

# PRESCOTT UNIFIED SCHOOL DISTRICT

## District Instructional Guide

Grade Level: High School		Subject: Biology		Quarter/Semester 1/1	Core Text: Biology, Miller & Levine, 2006
Time Block	Unit	Content	Skills	Standards Focus	Assessment / Benchmark
Weeks 1-3	Intro to Science	Lab Safety Rules	TSW (The student will) differentiate between safe and unsafe lab procedures. Analyze concepts in text and determine the meaning of symbols and key terms.	S1C2 P01 S1C2 P02 ELA 9-10 RST 10.4, 10.5, 10.10	Return Signed Lab Safety Contract  Unit EXAM
		Scientific Method	Explain a hypothesis. Describe how a hypothesis is tested. Current Science Topic, cite evidence determine central idea and summarize	S1C1, S1C2, S1C3 S2C2 ELA 9-10 RST 10.1, 10.2, 10.8	
		Observation vs. Inference	Distinguish between observation and interference. Follow and evaluate procedures (SI lab)	S1C1 P01-4 ELA 9-10 RST 10.3	
	The Science of Biology	What is science?	Explain the goal of science.	S1C1 P01	
		What is Life?	Describe the characteristics of living things. Translate textual information in visual form with graphic organizer.	S4C1 P02 (ET) S1C3 PO1 ELA 9-10 RST 10.7	
		Studying Life	Explain how life can be studied at different levels.	S4C5 P05	
		Tools and Procedures	Explain how light microscopes are used.	S1C2 P03	
Weeks 4-9	The Chemistry of Life	The Nature of Matter	Identify the three subatomic particles in atoms. Explain what chemical compounds are. Describe the two main types of bonds.	S5C1 P06 S5C1 P03 S5C4 P04 (ET) S3C2 PO1	Unit EXAM
		The Properties of Water	Explain why water molecules are polar. Differentiate between solutions and suspensions. Explain what an acidic and basic solution is.	S1C3 P05 S4C1 P03 S4C1 P04	
		Carbon Compounds	Explain the functions of each group of organic compounds.	S4C5 P02	
		Chemical Reactions and Enzymes	Explain how chemical reactions affect chemical bonds in compounds. Describe why enzymes are important to living systems. Comparison of two research studies, or one research study and student completed lab.	S5C1 P04  ELA RST 9-10 10.6, 10.9	

Grade Level: High School		Subject: Biology		Quarter/Semester 2/1	Core Text: Biology, Miller & Levine, 2006	
Time Block	Unit	Content	Skills	Standards Focus	Assessment / Benchmark	
Weeks 10-12	Cell Structure and Function	Life is Cellular	Define what the cell theory is. Distinguish between eukaryotic and prokaryotic cells.	S4C1 PO2 (ET) S6C4 PO1	Unit Exam	
		Eukaryotic Cell Structure	Describe the function of the cell nucleus. Describe the functions of the cell's organelles.	S4C1 PO2		
		Cell Boundaries	Identify the main functions of the cell membrane and the cell wall. Describe what happens during diffusion. Explain the processes of osmosis, facilitated diffusion, and active transport.	S4C1 PO2 S4C1 PO3		
		Diversity of Cellular Life	Explain what the cell theory is. Distinguish between eukaryotic and prokaryotic cells. Describe cell specialization. Identify the organization levels in multicellular organisms.	S4C1 PO2		
Weeks 13-15	Photosynthesis	Energy and Life	Explain where plants get the energy they need to produce food. Describe the role of ATP in cellular activities. Analyze concepts in text and determine the meaning of symbols and key terms.	S4C5 PO1  ELA 9-10 RST 10.4, 10.5, 10.10	Unit Exam	
		Photosynthesis: An Overview	State the overall equation for photosynthesis. Describe the role of light and chlorophyll in photosynthesis. Follow precise complex steps when carrying out procedures (Photosynthesis Lab)	S5C5 PO1 ELA RST 9-10 10.3		
		The Reactions of Photosynthesis	Describe the structure and function of a chloroplast. Describe what happens in the light-dependent reactions. Explain the Calvin Cycle. Identify factors that affect the rate at which photosynthesis occurs.	S5C5 PO1 S5C5 PO2		
Weeks 16-17	Cellular Respiration	Chemical Pathways	Explain what cellular respiration is. Describe what happens during the process of glycolysis. Name the two main types of fermentation. Translate technical information expressed in words into a visual form (CR pathway)	S5C5 PO1 S1C3 S4C5 PO1 ELA RST 9-10 10.7	Unit Exam	
		The Krebs Cycle and Electron Transport	Describe what happens during the Krebs cycle. Explain how high energy electrons are used by the electron transport. Identify three pathways the body uses to release energy during exercise. Compare photosynthesis and cellular respiration	S4C5 PO1 S4C1 PO2 S5C5 PO1 (ET) S6C4 PO1		

