DAPTO HIGH SCHOOL – Science
Year 9 - Topic: Periodic Table

To satisfactorily complete this topic you must achieve the outcomes below.

Student Outcomes	Achieved? (√ or X)
1. Distinguish between an element, compound and a mixture. 2. Identify the atom as the smallest unit of an element. 3. Describe the features and the location of protons, neutrons and electrons in the atom. 4. Construct a table to distinguish between elements using information about the numbers of protons, neutrons and electrons 5. Use molecular model kits to display the structure of elements, compounds, atoms and molecules. 6. Describe an appropriate model that had been developed by scientists to describe atomic structure. 7. Identify the position of and describe the relationships between elements (including physical properties) using the periodic table: • Metals, non-metals, semi-metals, inert gases • Rows (going down) eg. inert gases and halogens • Periods (going across) increase by 1 electron and 1 proton each space. 8. Describe the order of activity for different metals. 9. Recall the names and symbols of the first 20 elements as well as zinc, copper, tin, silver, gold, iron and uranium. 10. Draw diagrams or construct models to show the differences between atoms, molecules of an element and molecules of a compound. 11. Identify that a new compound is formed by rearranging atoms, rather than by creating matter. 12. Name and write the formula of compounds made up of two elements using the periodic table. 13. Learn the basic concept of valency. 14. Identify where chemical reactions occur around us. 15. Evaluate the impact of chemical applications which prevent corrosion (Eg. zinc block in outboard motors, antifouling paint on boats, paint on metallic objects). 16. Identify local industries which relay on chemistry knowledge (Eg. Bluescope Steel/ Copper Mills/ Mines etc). 17. Research and present information in a table to compare the properties of at least 5 elements. **Vocabulary List:** Reaction Decomposition Electrons Metal Carbonate Reactants Element Inert Gas Combustion Products Compounds Corrosion Protons Molecule Precipitate Neutrons Atom	

Topic Test: ___/50

Bookwork :   Satisfactory ☐   Unsatisfactory ☐

Attitude :   Satisfactory ☐   Unsatisfactory ☐

Assessments :   Satisfactory ☐   Unsatisfactory ☐

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      Teacher Signature   Parent/Guardian Signature

Self-reflection

My achievements for this unit are:_____

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I need to improve in the following area:_____

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One way I can improve:_____

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DAPTO HIGH SCHOOL – Science
Year 9 - Topic: Healthy Bodies

To satisfactorily complete this topic you must achieve the outcomes below.

Student Outcomes	Achieved? (√ or X)

1. Define Disease as a condition when the body or part of it does not function properly.
 2. Recognise the signs of a healthy person compared to an unhealthy person.
 3. Compare the terms infectious disease and non-infectious disease.
 4. Use a bioviewer to draw and describe examples of human diseases as well as harmful and helpful bacteria.
 5. Name a disease caused by the following:
     ▪ Bacteria (diphtheria, whooping cough)
     ▪ Fungi (ringworm, tinea, thrush)
     ▪ Virues (influenza, smallpox, HIV)
     ▪ Protozoa (Malaria, amoebic, dysentery)
 6. Culture agar plates and compare features of bacterial and fungal colonies.
 7. Name a disease caused by each of the following:
     ▪ Nematodes (threadworm)
     ▪ Cestodes (tapeworms)
     ▪ Trematode (liver fluke)
 8. Interpret life cycle diagrams of Nematodes, Cestodes and Trematodes.
 9. Research the work of Pasteur, Lister and Jenner.
 10. Identify and discuss the role of:
     ▪ The bodies first line of defence (skin, acids, mucus membranes)
     ▪ The bodies second line of defence (white blood cells)
     ▪ The bodies third line of defence (antiobodies of the immune system)
 11. Summarise information from a video describing our bodies defence against diseases.
 12. Use a bioviewer to complete diagrams and describe the bodies defence against infection and immunity.
 13. Compare the use of antibiotics (to kill bacteria in the body) and disinfectants (kill bacteria outside the body).
 14. Explain the use of vaccines to stimulate the production of antibiotics against specific disease antigens.
 15. List and describe in general terms the following types of non-infectious diseases:
     ▪ Autoimmune disease (type 1 diabetes, MS, lypus, rheumatoid arthritis)
     ▪ Cancer
     ▪ Genetic Disease (Downs syndrome, Hemophilia, Cleft palate)
     ▪ Nutritional (rickets, scurvy)
     ▪ Environmental (Asthma, Hay fever, Skin cancer)
     ▪ Emotional (Bulimia, Depression)
 16. Name the main components of the Nervous and Endocrine Systems.
 17. Compare the roles of the Central Nervous System and the Peripheral Nervous System.
 18. Explain a voluntary and involuntary action.
 19. Label a diagram showing the sensory connective and motor neurons of the reflex arc.
 20. Infer the number and location of sensory cells by comparing the sensitivity of difference parts of the body.
 21. Draw and label a nerve cell using a microscope.
 22. List the glands of the Endocrine System (pituitary, thymus, thyroid, adrenal, testes/ovaries).
 23. Name and label a diagram of the main hormones, and give one function of each, made by each of the glands of the Endocrine System:
     ▪ Thyroxin (growth)
     ▪ Insulin (break down of sugar)
     ▪ Adrenalin (fight/fight response)
     ▪ Testosterone (male sex hormone)
     ▪ Estrogen (female sex hormone)	

