**Biology Advanced Parent Guide**

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| Students in Biology focus on patterns, processes, and relationships of living organisms through four main concepts: biological structures, functions, and processes; mechanisms of genetics; biological evolution; and interdependence within environmental systems. Students will ask questions, plan and conduct investigations, and explain phenomena using appropriate tools and models. They will also identify problems and design solutions using engineering design practices. Recurring themes and concepts will be explored to make connections between overarching concepts. Student investigations emphasize accurate observations, collection of data, data analysis, and the safe manipulation of laboratory apparatus & materials in the field and in the laboratory. This course will have a greater emphasis on laboratory experiences, gathering and processing complex data and writing technical conclusions based on data. Texas Essential Knowledge & Skills for [Biology §112.42. Science, Biology, Adopted 2021](https://texreg.sos.state.tx.us/public/readtac%24ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=19&pt=2&ch=112&rl=42)   |
| 1st 6 Weeks:Biomolecules and Cells:Molecules of LifeChemical Reactions and EnzymesProkaryotic and Eukaryotic Cell StructureCell Transport and HomeostasisEnergy in Cells:Energy and LifeCellular Respiration, Fermentation and PhotosynthesisCell Growth & Differentiation | 4th 6 Weeks:Mechanisms of Evolution: Other Mechanisms of EvolutionThe Process of SpeciationEvidence of Evolution: The Fossil RecordBiogeography and Homologies; Rates of Change; Earth’s Eary HistoryPlant Systems: Plant Systems and Interactions; Reproduction in PlantsTransport and Response in PlantsAnimal Systems: Nutrient & Waste Regulation; Reproduction in AnimalsResponse to EnvironmentThe Challenge of Diseases: Understanding Disease, Immune Response, Emerging Diseases |
| 2nd 6 Weeks:Cell Growth & Differentiation: Control of the Cell CycleCell Specialization and DifferentiationInheritance & Variation of Traits: Mendelian & Other Patterns of Inheritance; MeiosisDNA: The Structure of DNA and DNA ReplicationRNA & Gene Expression: RNA and Protein Synthesis | 5th 6 Weeks:The Biosphere: Ecology on a Living Planet; Energy FlowCycles of MatterEcosys. Stability & Change: Ecological Succession; Population GrowthHuman Impact on the Biosphere: Human Activity & Ecosystem StabilityBiodiversity and Environmental Change; Humans and the Environment |
| 3rd 6 Weeks:Gene Regulation and Expression; MutationsThe Human Genome: Human Genetics; Human Genetic DisordersStudying the Human GenomeBiotechnology: Molecular Technology; Application of BiotechnologyMechanisms of Evolution:Evolution as Genetic Change in Populations & Darwin’s Theory: Natural Selection | 6th 6 Weeks:Biology EOC Exam ReviewBiology EOC ExamScenario Based Unit |

**Questions?** Please contact your course science teacher.