BIOLOGY (General and Honors) Curriculum Guide

Month	Unit/Topic of Study	Standards	Key Vocab	KAGAN/Test Taking/ Reading Strategies	Math Skills	Writing in the Content Area	Assessments
September	Intro to Biology (2wk) Ch 1 - Yellow Book Chemistry of Life (2wk) Ch 2 Yellow Book	B1.1 Scientific Inquiry B1.2 Reflection and Social Implication B2.2 Organic Molecules B2.2 Proteins B2.3 Homeostasis B2.5 Living Organism Composition	Observation, Inference, Hypothesis, Variable, Data, Theory, Peer review, Metabolism, Homeostasis, Stimulus, Atom, Nucleus, Proton, Electron, Neutron, Element, Isotope, Compound, Ion, Ionic bond, Covalent bond, Molecule, Hydrogen bond, Cohesion, Adhesion, Mixture, Solution, Solute, Solvent, Suspension, Polarity, pH, Acid, base, Buffer, monomer, Polymer, carbohydrate, Lipid, nucleic acid, Protein, amino acid, Nucleic acid, chemical reaction, Reactant, product, Enzyme, activation energy, Catalyst, substrate	RAISE Talking to the text - annotation Think-a-loud Student led quiz design Jigsaw and Expert groups Actual reading of high level or at least higher level text Student graphic representation of text Extra credit for flash cards	Graphs Percentages probabilities Data analysis Charting and graphing of data gathered in labs	Daily Journal Our annotation requires students to explain the reading in their own words Students will write summaries Students will be asked to defend opinions of scientific ideas	CH 1 intro Quest CH 2.1 Test over basic Chemistry and Water CH 2.2 Test over Organic molecules and enzymes

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October	Chemistry of Life (1wk) Ch 2 Yellow Book Ecology and Energy Flow (2wks) Ch 3 and Ch 4 Yellow Book Populations (1wk) Ch 5, 6, and 7 Yellow Book	B1.1 Scientific Inquiry B1.2 Reflection and Social Implication B2.2 Organic Molecules B2.2 Proteins B2.3 Homeostasis B2.5 Living Organism Composition B3.2 Ecosystems B3.3 Element Recombination B3.4 Human Impact B3.5 Populations B3.5 Environmental Factors	Chemistry of Life vocab above Biosphere Ecology Species population Community ecosystem Biotic abiotic Climate weather Greenhouse effect Biome Humus Taiga Permafrost photic zone Aphotic zone wetland Estuary anthrome Autotroph heterotroph Primary and Secondary producers Chemosynthesis detritus Detritivore consumer Food web phytoplankton Trophic level biomass Nutrient fixation denitrification Limiting nutrient algal bloom Pop density pop distribution Age structure immigration Exponential growth emigration Logistic growth carrying capacity Limiting factors demography	RAISE Talking to the text - annotation Think-a-loud Student led quiz design Jigsaw and Expert groups Actual reading of high level or at least higher level text Student graphic representation of text Extra credit for flash cards	Graphs Percentages probabilities Data analysis Charting and graphing of data gathered in labs Use of data as evidence to support an opinion	Daily Journal Our annotation requires students to explain the reading in their own words Students will write summaries Students will be asked to defend opinions of scientific ideas Honors: write a research paper using data to support an opinion on human activity in the Biosphere	CH 3 and CH 4 Test over Basic ecology and Energy Flow Ch 5, 6, and 7 Test over Populations Honors - Research paper serves as Test
November	Populations (2wk) Ch 5, 6, and 7 Yellow Book	B3.4 Changes in Ecosystems B3.4 Human Impact	Habitat niche Competitive exclusion Keystone species symbiosis Commensalism mutualism Parasitism herbivory Primary and secondary succession Pioneer species biodiversity Resilience monoculture Great acceleration	RAISE Talking to the text - annotation Think-a-loud Student led quiz design	Graphs Percentages probabilities Data analysis Charting and	Daily Journal Our annotation requires students to explain the reading in their own words Students will write	