Additional Content:
24. Identify the causes of reduced life expectancy and disease in isolated Aboriginal populations
25. Identify and outline the role of three traditional Aboriginal disease treatments.

Vocabulary List:

Disease	Viruses	Protozoa	Nutrition
Pathogen	Host	Nematodes	Environmental
Hormones	Immune System	Cestodes	Emotional
Glands	Glands	Trematodes	Voluntary
Neurons	Health	Defence	Involuntary
Antigens	Infectious	Disinfectant	Reflex
Vaccines	Non-infectious	Autoimmune	Sensory
Antibiotics	Fungi	Genetic	Endocrine
Bacteria	Cell	Nerve	

Topic Test: ___/50

Bookwork : Satisfactory ☐ Unsatisfactory ☐

Attitude : Satisfactory ☐ Unsatisfactory ☐

Assessments : Satisfactory ☐ Unsatisfactory ☐

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Teacher Signature   Parent/Guardian Signature

Self-reflection
My achievements for this unit are:_____
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I need to improve in the following area:_____
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One way I can improve:_____
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DAPTO HIGH SCHOOL – Science
Year 9 - Topic: At Light Speed

To satisfactorily complete this topic you must achieve the outcomes below.

Student Outcomes	Achieved? (√ or X)

1. Identify waves as carriers of energy.
2. Identify sound as an example of a longitudinal wave and light as an example of a transverse wave.
3. Describe and compare transverse and longitudinal waves (using light and sound as examples) regarding:
    ▪ Particle motion as compared to wave motion
    ▪ Requirement of a medium
    ▪ Amplitude, wave length, frequency, crest and trough.
4. Draw and label appropriate diagrams to represent waves with different properties.
5. Identify and compare the speed of light and sound in different mediums.
6. Describe and demonstrate some basic properties of electromagnetic radiation using light as an example:
    ▪ Straight line travel
    ▪ Reflection (using straight, concave and convex mirrors)
    ▪ Refraction (using prisms, convex and concave lenses)
    ▪ Diffraction (using prisms and light box slits)
7. Discuss the advantages and limitations of using certain equipment in the above experiments.
8. Draw a model of the eye and ear and relate the structures to functions (in a table).
9. Identify the Electromagnetic Spectrum (EMS) as a unique of waves that travel at 3 x 10 m/s and that light is part of the EMS.
10. Identify the main categories of waves that make up the EMS:
    ▪ Radiowaves
    ▪ Infrared Waves
    ▪ Visible Light
    ▪ Ultraviolet Waves (UV)
    ▪ X-Rays
    ▪ Gamma Rays
11. Identify how each of the group of waves listed above are used in everyday life (Eg: medicine, communication, security).
12. Associate the term Electromagnetic Radiation (EMR) with EMS.
13. Research possible problems associated with Electromagnetic Radiation (EMR).
    Eg: living below power lines, using mobile phones, faculty seals in microwaves, computer screens.
 	
Vocabulary List:
 	
	Electromagnetic	Crest	Medium	Prism

Spectrum	Trough	Transverse	Concave
Radiation	Energy	Longitudinal	Convex
Wave length	Reflection	Category	
Amplitude	Refraction	Particle	
Frequency	Diffraction	Hertz			

Topic Test: ____/50

Bookwork :   Satisfactory ☐   Unsatisfactory ☐

Attitude :   Satisfactory ☐   Unsatisfactory ☐

Assessments :   Satisfactory ☐   Unsatisfactory ☐

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        Teacher Signature   Parent/Guardian Signature

Self-reflection
My achievements for this unit are:_____

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I need to improve in the following area:_____

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One way I can improve:_____

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DAPTO HIGH SCHOOL – Science
Year 9 - Topic: What is that Stuff?

