

	Week	Unit	Topics by week	Lab or simulation
Quarter 1	1	1. Chemistry of Life	Intro to AP Biology, FRQs, Statistics in Biology	Chi Squared- M&M lab
	2		1.1 Structure of Water, Hydrogen bonding	Modeling Water Properties of Water lab (with stats)
	3		1.3-1.6 Macromolecules	Macromolecule card sort LARP: Protein Folding Party
	4	2. Cell Structure & Function	2.1 Cell Structure: Subcellular Components 2.2 Cell Structure & Function 2.4 Plasma Membranes 2.5 Membrane Permeability	Organelle Speed Dating (Flipgrid) Membrane Properties Lab Cell transport (dialysis tubing)
	5		2.3 Cell Size 2.5 Membrane Permeability 2.6 Membrane Transport	SA:Vol Ratio, Why Are Cells So Small Lab (agar cubes)
	6		2.7 Facilitated Diffusion 2.9 Mechanisms of Transport	LARP: Lights, Camera, Action Transport PhET: Membrane Channels
	7		2.8 Tonicity & Osmoregulation 2.9 Cell Compartmentalization 2.11 Origins of Cell Compartmentalization	Tonicity & Osmoregulation Water Potential Problems
	8	3. Cellular Energetics	3.1 Enzyme Structure	Toothpickase Enzyme Modeling
	9		3.2 Enzyme Catalysis	Catalase Lab, guided inquiry
Fall Break				
Quarter 2	10	3. Cellular Energetics	3.3 Environmental Impacts on Enzyme Function	Catalase Lab, design your own experiment
	11		3.4 Cellular Energy 3.5 Photosynthesis	Case Study: Killing Chloroplasts
	12		3.5 Photosynthesis	Photosynthesis Lab (spinich leaf disc)
	13	4. Cell Communication & Cell Cycle	3.6 Cellular Respiration 3.7 Fitness	Cellular respiration lab (peas) Case Study: Tylenol Murders ATP modeling & ATP Synthase, chemiosmosis
	14		4.1 Cell Communication 4.2 Intro to Signal Transduction Cycle 4.3 Signal Transduction	GPCR modeling Stop-Motion Signal transduction pathway video creation
	15		ACT MIMICS (Thanksgiving Week) -	Gynmena Tea- Signal transduction interruption Competitive, allosteric inhibition
	16		4.4 Changes in Signal Transduction Pathway 4.5 Feedback	Feedback lab
	17	4.6 Cell Cycle	Effects of Lectin on Mitosis Mitosis modeling	
	18	4.7 Regulation of Cell Cycle	HHMI Cancer Interactive (virtual lab)	
19		Final Exams		
Winter Break				
Quarter 3	20	5. Heredity	5.1 Meiosis 5.2 Meiosis & Genetic Diversity	Modeling lab: Pop Beads/Meiosis Origami
	21		5.3 Mendelian Genetics 5.4 NonMendelian Genetics	Case Study: Genetic Counseling (Pedigrees) Chi Squared Corn Lab-- Dihybrid Inquiry
	22		5.5 Environmental Effects on Phenotype 5.6 Chromosomal Inheritance	Karyotyping HeLa cells Chromosome Mapping
	23	6. Gene Expression & Regulation	6.1 DNA & RNA Structure 6.2 Replication	DNA origami (modeling) Replication origami (modeling)
	24		6.3 Transcription & RNA Processing 6.4 Translation	Modeling Protein Synthesis
	25		6.5 Regulation of Gene Expression	PhET: Operons Insulin Factory, Plasmids Modeling Using a Micropipette
	26		6.6 Mutations 6.7 Biotechnology	pGLO Bacterial Transformation MiniOne PCR, Gel Electrophoresis
	27	7. Natural Selection	7.1 Intro to Natural Selection 7.2 Natural Selection 7.3 Artificial Selection	Brine Shrimp Adaptations & Selection EvoDots, virtual natural selection lab Begin Wisconsin Fast Plants, artificial selection lab
	28		7.4 Population Genetics 7.5 Hardy-Weinberg Equilibrium 7.12 Variations in Populations	HHMI Rock Pocket Mouse PTC & Hardy Weinberg Equilibrium, MiniOne PCR lab
29	7.6 Evidence of Evolution 7.7 Common Ancestry 7.8 Continuing Evolution		Stickleback graphing analysis Antibiotic Resistance, virtual lab	
Spring Break				

		Week	Unit	Topics by week	Lab or simulation
<b>Quarter 4</b>		30	7. Natural Selection	7.9 Phylogeny 7.10 Speciation 7.11 Extinction 7.13 Origin of Life on Earth	Great Clade Race BLAST DNA & Disease Research Wisconsin Fast Plants lab, part 2 (2nd generation)
		31	8. Ecology	8.1 Responses to the Environment 8.2 Energy Flow Through Ecosystems	Animal Behavior lab (choice chambers), mealworms, pill bugs, or termites (virtual available)
		32		8.3 Population Ecology 8.4 Effect of Density of Populations	Population ecology mini-lab stations Bubble survivorship lab
		33		8.5 Community Ecology 8.6 Biodiversity	Simpson's Diversity Index
		34		8.7 Disruptions to Ecosystems	Mark-Recapture Lab
		35	AP Prep	Review for AP Exam	Virus & Vaccine Research Project and Presentations
		36		AP EXAM	
		37		AP Final Project	
	38	Final Exam			