Information for Course Syllabus

Name of Course: Biology II Honors / AP Biology

Grade Level: 10-12

School: ORHS

Major Assignments: Several Formal Lab Reports

Field Trips: None

How can parents access instructional materials? Canvas

Biology II Honors / AP Biology
2021-2022

Term 1

AP Biology Math Skills	Variance and Standard Deviation
	Standard Error
	The Chi-Square Test

Chemistry of Life	Atomic Structure and Bonding
	Water and pH
	Dehydration Synthesis and Hydrolysis
	Protein Structures and Denaturation
	Protein Functions
	Organic Compounds
	Enzymes and Free Energy
	Collision Theory
	Enzyme Structure and Function
	Enzyme Regulation

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Term 1

Cell Structure and Function	Cell Size and Surface Area to Volume Ratio
	Prokaryotes and Eukaryotes
	Cell Structure
	Cell Modeling
	Cell Specialization
	The Plasma Membrane
	Membrane Transport
	Facilitated Diffusion
	Osmosis and Tonicity
	Water Potential
	Proving Osmosis and Diffusion
	Active Transport
	Cellular Transport Modeling

Cellular Energetics	Pigments and Light Absorption
	Photosynthesis
	Photosynthesis: The Light Dependent Reaction
	Photosynthesis: The Calvin Cycle
	C4 and CAM Pathways

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Term 2

Cellular Energetics Cont.	Cellular Respiration
	Aerobic Cellular Respiration
	Chemiosmosis and Oxidative Phosphorylation
	Chemical Energy
	Anaerobic Cellular Respiration

Cell Communication and The Cell Cycle	Cell Communication and Signal Transduction
	Types of Receptor Proteins
	Amplification and Inhibition
	Feedback
	The Cell Cycle
	Mitosis
	Cancer

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Term 2

Heredity	Meiosis
	Cell Reproduction Modeling
	Probability and Inheritance
	Using Punnett Squares
	Incomplete Dominance and Codominance
	Multiple Alleles and Blood Types
	Special Cases of Inheritance
	Gene Linkage
	Sex-Linkage
	Genetic Disorders
	Karyotypes
	Pedigrees

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Term 3

Gene Expression and Regulation
DNA and RNA
DNA Replication
Modeling DNA Replication
Gene Mutations
Chromosomal Mutations
The Central Dogma Theory
Gene Expression: Transcription
The Genetic Code
Gene Expression: Translation
Gene Expression Modeling
Gene Regulation
Prokaryote Gene Regulation: The Operon
Eukaryote Gene Regulation: Transcription Factors and the Enhancer
Gene Regulation Modeling
Eukaryote Gene Regulation after Transcription
Epigenetics
Restriction Enzymes
Gel Electrophoresis
Restriction Mapping
Recombinant DNA and Bacterial Transformation
Viral Vectors
Microarrays
DNA Sequencing and Human Genome Project
Genetic Engineering
Human Gene Therapy
Cloning and Bioethics

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Term 3

Natural Selection	Evolution Revolutions
	Natural Selection
	Stickleback Evolution
	Patterns of Selection
	Hardy-Weinberg Equilibrium
	Evidence of Evolution
	Speciation
	Modes of Evolution
	Phylogenetics
	Classification and Diversity
	History of Life

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Term 4

Ecology	Characteristics of Populations
	Demographics
	Population Growth
	Competition
	Feeding Relationships
	Symbiosis
	Animal Behaviors
	Community Structure and Biodiversity
	Ecosystem Productivity
	Succession
	Biogeochemical Cycles
	Human Impacts: Chemical Pollutants
	Human Impacts: Biological Magnification
	Human Impacts: Climate Change
	Human Impacts: Atmospheric Ozone Depletion
	Human Impacts: Invasive Species, Deforestation, and Desertification
	Ecological Footprint

AP Exam Review