Week 18	Final Exam Review	All Units from Semester 1	All Skills Semester 1	All Standards Semester 1	Final Exam
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Grade Level: High School		Subject: Biology		Quarter/Semester 3/2	Core Text: Biology, Miller & Levine, 2006	
Time Block	Unit	Content	Skills	Standards Focus	Assessment / Benchmark	
Week 1-2	Cell Growth and Division	Cell Growth	Explain the problems that growth causes for cells. T5W describe how cell division solves the problems of cell growth.	S4C1 P01	Unit Exam	
		Cell Division	Name the main events of the cell cycle. Describe what happens during the four phases of mitosis. Translate technical information expressed in words into a visual form (Cell Cycle)	S4C2 P04 ELA RST 9-10 10.7		
		Regulating the Cell Cycle	Identify a factor that can stop cells from growing. Describe how the cell cycle is regulated. Explain how cancer cells are different from other cells. Follow and evaluate procedures (Mitosis Lab)	S4C1 P02 ELA RST 9-10 10.3		
Week 3	Meiosis	Meiosis	Contrast the chromosome number of body cells and gametes. Summarize the event of meiosis. Contrast meiosis and mitosis.	S4C2 PO4 S4C4 PO 1-5	Unit Exam	

Weeks 4-6	Introduction to Genetics	The Work of Gregor Mendel	Describe how Mendel studied inheritance in peas. Summarize Mendel's conclusion about inheritance. Explain the principle of dominance. Describe what happens during segregation. Analyze concepts in text and determine the meaning of symbols and key terms.	S4C2 PO3  ELA 9-10 RST 10.4, 10.5, 10.10	Unit Exam
		Probability and Punnett Squares	Explain how geneticists use the principles of probability. Describe how geneticists use Punnett squares.	S4C2 PO3	
		Exploring Mendelian Genetics	Explain the principle of Independent Assortment. Describe the patterns that exist aside from simple dominance. Explain how Mendel's principles apply to all organisms. Analyze authors purpose, assess the evidence of author's claims and reasoning, compare and contrast findings (Research project)	S4C2 PO3  ELA RST 9-10 10.1, 10.2, 10.6, 10.8, 10.9	
Weeks 7-9	DNA ,RNA & Mutations	DNA	Summarize the relationship between genes and DNA. Describe the overall structure of the DNA molecule.	S4C2 PO1	Unit Exam
		Chromosomes and DNA Replication	Summarize the events of DNA replication. Relate the DNA molecule to chromosome structure.	S4C2 PO1	
		RNA and Protein Synthesis	Explain how DNA and RNA differ. Differentiate the differences between the 3 types of RNA. Describe transcription and translation. Identify the genetic code. Explain the relationship between genes and proteins.	S4C2 PO1	
		Mutations	Contrast gene mutations and chromosomal mutations.	S4C2 PO3	

