

Year Plan for Science grade 10

unit no.	Unit title	Time	Key concept	related concept	global context	Statement of Inquiry	Objectives	ATL skills	Content	Resources
1	Coordinated body systems	2 weeks	Systems	Form and function Movement Balance	Identities and relationships: an exploration of how we are made up of complex systems that work together	Coordinated responses in systems require organisation and communication	Criterion A, B	Information literacy Collaboration Critical thinking	* Exploring discrimination of our own senses * Explaining the body's communication systems * Chemical controls in other organisms * An evaluation of implications of complexity levels	pp 56-77
2	Global diseases	4 weeks	Relationships	Environment Interaction consequences	Fairness & Development	Health, history and global relationships re all transformed by Infectious diseases	Criterion A, B, C	Information literacy Critical thinking	* Origins of infectious diseases * Types of pathogens * Disease transmission * How our bodies respond to disease * Disease control	Biology 4/5 pg 182-203
3	Understanding matter (periodic table)	3 weeks	Relationships	Development Patterns Creativity	Personal and cultural expression: an exploration into humankind's search for understanding of matter	The development of our modern ideas about matter, including the periodic table, is a story about the creative work of philosophers and chemists from a variety of cultures and over a	Criterion A, B, C	Communication Research Thinking Self-management	* The discovery of elements * Creation of the periodic table * Relationships in the periodic table * Modern models for atomic structure * Group 18: The noble gases * Group 1: The alkali metals * Group 17: The halogens * Patterns in the transition metals	Chemistry 4/5 for the international student pp.2-28
4	It's in your Genes	2 weeks	Change	Patterns Transformation Consequences	Personal and cultural expression: an exploration of a modern understanding of genetics, as a source of conserving identity or generating variation	Genetics show us who we , and all other life, once were, are and might become	Criterion A, B	Affective-emotional intelligence Transfer	* The genetics of asexual reproduction * The mechanics of mitosis * Chromosomes: our parents legacy * The origins of sex * Explaining patterns: Mendel's gift for statistics * Patterns of inheritance * Other examples of inheritance	pp 130-150
5	Molecules and metals in our lives	3 weeks	Relationships	Environment Consequences Transfer	Globalisation and sustainability: an exploration into the balance between our reliability on organic chemicals and their responsible use	The idea of "think globally, act locally" is important to the protection of fragile ecosystems	Criterion A, B	Creative thinking	* Relating the properties of a substance to its structure and bonding * Giant covalent structures * Metallic bonding * Organic chemistry * Crude oil * Responsible citizenship in a chemical age * The impact of CFC's	pp 58-83
6	Chemical systems	1.5 weeks	Systems	Balance Movement Consequences	Scientific and technical innovation; an exploration of developments that have arisen from our knowledge of reaction rates and equilibrium	Innovations in chemistry often depend on a understanding of rates of chemical reactions	Criterion A, B	Critical Thinking	* The rate of a chemical reaction * Chemical systems in equilibrium * Understanding the importance of the Haber process	pp 110-134
7	Important redox reactions	1.5 weeks	Change	Energy Consequences Interaction	Orientation in time and place: an exploration into the growing importance in our lives of applications of redox reactions	Developments in our understanding of the energy changes in redox reactions are having considerable consequences for our society	Criterion A, B	Communication Transfer Critical thinking	* Redox: oxidation and reduction reactions * Half equations * Reactivity series of metals * Ionic equations * Extraction of metals * Batteries and their future	pp 136-161

8	useful organic molecules	1.5 weeks	Relationships	Environment Form Function	Globalisation and sustainability: an exploration of the wider implications of our present use of synthetic chemicals, especially plastics	Our ability to develop new organic chemicals has resulted in many useful products but increasingly questions are being asked about sustainability and stewardship of the environment	Criterion A, C	Critical thinking Transfer	<ul style="list-style-type: none"> * Naming the organic compounds * Cracking of alkanes * Alkenes * Addition polymerisation * Properties and uses of plastics * Condensation polymerisation * Biological polymers * fats and oils * Alcohols * Plastics into the future 	pp 164-192	Organic Chemistry
9	ing use of energy cha	2 weeks	Change	Environment Energy	Scientific and technical innovation: an exploration into innovative uses of chemical reactions	Our understanding of chemical reactions and associated energy changes has led to the possibility of innovative new products in our lives.	Criterion A, B	Creative thinking Collaboration: peer teaching	<ul style="list-style-type: none"> * Exothermic and endothermic reactions * Using exothermic and endothermic reactions * Bond energies and energy changes * Measuring energy changes in chemical reactions. * Further heat of and Hess's Law * Combustion reactions: the good and the bad 	pp 226-266	
10	motion and car safety	2 weeks	relationships	Development Movement Cause and effect Consequences	Scientific and technical innovation- an exploration of how humans use understanding of scientific principles to improve the quality of their lives.	Our understanding of Newton's laws of motion has led to safety features in cars that improve road safety	Criterion A, B	Communication Communication: Correct use of scientific language Creative thinking: Enjoying new challenges and the ingenuity involved in using new techniques Reflection: monitors own learning, approaches tasks Strategically	<ul style="list-style-type: none"> Describing motion Reaction time and equations of motion Force Newton's laws of motion Car safety features 	pp. 60-90	
11	cost of switching on	2 weeks	relationships	Patterns Environment Consequences	Globalisation and sustainability- an exploration of the implications for our environment of our generation and use of electricity	Our present reliance on fossil fuels for electricity production is environmentally unsustainable on a global scale.	Criterion A, D	Organisation Creative thinking Information literacy	<ul style="list-style-type: none"> Measuring energy How much energy do we use? Energy sources Electromagnetic induction and spinning turbines Electromagnetism The motor effect Transmission of electricity in a national grid Energy and earth Alternatives to fossil fuels Electrical generation in developing countries 	pp. 92-124	Electricity
12	flight	3 weeks	change	Development Form Function	Orientation in time and space-an exploration into the story of how people created the technology for flight and of the impact this has had on how we live	Our understanding of aerodynamic principles and subsequent developments in aviation technology have led to radical changes in society	Criterion A, D	Collaboration Reflection: Monitoring your progress, considering areas of difficulties Transfer	<ul style="list-style-type: none"> Forces involved in flight Lighter than air flight Heavier than air flight No air space flight Momentum 	pp. 126-151	

