

# Science Department

## Curriculum Overview:

### Curriculum Overview: Key Stage 3 Science

Please see the department MTP for a more in depth scheme of work.

Year	Term	Unit/s of Work	Core Knowledge & Concepts
7	1	1A Unit 7.1 Living Things	<ul style="list-style-type: none"> <li>The characteristics common to all living things, and their importance to the survival of the organism.</li> <li>That all living things are made of cells, the structure and typical cells, how cells are adapted to their function.</li> <li>How cells are organised into tissues, organs and organ systems to efficiently carry out the functions of life.</li> </ul>
		1B Unit 7.2 Solids, Liquids and Gases	<ul style="list-style-type: none"> <li>Students build on their previous knowledge of states of matter</li> </ul>
		1C Unit 7.3 Energy Transformations	<ul style="list-style-type: none"> <li>Different types of energy.</li> <li>Energy as something that cannot be created or destroyed.</li> <li>Energy transfers.</li> </ul>
	2	2A Unit 7.4 Microorganisms and Disease	<ul style="list-style-type: none"> <li>How some microorganisms can be useful to humans but others are harmful.</li> <li>The use of microorganisms in food production.</li> <li>How microorganisms breakdown can cause decay.</li> <li>The work of Louis Pasteur and other scientists studying the human body.</li> </ul>
		2B Unit 7.5 The Earth and Beyond	<ul style="list-style-type: none"> <li>The different type of rocks and soils.</li> <li>Simple models of the internal structure of the Earth.</li> <li>Fossils and the fossil record as a guide to estimating the age of the Earth.</li> <li>How the movement of the Earth causes the apparent daily and annual movement of the Sun and the stars.</li> <li>The relative positions and movement of the planets and the Sun in the solar system.</li> <li>The impact of the ideas and discoveries of Copernicus, Galileo and more recent scientists.</li> <li>The Sun and other stars as sources of light, and that planets and other bodies are seen by reflected light.</li> </ul>
		2C Unit 7.6 Putting Things into Groups	<ul style="list-style-type: none"> <li>Metals and non-metals.</li> <li>Everyday materials and their physical properties.</li> <li>Classify animals and plants into major groups, using some locally occurring examples.</li> <li>Understand what is meant by a species.</li> <li>Investigate variation within a species.</li> </ul>
	3	3A Unit 7.7 Habitats and Environment	<ul style="list-style-type: none"> <li>Where organisms live.</li> <li>How organisms interact with each other and the environment.</li> <li>The influences humans have on the natural environment.</li> </ul>
		3B Unit 7.8 Acids and Bases	<ul style="list-style-type: none"> <li>How to tell if a solution is an acid or an alkali.</li> <li>Using a pH scale.</li> <li>Neutralisation and some of its applications.</li> </ul>
		3C Unit 7.9 Forces and their Effects	<ul style="list-style-type: none"> <li>The effects of forces on movement, including friction and air resistance.</li> <li>The effects of gravity on objects.</li> </ul>
8	1	1A Unit 8.1 Obtaining Food	<ul style="list-style-type: none"> <li>The need of plants for carbon dioxide, water and light for photosynthesis and that this process makes biomass and oxygen</li> <li>The constituents of a balanced diet and the functions of various nutrients</li> <li>The effects of nutritional deficiencies</li> <li>The relationship between diet and fitness</li> <li>The organs and functions of the alimentary canal</li> <li>The function of enzymes</li> </ul>
		1B Unit 8.2 Elements, Mixtures and Compounds	<ul style="list-style-type: none"> <li>Changes of state, gas pressure and diffusion.</li> <li>The chemical symbols for the first twenty elements of the Periodic Table.</li> </ul>