To satisfactorily complete this topic you must achieve the outcomes below.

Student Outcomes	Achieved? (√ or X)

1. Recall definitions of mixtures, pure substances, elements and compounds.
 2. Classify a group of substances as mixtures, elements or compounds.
 3. Learn about the safe handling of chemicals in the home, at school and in industry, including hazard labels and signs.
 4. Decompose water into hydrogen and oxygen by electrolysis.
 5. Extract copper from copper sulfate and/or lead from lead nitrate by electrolysis.
 6. Synthesize a compound from its constituent elements (Eg: Fes, ZnS, Cus).
 7. Learn about why do compounds form and what happens when elements form compounds.
 8. Classify compounds as inorganic or organic.
 9. Name various inorganic compounds – binary, radicals, non-metal/non-metal prefixes.
 10. Learn to write simple chemical formulae of inorganic compounds.
 11. Test acids and determine their properties.
 12. Test bases and determine their properties.
 13. Test groups of salts and test for similar properties (sulfates, nitrates, carbonates)
 	
 Additional Content:
 14. Classify some organic compounds according to their properties:
    ▪ Carbonates
    ▪ Proteins
    ▪ Lipids
    ▪ Hydrocarbons
 15. Name simple hydrocarbon compounds (IUPAC nomenclature)
 	
 Vocabulary List:
 	
 Chemical   Formula   Property
 Compound   Hydrocarbon   Reaction
 Electrolysis   Inorganic   Substance
 Element   Mixture   Synthesize
 Extraction Organic	

Topic Test: ___/50

Bookwork :   Satisfactory ☐   Unsatisfactory ☐

Attitude :   Satisfactory ☐   Unsatisfactory ☐

Assessments :   Satisfactory ☐   Unsatisfactory ☐

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     Teacher Signature   Parent/Guardian Signature

Self-reflection

My achievements for this unit are:_____

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I need to improve in the following area:_____

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One way I can improve:_____

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DAPTO HIGH SCHOOL – Science
Year 9 - Topic: Act Local, Think Global

To satisfactorily complete this topic you must achieve the outcomes below.

Student Outcomes	Achieved? (√ or X)
1. Distinguish between the terms biotic and abiotic.	

1. Distinguish between the terms biotic and abiotic.
2. Identify and measure the biotic and abiotic features of the local environment (Lake Illawarra Catchment – Mullet Creek).
3. Describe the terms biosphere, lithosphere, hydrosphere, atmosphere and asthenosphere.
4. Draw water, nitrogen and carbon cycles.
5. Discuss the importance of the cycles of materials in ecosystems.
6. Explain the importance of the Ozone Layer to life on Earth.
7. Describe some impacts of human activities on ecosystems:
   ▪ Reducing biodiversity (Eg: logging, farming – monocultures)
   ▪ Reducing resources (Eg: mining – non-newable)
   ▪ Urbanistaion (Eg: housing, transport, freeway exhaust towers)
   ▪ Recreational activities (Eg: fishing, boating)
   ▪ Technology (Eg: CFC's affecting ozone layer)
   ▪ Agricultural Eg: fertilizers – eutrofication and pesticides)
8. Explain the Greenhouse Effect using a diagram.
9. Identify excessive use of fossil fuels as a contributor to a Greenhouse Effect.
10. Relate pollution to contamination by unwanted substances.
    ▪ Air – test car exhaust for CO, CO and acidic compounds
    ▪ Water (Lake or Local Creek) – test for turbidty, pH and temperature
11. Discuss strategies (using various sources), used to balance human activities and needs in ecosystems with conserving, protecting and maintaining the quality and sustainability of the environment. (Eg: National Parks, Unleaded petrol, conversion programs, pollution monitoring programs – beach water results in local paper and urban planning).
12. Distinguish between scientific argument and economical/ legal appeal (Eg: wind power – one site near Goulburn, nuclear power – Lucas Heights, wave power – site off Port Kembla).
13. Debate the "NIMBY" position.

Additional Content:
14. Outline some land management practices and techniques used by various cultures including Aboriginals.
15. Discuss evidence for and against relating global warming to changes in weather patterns, including El Nino and La Nina.

