apply Newton's Third Law to design	PS2.A 3.2.3.A	Interactive Notebook, CER, Response Sheet,	Content is teacher created. In addition lab/project supplies,	9 Weeks

	a solution to a problem involving the motion of two colliding objects. 3.2.6-8.H Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	3.2.3.B ELA: CC.3.5.6-8.A CC3.5.6-8.C CC.3.6.6-8.F Math: MP.2 CC.2.1.6.E.4 CC.2.2.6.B.1 CC.2.7.B.3 MP.2	Labs,Projects, Quizzes and Tests	materials are posted in Google Classroom.	
Types of Interactions	3.2.6-8.I Ask questions about data to determine the factors that affect the strength of electric and magnetic forces. 3.2.6-8.J Construct and present arguments using evidence to support that claim that gravitational interactions are attractive and depend on the masses of	PS2.B 3.2.5.F ELA: CC.3.5.6-8.A CC.3.6.6-8.A CC.3.5.6-8.C CC3.5.6-8.F Math: MP.2	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	Content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom.	Included with Force and Motion

	interacting objects. 3.2.6-8.K Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.				
Definitions of Energy	3.2.6-8.L Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass and speed of an object.	PS3.A 3.2.4.A ELA: CC.3.5.6-8.A CC3.5.6-8.G Math: MP.2 CC2.1.6.D.1 CC2.1.7.D.1	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	Content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom.	Included with Force and Motion
Relationship Between Energy and Energy Forces	3.2.6-8.P Develop a model to describe that when the arrangement of objects interacting at a distance changes, different	PS3.A PS3.C 3.2.4.C 3.2.4.D ELA:	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	Content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom.	Included with Force and Motion

	amounts of potential energy are stored in the system.	CC3.5.6-8.G			
Information Technologies and Instrumentation	3.2.6-8.S Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.	PS4.C 3.2.4.G ELA: CC.3.5.6-8.A CC.3.5.6-8.B CC.3.5.6-8.I CC.3.6.6-8.H	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	Content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom.	Included with Forces and Motions
Waves Properties	3.2.6-8.Q Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.	PS4.A 3.2.4.E ELA: CC.3.5.6-8.G Math: MP.2 MP.4 CC.2.4.6.B.1 CC.2.4.8.B.1 CC.2.4.8.B.2	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	Content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom.	2 Weeks
Electromagnetic Radiation	3.2.6-8.R Develop and use a model to describe	PS4.A PS4.B	Interactive Notebook, CER, Response Sheet,	Content is teacher created. In addition lab/project supplies,	2 Weeks

	how waves are reflected, absorbed, or transmitted through various materials.	3.2.4.F ELA: CC.1.5.8.E	Labs,Projects, Quizzes and Tests	materials are posted in Google Classroom.	