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			<ul style="list-style-type: none"> <li>• Elements, compounds and mixtures.</li> </ul>
		1C Unit 8.3 Light	<ul style="list-style-type: none"> <li>• How light travels and the formation of shadows.</li> <li>• How non-luminous objects are seen.</li> <li>• Reflection at a plane surface and use the law of reflection.</li> <li>• Refraction at the boundary between air and glass or air and water.</li> <li>• The dispersion of white light.</li> <li>• Colour addition and subtraction, and the absorption and reflection of coloured light.</li> </ul>
	2	2A Unit 8.4 Respiration and Circulation	<ul style="list-style-type: none"> <li>• How water and mineral salts are absorbed and transported in flowering plants.</li> <li>• They also develop their knowledge of transporting chemicals in humans by finding out about</li> <li>• The basic components of the circulatory system and their functions.</li> <li>• The basic components of the respiratory system and their functions.</li> <li>• Gaseous exchange.</li> <li>• The effects of smoking.</li> <li>• Aerobic respiration.</li> </ul>
		2B Unit 8.5 Metals, Non-metals and Corrosion	<ul style="list-style-type: none"> <li>• The differences between metals and non-metals.</li> <li>• Chemical reactions which are not useful.</li> <li>• Word equations.</li> </ul>
		2C Unit 8.6 Sound	<ul style="list-style-type: none"> <li>• The properties of sound in terms of movement of air particles.</li> <li>• The link between loudness and amplitude, pitch and frequency.</li> </ul>
	3	3A Unit 8.7 Reproduction and Growth	<ul style="list-style-type: none"> <li>• The human reproductive system, including the menstrual cycle, fertilisation and foetal development.</li> <li>• The physical and emotional changes that take place during adolescence.</li> <li>• How conception, growth, development, behaviour and health can be affected by diet, drugs and disease.</li> </ul>
		3B Unit 8.8 Chemical Reactions	<ul style="list-style-type: none"> <li>• Some common compounds including oxides, hydroxides, chlorides, sulphates and carbonates.</li> <li>• Using word equations to describe a reaction.</li> </ul>
		3C Unit 8.9 Forces and Magnets	<ul style="list-style-type: none"> <li>• Speed including interpreting simple distance/time graphs.</li> <li>• How magnetism can be used to move things.</li> </ul>
9	1	1A Unit 9.1 Photosynthesis and Plant Growth	<ul style="list-style-type: none"> <li>• The process of photosynthesis including the word equation.</li> <li>• The importance of water and mineral salts to plant growth.</li> </ul>
		1B Unit 9.2 The Periodic Table and Preparing Salts	<ul style="list-style-type: none"> <li>• The structure of an atom.</li> <li>• The methods and discoveries of Rutherford and other scientists.</li> <li>• The structures of the first twenty elements of the Periodic Table.</li> <li>• Trends in groups and periods.</li> <li>• Preparing some common salts by the reactions of metals or metal carbonates with acid.</li> <li>• Writing word equations to describe reactions of metals or metal carbonates with acids.</li> </ul>
		1C Unit 9.3 Electrostatics and Electric Currents	<ul style="list-style-type: none"> <li>• Electrostatics and the concept of charge, including digital sensors.</li> <li>• Simple series and parallel circuits.</li> <li>• How common types of component, including cells (batteries), affect current.</li> <li>• How current divides in parallel circuits.</li> <li>• Measuring current and voltage.</li> </ul>
	2	2A Unit 9.4 Sexual Reproduction in Flowering Plants	<ul style="list-style-type: none"> <li>• Sexual reproduction in flowering plants including pollination, fertilisation, seed formation and dispersal.</li> </ul>
		2B Unit 9.5 Reactivity and Rates of Reaction	<ul style="list-style-type: none"> <li>• The reactivity series of metals with oxygen, water and dilute acids.</li> <li>• Displacement reactions.</li> <li>• The effects of concentration, particle size, temperature and catalysts on the rate of a reaction.</li> </ul>
		2C Unit 9.6 Movements, Pressure and Density	<ul style="list-style-type: none"> <li>• Objects turning on a pivot and understand the principle of moments.</li> <li>• Pressure as caused by the action of force on an area.</li> <li>• Pressures in gases and liquids (qualitative only).</li> <li>• The densities of solids, liquids and gases.</li> </ul>

	3	3A Unit 9.7 Ecology	<ul style="list-style-type: none"> <li>Constructing keys to identify plants and animals.</li> <li>Food chains, food webs and energy flow including the role of decomposers.</li> <li>How living things are adapted to their habitats.</li> <li>How characteristics are inherited.</li> <li>Selective breeding.</li> <li>The work of Darwin on natural selection and other scientists studying the natural world.</li> </ul>
		3B Unit 9.8 Chemicals and Thermal Energy	<ul style="list-style-type: none"> <li>Endothermic processes and exothermic reactions.</li> <li>The thermal (heat) energy transfer processes of conduction, convection and radiation.</li> <li>Cooling by evaporation.</li> </ul>
		3C Unit 9.9 The Energy Crisis and Human Influences	<ul style="list-style-type: none"> <li>Factors affecting the size of populations.</li> <li>Some effects of human influences on the environment.</li> <li>The world's energy needs.</li> </ul>

### Curriculum Overview: Combined Science

Please see the department MTP for a more in depth scheme of work.

