Year Level: 11	**Subject: Unit 1 Chemistry**	
Week	**Area of Study**	**Learning Focus**
HEADSTART 4th-7th Dec	Scientific Method	• To review the structure of a Chemistry Report and learn Scientific Method terminology.
CHRISTMAS HOLIDAYS 2nd Dec-30th Jan		
Area of Study 1: How can knowledge of elements explain the properties of matter?		
Outcome 1: Relate the position of elements in the periodic table to their properties, investigate the structures and properties of metals and ionic compounds, and calculate mole quantities.		
1 week 1 31st Jan-2nd Feb	Elements and the periodic table	• To review the structure of an atom and relate this to elements, molecules and compounds. • To construct a relative scale of objects. • To observe electron energy levels with absorption spectra.
1 week 2 5th – 9th Feb	Elements and the periodic table	• To conduct experiments demonstrating trends within the periodic table. • To interpret a series of ionization energies as evidence for electron shells and subshells.
1 week 3 12th – 16th Feb	Metals	• To examine a variety of metals and determine their common properties. • To determine the relative reactivity of metals through experimentation.
1 week 4 19th – 23rd Feb	Metals continued	• To illustrate Dalton's theory that atoms are rearranged in chemical reactions by reacting copper metal in a series of experiments. • To model the properties of alloys. • To investigate experimentally the effects of annealing, quenching and tempering metals.
1 week 5 26th Feb – 2nd March	Ionic Compounds	• To investigate the physical properties of ionic compounds. • To determine the empirical formula of an ionic compound experimentally.
1 week 6 5th – 9th March	Ionic Compounds	• To determine factors affecting mineral crystals, viewed under a stereomicroscope. • To investigate the uses of common ionic compounds.

1 week 7 12th – 16th March	Quantifying atoms and compounds	• To perform calculations of relative atomic masses from abundances and relative isotopic masses. • To visualize the mole using lollies.
1 week 8 19th – 23rd March	Quantifying atoms and compounds continued	• To interpret mass spectra to determine the relative atomic masses.
1 week 9 26th – 30 March	Quantifying atoms and compounds	• To solve quantitative exercises involving the mole and Avogadro's constant
EASTER HOLIDAYS		
Area of Study 2: How can the versatility of non-metals be explained?		
Outcome 2: Investigate and explain the properties of carbon lattices and molecular substances with reference to their structures and bonding, use systematic nomenclature to name organic compounds, and explain how polymers can be designed for a purpose.		
2 week 10 16th – 20th April	Materials from molecules	• To create ball-and-stick models of simple molecules. • To explain the shape of molecules with reference to their polar/non-polar character.
2 week 11 23rd-27th April	Materials from molecules continued	• To experimentally determine the properties of molecular substances. • To investigate intermolecular attractions using capillary action.
2 week 12 30thApril – 4th May	Carbon lattices and carbon nanomaterials	• To model the allotropes of carbon and determine their properties. • To research the applications of carbon nanomaterials.
2 week 13 7th – 11 May	Organic compounds Extended Research Investigation	• To research why crude oil reserves around the world have different hydrocarbon compositions. • To use steam distillation to extract oil from eucalyptus leaves. • To research answer to extended investigation question on crude oil. • To commence exam revision, identifying areas of concern.
2 week 14 14th -18th May	Extended Research Investigation EXAM REVISION	• To compile extended investigation research and compile Scientific Poster. • To apply knowledge of semester through a practice exam.

2 week 15 21st – 25th May	EXAM REVISION	• To continue exam revision.
2 week 16 28thMay – 1st June	YEAR 11 EXAMS	• To apply and test knowledge of the semester through examination.
2 week 17 4th -8th June	Organic compounds continued	• To create models of a range of alkanes, alkenes and alkynes. • To predict trends in melting and boiling points of alcohols, carboxylic acids and non-branched esters through experimentation. • To practice naming organic compounds.
2 week 18 11th – 15th June	Organic compounds continued	• To solve quantitative exercises involving empirical and molecular formulas of organic compounds.
2 week 19 18th – 22nd June	Polymers	• To model addition polymerisation of alkenes. • To experimentally determine the properties of thermoplastics and thermosetting plastics and explain their differences.
2 week 20 25th – 29th June	Polymers continued	• To research the advantages and disadvantages of polymer materials. • To design experiments to compare the relative biodegradabilities of different polymers labelled as 'biodegradable'; investigate environmental factors that affect biodegradability, for example UV light, pH, heat, water • use a problem-based learning approach to investigate an issue in chemistry, for example, safety issues associated with the use of nanoparticles in the manufacture of sunscreens
MID YEAR HOLIDAYS		
MID YEAR HOLIDAYS		

Year Level: 11 **Subject: Unit 2 Chemistry**

Semester: 2

Week	Unit	Learning Focus
1	Properties of water	• Trends in MP and BP of Group 16 hydrides • Specific heat capacity and latent heat of water
2	Water as a solvent	• The solution process • Precipitation reactions • Ionic equations • Importance of solvent properties in biological, domestic or industrial contexts
3	Measurement of solubility and concentration	• Solubility and solubility tables • Solubility curves • Units of concentration

4-5	Acid-base reactions in water	• Lowry-Bronsted theory • Reactions involving acids and bases and equation writing • Ionic product of water, pH • Strengths of acids and base (No Ka) • Dilutions of solutions • Strong and weak acids and bases and dilute and concentration solutions • Selected acid-base issue – Ocean acidity
6	Redox reactions in water	• Oxidation and reduction • Writing equations • Reactivity series • Selected redox issue - Corrosion
7	Water sample analysis	• Water distribution and availability • Sampling protocols • Selected water sample and contaminant
8-10	Analysis for salts in water	• Sources of salts • Mass-mass stoichiometry • Gravimetric analysis • Colorimetry and UV-visible spectroscopy • Atomic absorption spectroscopy and calibration
11	Analysis for organic compounds	• Organic contaminants in water • Chromatography and HPLC
Term 4		
1-2	Analysis for acids and bases	• Sources of acids and bases in waterways • Volume-volume stoichiometry • Volumetric analysis including standard solutions and dilutions • Practice of stoichiometry
3-4	Practical Investigation	
5	Complete all assessment tasks and content	
6	Revision	
7	Exams	