Vocabulary List:

Biosphere	Environment	Cycle	Nuclear
Lithosphere	Biotic	Biodiversity	Urbanisation
Atmopshere	Abiotic	Ecosystems	Technology
Hydrosphere	Greenhouse	Contamination	Pollution
Asthenopshere	Ozone	Sustainability	

Topic Test: ____/50

Bookwork :	Satisfactory ☐	Unsatisfactory ☐
Attitude :	Satisfactory ☐	Unsatisfactory ☐
Assessments :	Satisfactory ☐	Unsatisfactory ☐

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Teacher Signature   Parent/Guardian Signature

Self-reflection
My achievements for this unit are:_____

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I need to improve in the following area:_____

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One way I can improve:_____

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DAPTO HIGH SCHOOL – Science
Year 9 - Topic: Electricity

To satisfactorily complete this topic you must achieve the outcomes below.

Student Outcomes	Achieved? (√ or X)
1. Describe voltage, current and resistance using analogies such as water flowing through a pipe (current), the diameter of a pipe (resistance) and force pushing water through the pipe (voltage). 2. Describe Ohm's Law, the relationship between voltage, current and resistance. 3. Design, construct and draw circuits containing a number of components, including voltmeters, ammeters and light globes. 4. Compare the characteristics and applications of series and parallel circuits: ▪ Series – the current is the same, the voltage is shared ▪ Parallel – the voltage is the same, the current is shared 5. Describe a logical procedure for setting up both series and parallel circuits. 6. Follow the planned procedure when setting up series and parallel circuits. 7. Safely and efficiently assemble and manipulate voltmeters and ammeter in series and parallel circuits. 8. Record data from voltmeters and ammeters in series and parallel circuits. 9. Use symbols to express relationships, including mathematical ones and appropriate units for voltage, current and resistance. 10. Use circuit diagrams, graphs and tables to show the relationships between voltage, current and resistance. **Vocabulary List:** Series Conductor Ohm Parallel Insulator Amp Circuit Voltage Volt Current Electricity Voltmeter Resistance Energy Ammeter	

Topic Test: ___/50

Bookwork :   Satisfactory ☐   Unsatisfactory ☐

Attitude :   Satisfactory ☐   Unsatisfactory ☐

Assessments :   Satisfactory ☐   Unsatisfactory ☐

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Teacher Signature Parent/Guardian Signature

Self-reflection

My achievements for this unit are:_____

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I need to improve in the following area:_____

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One way I can improve:_____

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DAPTO HIGH SCHOOL – Science
Year 9 - Topic: Forensic Science

To satisfactorily complete this topic you must achieve the outcomes below.

Student Outcomes	Achieved? (√ or X)
1. Define "forensic science".	
2. Describe the work of Forensic scientists.	
3. List, discuss and examine different types of evidence that can be collected at a crime scene.	
4. Distinguish between "evidence" and "proof"	
5. Use evidence to reconstruct a crime.	
6. Recall the principal of forensic science – "when two objects come into contact, there is always transference of material from one object to another"	
7. Distinguish between and observation/inference and hypothesis/conclusion.	
8. Distinguish between trace and contact evidence at crime scenes.	
9. List the procedures to be followed at a crime scene to ensure all evidence is collected and contamination is avoided.	
10. Discuss the importance of evidence such as fibres, hair, paint chips, pollen grains, blood samples and soil found at crime scenes.	
11. Recognise the importance of insect life cycles in developing a hypothesis about the approximate time of death of crime scene victims.	
12. Identify the main groups of fingerprint patterns as arches, whorls, loops and composites of these groups.	
13. Analyse and collect fingerprint patterns and bite marks to identify possible crime suspects.	
14. Sort evidence according to patterns using blood splatters, ballistic evidence, blood groups, results of DNA analysis and plaster casts of footprints and tyre treads.	
15. Assess the impact of DNA sampling on solving crimes.	
16. Accurately describe and identify "suspects" from brief observations.	
17. Identify ink by chromatography.	
18. Identify a suspect by examining footprints and soil samples taken from shoes.	
19. Examine the background of a number of crimes in the past that have used "Forensic Science" to solve the crimes.	

Vocabulary List:

Forensic	Inference	Chromatography	Dental Record
Evidence	Analysis	Proof	
Blood types	Fingerprints	Qualitative	
DNA profiling	Ballistics	Quantitative	

Topic Test: ___/50

Bookwork : Satisfactory ☐ Unsatisfactory ☐

Attitude : Satisfactory ☐ Unsatisfactory ☐

Assessments : Satisfactory ☐ Unsatisfactory ☐

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Teacher Signature   Parent/Guardian Signature

Self-reflection

My achievements for this unit are:_____

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I need to improve in the following area:_____

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One way I can improve:_____

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