Danville Area School District
Course Overview and Scope and Sequence

Course Title: Keystone Biology
Content Area: Science
Grade Level: Primarily 10th
Date Developed: June 2023

COURSE OVERVIEW: Biology is the study of life! This course examines structure, function, energy use, behavior and relationships in the world around us. The emphasis will be on cellular, molecular, and environmental aspects of life. Students will acquire skills needed to continue their education in science and develop the ability to address biosocial issues throughout their lives. This course will also emphasize a hands-on laboratory component. Students enrolled in Keystone Biology will take the Keystone Biology Exam during the spring of the school year.

ANCHOR STANDARDS:

1. Structure and Function
2. Growth and Development of Organisms
3. Organization for Matter and Energy Flow
4. Interdependent Relationships in Ecosystems
5. Cycles of Matter and Energy Transfer in Ecosystems
6. Ecosystem Dynamics, Functioning, and Resilience
7. Social Interactions and Group Behavior
8. Inheritance of Traits
9. Variation of Traits
10. Evidence of Common Ancestry and Diversity
11. Natural Selection
12. Adaptation

KEY COURSE TEXT AND MATERIALS: Miller and Levine: Biology 2019
KEY ASSESSMENTS: Diagnostic: CDT Formative: Oral quizzes, labs and activities, bell ringers, exit tickets, and class discussions Summative: Unit tests, keystone writing practices, projects; Keystone Exam

SCOPE AND SEQUENCE					
Unit	PRIORITY STANDARDS	SUPPORTING STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Unit: 1 Introduction to Biology - Characteristics of life and scientific method	3.1.9-12B 3.1.9-12C	3.1.6-8.C	Glow stick lab, graph interpretation, goldfish analysis, quizzes and tests	All content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	15 days
Unit 2: Biological molecules	3.1.9-12F	3.1.6-8.G	Infographics, protein structure lab, enzyme lab, gizmo, class discussions, quizzes, and test	All content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	12 days
Unit 3: Energy transfer in cells	3.1.9-12E 3.1.9-12G 3.1.9-12J	3.1.6-8.F 3.1.6-8.G	ATP simulation, photosynthesis and CR model, respiration lab, oral quizzes and tests,	All content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	16 days

Unit 4: Cells and transport	3.1.9-12B 3.1.9-12C	3.1.6-8.A 3.1.6-8.B 3.1.6-8.D	Cell and organelle model, membrane model, homeostasis mechanisms via osmosis and diffusion labs, quizzes and tests	All content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	15 days
Unit 5: Cell cycle and cell division	3.1.9-12D 3.1.9-12Q	3.1.6-8.D 3.1.6-8.N	Cell cycle model, Cell division diagrams, gizmo, quizzes and test	All content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	15 days
Unit 6: Genetic information (DNA/RNA) structure and function	3.1.9-12A 3.1.9-12P 3.1.9-12Q	3.1.6-8.M 3.1.6-8.N	DNA model, codon game, diagrams of DNA processes, DNA extraction lab, flipcharts, genetic engineering simulations, oral quizzes, and test	All content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	22 days
Unit 7: Genetics and inheritance	3.1.9-12R	3.1.6-8.E 3.1.6-8.R	Predicting and analyzing inheritance patterns, blood type lab, quizzes and test	All content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	12 days
Unit 8: Evolution	3.1.9-12O 3.1.9-12R 3.1.9-12S	3.1.6-8.I 3.1.6-8.O 3.1.6-8.P	Evidence lab, natural selection simulation, gizmo,	All content is teacher created. In addition to	20 days

	3.1.9-12T 3.1.9-12U 3.1.9-12W 3.1.9-12X	3.1.6-8.Q 3.1.6-8.S 3.1.6-8.T	cladogram/phylogenetic tree construction, oral quizzes and test	lab/project supplies, materials are posted in Google Classroom.	
Unit 9: Ecology	3.1.9-12H 3.1.9-12I 3.1.9-12K 3.1.9-12L 3.1.9-12M 3.1.9-12N 3.1.9-12V	3.1.6-8.I 3.1.6-8.J 3.1.6-8.K 3.1.6-8.L 3.1.6-8.U	Biome diagram, model of energy flow in an ecosystem, scavenger hunt, limiting factor/carrying capacity lab, population growth models, quizzes and test	All content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	25 days