Year	Term	Unit/s of Work	Core Knowledge & Concepts	
10	1	Cells and cell processes	<ul style="list-style-type: none"> <li>Characteristics of Living Things</li> <li>Cell structure</li> <li>Movement in and out of cells</li> <li>Enzymes</li> </ul>	
		Animal nutrition	<ul style="list-style-type: none"> <li>Biological molecules</li> <li>Diet</li> <li>Alimentary canal</li> <li>Digestion</li> </ul>	
		Experimental techniques	<ul style="list-style-type: none"> <li>Measurement</li> <li>Criteria of purity</li> <li>Methods of purification</li> </ul>	
		Particles, atomic structure, ionic bonding and the Periodic Table	<ul style="list-style-type: none"> <li>The particulate nature of matter</li> <li>Atomic structure and the periodic table</li> <li>Elements, compounds and mixtures</li> <li>Physics and chemical changes</li> <li>Properties of metals</li> <li>Ions and ionic bonds</li> <li>Energy changes in chemical reactions</li> <li>The periodic table</li> <li>Periodic trends</li> <li>Stoichiometry</li> <li>Group properties</li> </ul>	
			Light	<ul style="list-style-type: none"> <li>Reflection of light</li> <li>Refraction of light</li> <li>Thin converging lens</li> </ul>
			Electricity 1	<ul style="list-style-type: none"> <li>Current, potential difference and electromotive force</li> <li>Resistance</li> <li>Electrical energy</li> </ul>
		2	Plant nutrition and transport	<ul style="list-style-type: none"> <li>Plant nutrition</li> <li>Transport in plants</li> </ul>
			Air and water	<ul style="list-style-type: none"> <li>Water</li> <li>Air</li> <li>Noble gases</li> <li>Carbon dioxide and methane</li> <li></li> </ul>

		Acids, bases and salts	<ul style="list-style-type: none"> <li>Stoichiometry</li> <li>The characteristic properties of acids and bases</li> <li>Preparation of salts</li> <li>Identification of ions and gases</li> </ul>
		Energy	<ul style="list-style-type: none"> <li>Energy</li> <li>Energy resources</li> <li>Conduction</li> <li>Convection</li> <li>Radiation</li> <li>Consequences of energy transfer</li> </ul>
	3	Respiration and transport in mammals	<ul style="list-style-type: none"> <li>Respiration</li> <li>Gas exchange</li> <li>Transport in mammals</li> </ul>
		Reaction rates	<ul style="list-style-type: none"> <li>Rate of reaction</li> <li>Energy changes in chemical reactions</li> </ul>
11	1	Metals and the reactivity series	<ul style="list-style-type: none"> <li>Properties of metals</li> <li>Reactivity series</li> <li>Extraction of metals from their ores</li> <li>Transition elements</li> </ul>
		Mechanics 1	<ul style="list-style-type: none"> <li>Length and time</li> <li>Motion</li> <li>Mass and weight</li> <li>Density</li> </ul>
		Coordination and response	<ul style="list-style-type: none"> <li>Hormones in humans</li> <li>Tropic responses</li> </ul>
		Reproduction in plants	<ul style="list-style-type: none"> <li>Asexual and sexual reproduction</li> <li>Sexual reproduction in plants</li> </ul>
		Covalent bonding	<ul style="list-style-type: none"> <li>Molecules and covalent bonds</li> </ul>
		Organic 1	<ul style="list-style-type: none"> <li>Homologous series</li> <li>Fuels</li> <li>Alkanes</li> <li>Alkenes</li> </ul>
		Electricity 2	<ul style="list-style-type: none"> <li>Electric charge</li> <li>Circuit diagrams</li> <li>Series and parallel circuits</li> <li>Dangers of electricity</li> </ul>
		Thermal physics	<ul style="list-style-type: none"> <li>Simple kinetic model of matter</li> <li>Matter and thermal properties</li> </ul>
	2	Human reproduction	<ul style="list-style-type: none"> <li>Sexual reproduction in humans</li> </ul>
		Organisms and environment	<ul style="list-style-type: none"> <li>Organisms and their environment</li> <li>Human influences on ecosystems</li> </ul>
		Amount of substance	<ul style="list-style-type: none"> <li>Stoichiometry</li> </ul>
Redox, electrochemistry and Group VII		<ul style="list-style-type: none"> <li>Redox</li> <li>Electricity and chemistry</li> <li>Extraction of metals from their ores</li> <li>Group properties</li> </ul>	
Mechanics 2		<ul style="list-style-type: none"> <li>Effects of forces</li> <li>Energy</li> <li>Work</li> <li>Power</li> <li>Pressure</li> </ul>	
	Waves	<ul style="list-style-type: none"> <li>General wave properties</li> <li>Electromagnetic spectrum</li> <li>Sound</li> </ul>	
3	Mock examinations and revision		

## Curriculum Overview: Coordinated Science

Please see the department MTP for a more in depth scheme of work.

