Danville Area School District
Course Overview and Scope and Sequence

Course Title: Life Science
Content Area: Science
Grade Level: 7th Grade
Date Developed: Summer 2023 using the PA Curriculum Framework and STEELS Standards

COURSE OVERVIEW: Life Science focuses on the study of living organisms including plants, animals and human beings. Throughout the course students will study cells and systems, metabolic reactions, plants, heredity and genetics, natural selection and adaptations, and energy throughout ecosystems. Students will acquire the background knowledge needed in preparation for future biology courses.
ANCHOR STANDARDS: 1. Structure and Function 2. Growth and Development of Organisms 3. Organization for Matter and Energy and Energy Flow in Organisms 4. Information Processing 5. Interdependent Relationships in Ecosystems 6. Cycles of Matter and Energy Transfer in Ecosystems 7. Ecosystem Dynamics, Functioning, and Resilience 8. Inheritance of Traits 9. Variations of Traits 10. Evidence of Common Ancestry and Diversity 11. Natural Selection 12. Adaptation 13. Biodiversity and Humans
KEY COURSE TEXT AND MATERIALS: OpenSciEd, 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 Function	3.1.6-8.A Conduct an investigation to provide evidence that living things are made of cells, either one cell or many different numbers and types of cells. 3.1.6-8.B Develop and use a model to describe the function of a cell as a whole and the ways that parts of cells contribute to the function. 3.1.6-8.C Use arguments supported by evidence for how the body is a system of	LS1.A 3.1.4.A ELA: CC.3.6.6-8.F CC.3.5.6-8.A CC.3.6.6-8.A CC.1.4.7.S CC.1.5.8.E Math: CC.2.2.6.B.3 CC.2.4.6.B.1 CC.2.4.7.B.1 CC.2.4.7.B.3	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	OpenSciEd teacher resources and additional content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom.	9 weeks (45 days)

	interacting subsystems composed of groups of cells.				
Information Processing	3.1.6-8.H Gather and synthesize information about how sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.	LS1.D 3.1.4.B ELA: CC.3.6.6-8.G	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	OpenSciEd teacher resources and additional content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom	Included with Structure and Function
Growth and Development Of Organisms	3.1.6-8.D Use arguments based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants, respectively. 3.1.6-8.E Construct	LS1.B 3.1.3.A ELA: CC.3.5.6-8.A CC.3.5.6-8.B CC.1.4.7.S CC.3.6.6-8.A CC.3.6.6-8.H Math: CC.2.4.6.B.1 CC.2.4.6.B.2 CC.2.4.7.B.3 CC.2.4.7.B.1 CC.2.4.8.B.1 CC.2.4.8.B.2	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	OpenSciEd teacher resources and additional content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom	6 weeks (30 days)

	a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.				
Organization for Matter and Energy and Energy Flow in Organisms	3.1.6-8.F Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. 3.1.6-8.G Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.	LS1.C PS3.D 3.1.5.A ELA: CC.3.5.6-8.A CC.3.5.6-8.B CC.3.6.6-8.B CC.3.6.6-8.H CC.1.5.8.E Math: CC.2.2.6.B.3 CC.2.4.7.B.3 CC.2.4.7.B.1	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	OpenSciEd teacher resources and additional content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom	6 weeks (29 Days)
Ecosystem Dynamics,	3.1.6-8.L Construct an argument	LS2.C	Interactive Notebook, CER,	OpenSciEd teacher resources and	Included with Organization for

Functioning, and Resilience	supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. 3.4.6-8.C Develop a model to describe how watersheds and wetlands function as systems, including the roles and functions they serve. 3.4.6-8.D Gather, read, and synthesize information for multiple sources to investigate how Pennsylvania environmental issues affect Pennsylvania's human and natural systems.	ELA: CC.3.5.6-8.A CC.1.4.9-10.S CC.3.6.6-8.A	Response Sheet, Labs,Projects, Quizzes and Tests	additional content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom	Matter and Energy and Energy Flow in Organisms
Cycles of Matter and Energy Transfer in Ecosystems	3.1.6-8.K Develop a model to describe the cycling of matter and flow of	LS2.B ELA: CC.1.5.8.E	Interactive Notebook, CER, Response Sheet, Labs,Projects,	OpenSciEd teacher resources and additional content is teacher created. In	Included with Organization for Matter and Energy and Energy Flow in