Grade Level: High School		Subject: Biology		Quarter/Semester 4/2	Core Text: Biology, Miller & Levine, 2006	
Time Block	Unit	Content	Skills	Standards Focus	Assessment / Benchmark	
Week 10-11	Darwin's Theory of Evolution	The Puzzle of Life's Diversity	Describe the pattern Darwin observed among organisms of the Galapagos.	S4C4 PO 1-4	Unit Exam	
		Ideas that Shaped Darwin's Thinking	State how Hutton and Lyell described geological change. Identify how Lamarck thought species evolve. Describe Malthus's theory of population growth. Cite textual evidence, determine central ideas and assess the extent to which the reasoning and evidence in text support the author's claim. (Darwin Diary)	S4C4 PO 1-4 ELA RST 9-10, 10.1, 10.2, 10.8		
		Darwin Presents His Case	List events leading to Darwin's publication of On the Origin of Species. Describe how Natural Variation is used in Artificial selection. Explain how natural selection is related to species' fitness. State Darwin's theory of evolution by natural selection.	S4C4 PO 1-4		
		Genes and Variations	Explain gene pool. Identify the main sources of inheritable variation in a population. State what determines how a phenotype is expressed.	S4C4 PO 1-4		
		The Process of Speciation	Identify the condition necessary for a new species to evolve. Describe the process of speciation in the Galapagos finches.	S4C4 PO 1-4		
Week 12	Classification	Kingdoms and Domains	Name the six kingdoms of life as identified.	S4C4 PO 6	Unit Exam	
			Describe the three domain system of classification. Analyze concepts in text and determine the meaning of symbols and key terms	S4C4 PO 6 ELA RST 9-10 10.4, 10.5, 10.10		
Week 13-14	Ecology	What is Ecology?	Identify the levels of organization that ecologists study. Analyze authors purpose, assess the evidence of author's claims and reasoning, compare and contrast findings (Research report)	S4C3 PO1 ELA RST 9-10 10.1, 10.2, 10.6, 10.8, 10.9	Unit Exam	
		Energy Flow	Identify the source of energy for life processes. Trace the flow of energy through living systems. Evaluate the efficiency of energy transfer among organisms in an ecosystem.	S4C3 PO1		
		Cycles of Matter	Describe how matter cycles among the living and nonliving parts of an ecosystem. Explain why nutrients are important in living systems. Describe how the availability of nutrients affects the productivity of ecosystems.	S4C5 P03		
		The Role of Climate	Identify the causes of climate. Identify the Earth's three main climate zones.	S4C3 P02		

		What Shapes an Ecosystem?	Explain how biotic and abiotic factors influence an ecosystem. Identify the interactions that occur within communities.	S4C3 PO2	
		Limiting Factors	Identify factors that limit population growth. Differentiate between density-dependent and density-independent limiting factors.	S3C1 PO3	
	<b>Populations</b>	Biomes	Identify the characteristics of major land and aquatic biomes.	S4C3 PO2	
Weeks 15-16	Bacteria and Viruses and Disease	Viruses	Describe the structure of a virus. Explain how viruses cause infection.	S4C2 PO2 S4C1 PO1	Unit Exam
		Bacteria	Explain how the two groups of prokaryotes differ. Describe the factors that are used to identify prokaryotes. Explain why bacteria are vital to maintaining the living world. Analyze author's purpose in discussing an experiment in text, defining the question the author seeks to address (Bact Lab)	S4C2 PO2 S4C1 PO1  ELA RST 9-10 10.6	
		Diseases caused by Microorganisms	Explain how bacteria cause disease. Describe how bacterial growth can be controlled. Explain how viruses cause disease. Cite evidence to support analysis of text, determine central ideas and conclusions and assess the extent to which the reasoning and evidence support the author's claim (Epidemiology Project)	ELA RST 9-10 10.1, 10.2, 10.8	
		Infectious Diseases	Identify the causes of disease. Explain infectious diseases are transmitted. Describe how antibiotics fight infection. Compare and contrast findings in text to those of other sources (Viral Transmission)	S4C2 PO2  ELA RST 9-10 10.9	
		The Immune System	Identify the body's nonspecific defenses against invading pathogens. Describe the function of the immune system.	S4C2 PO2 S4C1 PO1	
		Immune System Disorders	State what happens when the immune system overreacts.	S4C2 PO2 S4C1 PO1	

Week 17	Introduction to the Animal Kingdom	The Kingdom Protista	Describe the characteristics of a Protist.	S4C4 P06	Lab Practicum
		Animal-like Protists	T5W describe the major phyla of animal-like Protists. T5W explain how animal-like Protists harm other living things.	S4C4 P06	
		Plant-like Protists	Describe the function of chlorophyll and accessory pigments in algae. Describe the major phyla of unicellular algae. Summarize the ecological roles of unicellular algae.	S4C4 P06	
		What is an Animal?	List the characteristics that all animals share. Describe the essential functions that animals carry out. Identify the important trends in animal evolution. Follow precisely complex multistep procedures when carrying out dissections, translate information expressed in words into visuals, compare and contrast finding presented in text to those from lab dissections	S5C4 P06  ELA RST 9-10 10.3, 10.7, 10.9	
		Worms and Mollusks	Describe the defining features of worms and mollusks.	S4C4 P06	
		Arthropods	Describe the defining features of arthropods.	S4C4 P06	
		Echinoderms	Describe the defining features of echinoderms.	S4C4 P06	
		Chordates	Describe the defining features of chordates.	S5C4 P06	
Week 18	Final Exam Review	All Units from Semester 1	All Skills Semester 2	All Standards Semester 1	Final Exam

