| ***Standard*** | ***Week*** | ***Units*** | ***Concepts*** | ***Vocabulary***  |
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| **A. Exploring and Defining the Fundamental Unifying Concepts, Organization, and Inquiry Techniques underlying the Science of Biology**ASIM Lab A1: RuleASIM Lab B1a: Toilet Paper InquiryASIM Lab C7: Cell Size | Week 1 | A.1 Scientific InquiryA.3 Science in Practice | * Safety rules
* Safety symbols
* Lab equipment
* Scientific method
* Experimental design
* Variables
* Microscopes
* Graphing
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| Scientific methodObservationHypothesisPredictionEstimationVariableIndependent variableDependent variableControl groupExperimentData Qualitative data Quantitative data | Sample size InferenceConclusionPeer reviewHonestyBiasLine graphBar graphPie chartScatter plotCorrelationCompound light microscopeResolution | Electron microscopeTheoryScientific lawNatural phenomenaTechnologyValidityReliabilityFabricationFalsificationPlagiarismSuppressionPure scienceApplied science |

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| Week 2 | A.2 Mathematics and Measurement in Science | * SI units
* Analyze experiments
* Formulate graphs
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| Metric system Base unitmean | MedianMode range | Exponential modelLogistic model |

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| Week 2 Cont. | A.4 Foundations | * Characteristics of life
* Levels of organization
* (from atom to organism)
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| MetabolismReproductionHomeostasisStimuliGrowthDevelopment (differentiation) Viruses  | AtomMoleculeOrganelleCellOrganOrgan systemOrganism | PopulationCommunityEcosystemBiomeBiosphere |

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| Week 3/4 | A.5 Biochemistry  | * Atoms
* Ions
* Chemical bonds
* Properties of water
* Organic compounds
* Chemical reactions
* (photosynthesis, fermentation, and cellular respiration introduction)
* pH scale
* acids and bases
* enzymes
* ATP introduction
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| Proton NeutronElectronElectron cloudIonic bondsCovalent bondsIsotopes (carbon 12, 13, and 14)PolarNon-polarOrganicInorganicCellular respiration (including formula)Photosynthesis  | ProductsReactants Hydrogen bondpH scaleionsH+ ions(hydrogen ion)OH- ions (hydroxide ion)buffersCarbohydratesLipidsProteinsNucleic acidHydrolysisCondensation reaction  | EnzymesActivation energy SubstrateInduced fit model MonosaccharideDisaccharidePolysaccharideAmino acidDipeptidePolypeptideFatty acidsGlycerolGlyceridesHydroxyl group |

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| **B. Investigating Life Processes at the Cellular Level and Understanding Both How These Processes Work and How They Are Maintained and Regulated**ASIM Lab C2a: Osmosis in Onion CellsASIM Lab C5: Comparing Plants and Animals | Weeks5/6  | B.1 Cells | * Prokaryotic vs. Eukaryotic
* Cell membrane and transport
* Cell organelles: structure and function
* Plant vs animal cells (how they are alike and different)
* ATP structure and function
* Anaerobic/aerobic
* respiration
* Mitosis
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| ProkaryoteEukaryoteEndoplasmic reticulum (RER, SER)Golgi bodyRibosomesMitochondriaCytoskeleton (microfilaments, microtubules) CiliaFlagella Pseudopodia MotileLysosomesCentriolesCell membraneCell wallVacuolesCentrioles Introduce Paramecium: (contractile vacuole)DNANucleus | Nuclear envelopeNuclear poresNucleolusChloroplastHypertonic HypotonicIsotonic OsmosisDiffusionFacilitated diffusionConcentration gradient Active transportPassive transport Channel proteins Sodium potassium pump EndocytosisExocytosisPhagocytosisPinocytosisFermentation AerobicAnaerobic | Lactic acidPyruvic acidNADHAcetyl CoAFADH2Glycolysis Krebs cycle (intro)Electron transport chain (intro)MitosisAutosomal (somatic cells)Cell cycleGenesChromosomesChromatinProphaseMetaphaseAnaphaseTelophaseCytokinesis Haploid Diploid |

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| C. Delving Into Heredity by Investigating How Genetic **Structures and Processes Provide the Mechanism for Continuity and Variety Among Organisms**ASIM Lab D12: Disorder Detective ASIM Lab D14: Dragon Detectives | Weeks 7/8 | C.1 Genetics | * DNA, RNA and Protein synthesis
* Meiosis
* Gregor Mendel
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| Griffith’s experimentsHershey Chase ExperimentBacteriophagesWatson and CrickFranklin and WilkinDNANitrogen baseRNAmRNAtRNATranscriptionTranslation CodonAnticodonintronsexonsRNA polymerasePromoterTermination signal | MeiosisCrossing overProphase IMetaphase IAnaphase ITelophase IProphase IIMetaphase IIAnaphase IITelophase IISexual reproductionGenetic variationAlleles DominantRecessive GenotypePhenotype Mendel’s law of segregationMendel’s law of independent assortment | Mendel’s law of Dominance Incomplete dominanceCo-dominanceSex-linked traits(X-linked)Punnett squareHomozygousHeterozygouscarrierPedigreeMutationsGene mutationsChromosome mutationsFrame-shift mutationsCystic fibrosisTrisomyDown SyndromeAlbinismDwarfismColor Blindness |

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