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Description automatically generated**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$ext.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 Life  Chemical Reactions and Enzymes  Prokaryotic and Eukaryotic Cell Structure  Cell Transport and Homeostasis  Energy in Cells:  Energy and Life  Cellular Respiration, Fermentation and Photosynthesis  Cell Growth & Differentiation | 4th 6 Weeks: Mechanisms of Evolution: Other Mechanisms of Evolution  The Process of Speciation  Evidence of Evolution: The Fossil Record  Biogeography and Homologies; Rates of Change; Earth’s Eary History  Plant Systems: Plant Systems and Interactions; Reproduction in Plants  Transport and Response in Plants  Animal Systems: Nutrient & Waste Regulation; Reproduction in Animals  Response to Environment  The Challenge of Diseases: Understanding Disease, Immune Response, Emerging Diseases |
| 2nd 6 Weeks: Cell Growth & Differentiation: Control of the Cell Cycle  Cell Specialization and Differentiation  Inheritance & Variation of Traits: Mendelian & Other Patterns of Inheritance; Meiosis  DNA: The Structure of DNA and DNA Replication  RNA & Gene Expression: RNA and Protein Synthesis | 5th 6 Weeks: The Biosphere: Ecology on a Living Planet; Energy Flow  Cycles of Matter  Ecosys. Stability & Change: Ecological Succession; Population Growth  Human Impact on the Biosphere: Human Activity & Ecosystem Stability  Biodiversity and Environmental Change; Humans and the Environment |
| 3rd 6 Weeks: Gene Regulation and Expression; Mutations  The Human Genome: Human Genetics; Human Genetic Disorders  Studying the Human Genome  Biotechnology: Molecular Technology; Application of Biotechnology  Mechanisms of Evolution:  Evolution as Genetic Change in Populations & Darwin’s Theory: Natural Selection | 6th 6 Weeks: Biology EOC Exam Review  Biology EOC Exam  Scenario Based Unit |

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