Craigslea State High School

….Educating Global Citizens

V19.1

Year Level Plan	Year 10	Science	Australian Curriculum

Term 1	Term 2	Term 3	Term 4
Unit 1	**Unit 2**	**Unit 3**	**Unit 4**
Unit 1: Chemistry At the beginning of the unit students will learn about the periodic table. They will describe the structure of atoms in terms of electron shells, explain how the electron structure of an atom determines its position in the periodic table and its properties, outline the development of the periodic table, explain why groups of elements have similar properties, and outline trends in the chemical activity of metals. By the end of the unit students will be able to construct word and symbol (formula) equations, predict the products of different types of simple chemical reactions, such as decomposition, combination, and precipitation reactions. They will investigate how the factors of temperature, surface area, concentration, agitation and catalysts affect the rate of a chemical reaction.	**Unit 2: Physics** **At the beginning of the unit students will learn about** the process of stop frame animation. They will use this process to deconstruct straight line motion into a series of points along a timeline which can be plotted on graphs. **By the end of the unit students will be able to** use data to calculate displacement, velocity and acceleration. They will construct displacement, velocity and acceleration graphs to reveal and analyse trends and patterns. Energy conservation and Newton's Laws of motion will be included within the analyses of the data. Students should be able to analyse graphs showing complex motion and describe how objects move as measured against time.	**Unit 3: Biology** **At the beginning of the unit students will learn about** genetics and heredity. They will examine the relationship between DNA, genes and the physical characteristics of an organism. Students will analyse monohybrid and dihybrid crosses and use patterns and trends to predict genotypes and phenotypes of offspring. They will construct pedigrees to track inheritable traits through generations. Students will consider the cause and effect of mutations on individuals and their offspring. **By the end of the unit students will be able to** explain the diversity of life on Earth using the theory of evolution and natural selection. Students will review models and mechanisms that have been developed and refined over time by a range of scientists to explain evolution and evaluate the evidence that supports these. They will critically analyse and evaluate the validity of evolutionary evidence found in secondary sources (including the fossil record, chemical and anatomical similarities, and the geographical distribution of species) and communicate their understanding of the theories and processes of evolution using scientific language, conventions and representations.	**Unit 4: Global Systems and Space Sciences** **At the beginning of the unit students will learn about** interactions between the biosphere, lithosphere, hydrosphere and atmosphere. They will examine how human activities impact on global systems, including explaining causes and effects of greenhouse gases and the impact of climate change on sea levels and biodiversity. Students will also examine factors that drive deep ocean currents and their role in regulating global climate and impacts on marine life. **By the end of the unit students will be able to** discuss a range of features in the universe including galaxies, stars and solar systems. They will consider the possible age of the universe and investigate the history of human knowledge of the solar system. They will also examine the physical parameters that exist on other planets and postulate the possibility of life existing on those planets.

Assessment Tasks

Unit 1	Unit 2	Unit 3	Unit 5
Student Experiment - Analysis of Reaction Rate Students develop questions and hypotheses and independently design and improve appropriate methods of investigation, including field work and laboratory experimentation. They explain how they have considered reliability, safety, fairness and ethical actions in their methods and identify where digital technologies can be used to enhance the quality of data. When analysing data, selecting evidence and developing and justifying conclusions, they identify alternative explanations for findings and explain any sources of uncertainty. They construct evidence-based arguments and select appropriate representations and text types to communicate science ideas for specific purposes. **Examination - Chemistry** Students analyse how the periodic table organises elements and use it to make predictions about the properties of elements. They explain how chemical reactions are used to produce particular products and how different factors influence the rate of reactions. When analysing data, selecting evidence and developing and justifying conclusions, they identify alternative explanations for findings and explain any sources of uncertainty.	**Data Test - Physics** When analysing data, selecting evidence and developing and justifying conclusions, students identify alternative explanations for findings and explain any sources of uncertainty. They evaluate the validity and reliability of claims made in secondary sources with reference to currently held scientific views, the quality of the methodology and the evidence cited. Students construct evidence-based arguments and select appropriate representations and text types to communicate science ideas for specific purposes. **Examination - Physics** Students explain the concept of energy conservation and represent energy transfer and transformation within systems. They apply relationships between force, mass and acceleration to predict changes in the motion of objects.	**Examination - Biology** Students explain the processes that underpin heredity and evolution. When developing and justifying conclusions, they identify alternative explanations for findings. Students construct evidence-based arguments and select appropriate representations and text types to communicate science ideas for specific purposes. **Research Assignment - Biology** Students evaluate the evidence for scientific theories that explain the diversity of life on Earth. They explain the processes that underpin heredity and evolution. Students analyse how the models and theories they use have developed over time and discuss the factors that prompted their review. They construct evidence-based arguments and select appropriate representations and text types to communicate science ideas for specific purposes.	**Practical Project - Climate Change** Students describe and analyse interactions and cycles within and between Earth's spheres. They develop questions and hypotheses and independently design and improve appropriate methods of investigation, including field work and laboratory experimentation. Students explain how they have considered reliability, safety, fairness and ethical actions in their methods and identify where digital technologies can be used to enhance the quality of data. When analysing data, selecting evidence and developing and justifying conclusions, they identify alternative explanations for findings. Students construct evidence-based arguments and select appropriate representations and text types to communicate science ideas for specific purposes. **Examination - Astronomy** Students evaluate the evidence for scientific theories that explain the origin of the universe. They explain the concept of energy conservation and represent energy transfer and transformation within systems. When developing and justifying conclusions, they identify alternative explanations for findings. Students construct evidence-based arguments and select appropriate representations and text types to communicate science ideas for specific purposes.