	energy among living and nonliving parts of an ecosystem.	Math: CC.2.4.8.B.1 CC.2.4.8.B.2	Quizzes and Tests	addition lab/project supplies, materials are posted in Google Classroom	Organisms
Interdependent Relationships in Ecosystems	3.1.6-8.I Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystems. 3.1.6-8.J Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. 3.4.6-8.C Develop a model to describe how watersheds and wetlands function as systems, including the roles and functions they serve. 3.4.6-8.E Collect, analyze, and interpret	LS2.A 3.1.5.B ELA: CC.3.5.6-8.A CC.3.5.6-8.G CC.3.6.6-8.B CC.3.6.6-8.H CC.1.5.8.A CC.1.5.8.D Math: CC.2.4.8.B.1 CC.2.4.8.B.2	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests Response Sheet		7 weeks (33 days)

	environmental data to describe a local environment.				
Biodiversity and Humans	3.1.6-8.U Evaluate design solutions for maintaining biodiversity and ecosystem services. 3.4.6-8.I Construct an explanation that describes regional environmental conditions and their implications on environmental justice and social equity.	LS2.C LS4.D ETS1.B 3.1.3.H ELA: CC3.5.6-8.H CC.1.4.9-10.S Math: MP.4 CC.2.1.6.D.1	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	OpenSciEd teacher resources and additional content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom	Included with Interdependent Relationships in Ecosystems
Inheritance of Traits	3.1.6-8.M Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.	LS3.A LS3.B 3.1.3.C ELA: CC.3.5.6-8.A CC.3.5.6-8.D CC.3.5.6-8.G CC.1.5.8.E Math: CC2.2.7.B.3	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	OpenSciEd teacher resources and additional content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom	6 weeks (28 Days)

Variation of Traits	3.1.6-8.N Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.	LS1.B LS3.A LS3.B 3.1.3.D ELA: CC.3.5.6-8.A CC.3.5.6-8.D CC.3.5.6-8.G CC.1.5.8.E Math: MP.4 CC.2.4.6.B.1	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	OpenSciEd teacher resources and additional content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom	Included with Inheritance of Traits
Evidence of Common Ancestry and Diversity	3.1.6-8.O Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past. 3.1.6-8. P Apply scientific ideas to construct an	LS4.A 3.1.3.E ELA: CC.3.5.6-8.A CC.3.5.6-8.G CC.3.5.6-8.I CC.3.6.6-8.B CC.3.6.6-8.H CC.1.5.8.A CC.1.5.8.D Math: CC.2.4.6.B.1 CC.2.4.7.B.1 CC.2.4.7.B.3	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	OpenSciEd teacher resources and additional content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom	6 weeks (31 Days)

	explanation for anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. 3.1.6-8.Q Analyze displays of pictorial data to compare patterns of similarities in anatomical structures across multiple species to identify relationships not evident in the fully formed anatomy.				
Natural Selection	3.1.6-8.R Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. 3.1.6-8.S Construct	LS4.B 3.1.3.F ELA: CC.3.5.6-8.A CC.3.6.6-8.G CC.3.5.6-8.I CC.3.6.6-8.B CC.3.6.6-8.H CC.1.5.8.A CC.1.5.8.D	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	OpenSciEd teacher resources and additional content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom	Included with Evidence of Common Ancestry and Diversity

	an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.	Math: CC.2.1.7.D.1			
Adaptation	3.1.6-8.T Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.	LS4.C 3.1.3.G ELA: Math: MP.4 CC.2.1.7.D.1 CC.2.4.7.B.1 CC.2.4.7.B.3	Interactive Notebook, CER, Response Sheet, Labs,Projects, Quizzes and Tests	OpenSciEd teacher resources and additional content is teacher created. In addition lab/project supplies, materials are posted in Google Classroom	Included with Evidence of Common Ancestry and Diversity