Science: Grade 7 Advanced

UNIT/Weeks	Timeline/Topics	Essential Questions
3	**Structures and Properties of Matter** • Atomic Structure • Molecular Structure • Properties of Matter	• How is it that everything is made of star dust?
4	**Chemical Reactions** • Chemical Reactions • Conservation of Matter • Subatomic Particles • Valence Electrons	• How do substances combine or change (react) to make new substances? • What happens to the atoms when you bake a cake? • How can a device that either releases or absorbs thermal energy by chemical processes be designed, constructed, tested, and modified?
3	**Structure and Function** • Cell Structure • Cell Function • Organelles	• How do we recognize life? • How do cells contribute to the functioning of an organism?
3	**Body Systems** • Body Systems • Sense Receptors • Neurotransmitters	• What are humans made of? • What is the evidence that a body is actually a system of interacting subsystems composed of groups of interacting cells? • How do organisms receive and respond to information from their environment?
4	• **Inheritance and Variation of Traits** • Recycling • Fossil Fuel • Renewable Fuel	• Inheritance • Genes • Genetic Mutations • Variation of Traits • How does the biosphere affect other systems?

4	**Common Ancestry** • Evolutionary Relationships • Fossil Records • Homologous Structures • Embryological Structures	• How do we know when an organism (fossil) was alive? • How do we know that birds and dinosaurs are related?
5	**Matter and Energy Flow in Organisms** • Photosynthesis • Cellular Respiration • Anaerobic Respiration • Aerobic Respiration	• How do some organisms turn electromagnetic radiation into matter and energy? • What is the role of photosynthesis in the cycling of matter and flow of energy into and out of an organism? • How is food rearranged through chemical reactions to form new molecules that support growth and/or release energy as this matter moves through an organism?
4	**Weather and Climate** • Water Cycle • Air Masses • Atmospheric and Oceanic Circulations	• What factors interact and influence weather and climate?
1	**GEF Water Quality** • Water Quality • Environmental Impact	• How do systems achieve equilibrium? • What happens in a system when it is out of balance?
1	**GEF Composting Garden** • Environmental Impact on Plants as Living Organisms	• What role do humans have in helping living plant organisms achieve and maintain homeostasis in order to be sustainable? • What happens in a system when it is out of balance?
4	**Forensics** • Forensic Science • Contact Traces • Fingerprinting • Forensic Techniques • Using Science to Solve Crimes	• How does applying the Scientific Method advance the exploration of the world around us?