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November	Cells and Transport (2.4wk) Ch 8 Yellow Book	B2.1 Cell Differentiation B2.3 Homeostasis B2.4 Cell Specialization	Invasive species Cell theory cell membrane Nucleus prokaryote Eukaryote cytoplasm Organelle ribosome Endoplasmic reticulum (rgh/smth) Golgi Apparatus vacuole Lysosome cytoskeleton Chloroplast mitochondria Cell wall lipid bi-layer Selective permeability Diffusion osmosis Facilitated diffusion Aquaporin isotonic Hypotonic hypertonic Osmotic pressure endocytosis Passive transport pinocytosis Active transport phagocytosis exocytosis	Jigsaw and Expert groups Actual reading of high level or at least higher level text Student graphic representation of text Extra credit for flash cards	graphing of data gathered	summaries Students will be asked to defend opinions of scientific ideas	CH 8 Test over Cells and Diffusion/ Transport
December	Photosynthesis (3wk) Ch 9 Yellow Book	B2.4 Cell Specialization B2.5 Living Organism Composition B2.5 Energy Transfer B3.1 Photosynthesis / Respiration	ATP pigment Chlorophyll thylakoid Granum stroma NADP+ NADPH Photosystem I and II Antenna complex light reaction Electron transport chain H+ ADP ATP Synthase Dark reaction Calvin Cycle Glucose C4 plants CAM plants	RAISE Talking to the text - annotation Think-a-loud Student led quiz design Jigsaw and Expert groups Actual reading of high level or at least higher level text Student graphic representation of text Extra credit for	Graphs Percentages probabilities Data analysis Charting and graphing of data gathered in labs	Daily Journal Our annotation requires students to explain the reading in their own words Students will write summaries Students will be asked to defend opinions of scientific ideas Students must	Ch 9 Test over Photosynthesis Normal MC Test and students have opportunity to draw and explain

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				flash cards		explain photosynthesis	
January	Respiration (2wk) Ch 10 Yellow Book Exams (1wk) Cell Growth and Division (wk) Ch 11 Yellow Book	B2.5 Energy Transfer B3.1 Photosynthesis / Respiration B2.4 Cell Specialization B2.5 Living Organism Composition B4.1 Genetics and Inheritance B4.3 Cell Division	Calorie aerobic Anaerobic Glycolysis NAD+ matrix Krebs cycle Pyruvic Acid FAD FADH2 NADH fermentation Lactic acid alcohol Asexual sexual Chromosome chromatin Cell cycle Interphase Prophase metaphase Anaphase telophase Cytokinesis centriole Mitotic spindle mitosis Centromere nucleosome Histone sister chromatid Cell plate cleavage Cyclin apoptosis Cancer tumor Differentiation embryo Blastocyst stem cell	RAISE Talking to the text - annotation Think-a-loud Student led quiz design Jigsaw and Expert groups Actual reading of high level or at least higher level text Student graphic representation of text Extra credit for flash cards	Graphs Percentages probabilities Data analysis Charting and graphing of data gathered in labs	Daily Journal Our annotation requires students to explain the reading in their own words Students will write summaries Students will be asked to defend opinions of scientific ideas Students must explain Respiration	CH 10 Respiration Test Honors must also explain Glycolysis and draw with explanation Semester 1 EXAM
February	Cell Growth and Division (1wk)	B4.1 Genetics and Inheritance B4.2 DNA B4.3 Cell DIvision	Cell Growth vocab above Genetics fertilization Trait hybrid Gene allele Dominance recessive Segregation gamete True breeding self-pollination	RAISE Talking to the text - annotation Think-a-loud Student led quiz design Jigsaw and Expert groups Actual reading of high level or at	Graphs Percentages probabilities Data analysis Charting and graphing of data gathered in labs	Daily Journal Our annotation requires students to explain the reading in their own words Students will write summaries Students will be asked to defend	CH 11 Test with Lab Practical - Cell Growth division and the Phases of Mitosis

