

**Skills and Strategies**

- Identify questions that can be answered through scientific investigations.
- Design and conduct a scientific investigation. (ODE)
- Use appropriate mathematics, tools and techniques to gather data and information. (ODE)
- Analyze and interpret data. (ODE)
- Develop descriptions, models, explanations and predictions. (ODE)
- Think critically and logically to connect evidence and explanations. (ODE)
- Recognize and analyze alternative explanations and predictions. (ODE)
- Communicate scientific procedures and explanations. (ODE)
- Students should be able to use scientific language correctly and a variety of communication modes and formats as appropriate. (IB.B)
- Students should be aware of the importance of acknowledging and appropriately referencing the work of others when communicating in science. (IB.B)
- Students should be able to understand scientific knowledge (facts, ideas, concepts, processes, laws, principles, models and theories) and to apply it to construct scientific explanations, solve problems and formulate scientifically supported arguments. (IB.C)
- Students should be able to develop intellectual and practical skills to design and carry out scientific investigations independently and to evaluate the experimental design (method). (IB.D)
- Students should be able to collect, process and interpret sufficient qualitative and/or quantitative data to draw appropriate conclusions. Students are expected to develop analytical thinking skills to interpret data and judge the reliability of the data. (IB.E)
- Students should be able to develop safe, responsible and collaborative working practices in practical science. (IB.F)

**Pre-Requisites for this Course**

- Components and patterns of the solar system
- All changes involve energy
- Gravity and magnetism
- Interactions in the ecosystem (producers, consumers, decomposers, scavengers)
- Types and functions of cells
- Two categories of energy
- Parts of an atom
- Rocks are made of minerals

**Unit 1: Introduction to Earth Systems**

- Tools and Measurements

**Unit 2: Ecosystems**

- The hydrologic cycle illustrates the changing states of water as it moves through the lithosphere, biosphere, hydrosphere and atmosphere. (ESS.1)
- Energy can be transformed from one form to another or can be transferred from one location to another, but is never lost. (PS.2)
- Energy can be transferred through a variety of ways. (PS.3)
- Matter is transferred continuously between one organism to another and between organisms and their physical environments. (LS.1)
- In any particular biome, the number, growth and survival of organisms and populations depend on biotic and abiotic factors. (LS.2)

**Unit 3: Microbiology**

- Matter is transferred continuously between one organism to another and between organisms and their physical environments. (LS.1)

**Unit 4: Natural Resources**

- The hydrologic cycle illustrates the changing states of water as it moves through the lithosphere, biosphere, hydrosphere and atmosphere. (ESS.1)
- The properties of matter are determined by the arrangement of atoms. (PS.1)
- Energy can be transformed from one form to another or can be transferred from one location to another, but is never lost. (PS.2)
- Energy can be transferred through a variety of ways. (PS.3)
- Matter is transferred continuously between one organism to another and between organisms and their physical environments. (LS.1)
- One world should provide students with the opportunity to critically assess the implications of scientific developments and their applications to local and/or global issues. (IB.A)

**Unit 5: Biomes/ Climate**

- The hydrologic cycle illustrates the changing states of water as it moves through the lithosphere, biosphere, hydrosphere and atmosphere. (ESS.1)
- Thermal energy transfers in the ocean and the atmosphere contribute to the formation of currents, which influence global climate patterns. (ESS.2)
- The atmosphere has different properties at different elevations and contains a mixture of gases that cycle through the lithosphere, biosphere, hydrosphere and atmosphere. (ESS.3)

**Unit 6: Earth/ Moon Interactions**

- The relative patterns of motion and positions of the Earth, moon and sun cause solar and lunar eclipses, tides and phases of the moon. (ESS.4)
- In any particular biome, the number, growth and survival of organisms and populations depend on biotic and abiotic factors. (LS.2)