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February cont.	Mendelian Genetics and Meiosis (3wk) Ch 12 Yellow Book		Gregor Mendel probability Homozygous heterozygous Phenotype genotype Punnett Square ratio Independent assortment Incomplete dominance Codominance multiple alleles Polygenic traits homologous Diploid haploid Meiosis tetrad Crossing-over Gene linkage Gene map	least higher level text Student graphic representation of text Extra credit for flash cards	Probability of outcomes	opinions of scientific ideas	CH 12.1 TEST over Genetics and Meiosis CH 12.2 over Genetics and Meiosis
March	DNA, RNA, protein synthesis and Mutation, Gene Regulation (3wk) Ch 13 and 14 Yellow Book Extra 1.5 weeks left out here to compensate for snow days or slow progress + Spring Break etc.	B4.2 DNA B4.2 DNA, RNA and Protein Synthesis B4.3 Cell Division B4.4 Genetic Variation	Transformation base pairing Nitrogenous bases Chargaff's rule Frederick Griffith Oswald Avery Hersey and Chase Erwin Chargaff Rosalind Franklin Watson/Crick Antiparallel Replication DNA polymerase Helicase Telomere Adenine Guanine Cytosine Thymine RNA Uracil mRNA tRNA rRNA Transcription RNA polymerase 5'G Cap poly-A tail Promoter intron Exon polypeptide Genetic code codon Translation anticodon Operon operator Homeotic gene homeobox gene Hox gene Lac Operon Repressor Epigenetics	RAISE Talking to the text - annotation Think-a-loud Student led quiz design Jigsaw and Expert groups Actual reading of high level or at least higher level text Student graphic representation of text	Graphs Percentages probabilities Data analysis Charting and graphing of data gathered in labs	Daily Journal Our annotation requires students to explain the reading in their own words Students will write summaries Students will be asked to defend opinions of scientific ideas	CH 13 Test over DNA and Replication CH 14 Test over RNA, transcription and translation

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			Mutations point mutation Frameshift mutation Mutagen polyploidy Chromosomal mutations Translocation inversion	Extra credit for flash cards			
April April	Lost week here for SAT/PSAT/MSTEP TESTING Human Genome and Biotechnology (2.5wk) Ch 15 and 16 Biotech continued	B4.3 Cell Division B4.4 Genetic Variation B4.4 Recombinant DNA	Genome karyotype Sex chromosome autosome Sex-linked pedigree X-Chromosome inactivation Nondisjunction Sickle Cell Cystic Fibrosis Huntington's Typhoid Malaria Restriction enzyme Gel electrophoresis Genomic imprinting Selective breeding biotechnology Hybridization inbreeding PCR reaction plasmid Recombinant DNA transgenic Clone gene therapy Forensics Genetic Engineering	RAISE Talking to the text - annotation Think-a-loud Student led quiz design Jigsaw and Expert groups Actual reading of high level or at least higher level text Student graphic representation of text Extra credit for flash cards	Graphs Percentages probabilities Data analysis Charting and graphing of data gathered in labs	Daily Journal Our annotation requires students to explain the reading in their own words Students will write summaries Students will be asked to defend opinions of scientific ideas Honors writes a research paper concerning Genetic Engineering and is asked to use data to support an opinion	CH 15 Test over the Human Genome CH 16 Test over Genetic engineering and Biotech Honors will do a research paper over Genetic Engineering that will serve as Biotech assessment

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May	Evolutionary Biology and Classification (3wks) Ch 17-19 Yellow Book Viruses and Protists (1wk) Ch 21 Yellow Book (IF TIME ALLOWS)	B2.4 Cell Specialization B5.1 Theory of Evolution B5.2 Molecular Evidence B5.3 Natural Selection	Evolution fossil Artificial selection adaptation Natural selection fitness Homologous structures Vestigial structures Analogous structures Allele frequency gene pool Genetic drift bottleneck Gene flow founder effect Genetic equilibrium Hardy-Weinberg principle Sexual selection speciation Reproductive isolation Behavioral isolation Geographical isolation Temporal isolation Taxonomy genus Binomial nomenclature Species taxon Family order Class phylum Kingdom domain Phylogeny clade cladogram	RAISE Talking to the text - annotation Think-a-loud Student led quiz design Jigsaw and Expert groups Actual reading of high level or at least higher level text Student graphic representation of text Extra credit for flash cards	Graphs Percentages probabilities Data analysis Charting and graphing of data gathered in labs	Daily Journal Our annotation requires students to explain the reading in their own words Students will write summaries Students will be asked to defend opinions of scientific ideas	CH 17/18/19 Evolution and Classification test
June	Viruses (1wk) Ch 21 Yellow Book Exam Prep	B2.4 Cell Specialization	Virus capsid Lytic infection bacteriophage Lysogenic infection prophage Retrovirus				Quest over Viruses if there is time. Semester 2 EXAM