Year	Term	Unit/s of Work	Core Knowledge & Concepts
10	1	Cells and processes	<ul style="list-style-type: none"> <li>• Characteristics of living things</li> <li>• Cell structure</li> <li>• Movement in and out of cells</li> <li>• Enzymes</li> </ul>
		Experimental techniques	<ul style="list-style-type: none"> <li>• Measurement</li> <li>• Criteria of purity</li> <li>• Methods of purification</li> </ul>
		Particles, atomic structure, ionic bonding and the Periodic Table	<ul style="list-style-type: none"> <li>• The particulate nature of matter</li> <li>• Atomic structure and periodic table</li> <li>• Elements, compounds and mixtures</li> <li>• Physical and chemical changes</li> <li>• Properties of metals</li> <li>• Ions and ionic bonds</li> <li>• Energy in chemical reactions</li> <li>• The periodic table</li> <li>• Periodic trends</li> <li>• Stoichiometry</li> <li>• Group properties</li> </ul>
		Light	<ul style="list-style-type: none"> <li>• Reflection of light</li> <li>• Refraction of light</li> <li>• Thin converging lens</li> </ul>
		Electricity 1	<ul style="list-style-type: none"> <li>• Current, potential difference and EMF</li> <li>• Resistance</li> <li>• Electrical energy</li> </ul>
	2	Animal nutrition	<ul style="list-style-type: none"> <li>• Biological molecules</li> <li>• Diet</li> <li>• Alimentary canal</li> <li>• Digestion</li> </ul>
		Plant nutrition and transport	<ul style="list-style-type: none"> <li>• Plant nutrition</li> <li>• Photosynthesis</li> <li>• Transport in plants</li> </ul>
		Air and water	<ul style="list-style-type: none"> <li>• Water</li> <li>• Air</li> <li>• Noble gases</li> <li>• Carbon dioxide and methane</li> </ul>
		Acids, bases and salts	<ul style="list-style-type: none"> <li>• Stoichiometry</li> <li>• The characteristic properties of acids and bases</li> <li>• Nitrogen and fertilisers</li> <li>• Types of oxides</li> <li>• Carbonates</li> <li>• Preparation of salts</li> <li>• Identification of ions and gases</li> </ul>
		Energy	<ul style="list-style-type: none"> <li>• Energy</li> <li>• Energy resources</li> <li>• Conduction</li> <li>• Convection</li> <li>• Radiation</li> <li>• Consequences of energy transfer</li> </ul>
	3	Respiration and the human transport system	<ul style="list-style-type: none"> <li>• Respiration</li> <li>• Gas exchange</li> <li>• Transport in mammals</li> </ul>
		Reaction rates	<ul style="list-style-type: none"> <li>• Rate of reaction</li> <li>• Energy changes in chemical reactions</li> </ul>
		Metals and the reactivity series	<ul style="list-style-type: none"> <li>• Properties of metals</li> <li>• Reactivity series</li> </ul>

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			<ul style="list-style-type: none"> <li>• Uses of metals</li> <li>• Extraction of metals from their ores</li> <li>• Transition elements</li> </ul>
		Mechanics 1	<ul style="list-style-type: none"> <li>• Length and time</li> <li>• Motion</li> <li>• Mass and weight</li> <li>• Density</li> </ul>
		Electromagnetism	<ul style="list-style-type: none"> <li>• Simple phenomena of magnetism</li> <li>• Electromagnetic induction</li> <li>• A.C. generator</li> <li>• Transformer</li> <li>• Magnetic effect of an electric current</li> <li>• Force on a current carrying conductor</li> <li>• D.C. motor</li> </ul>
11	1	Coordination, response and homeostasis	<ul style="list-style-type: none"> <li>• Nervous control in humans</li> <li>• Sense organs</li> <li>• Hormones in humans</li> <li>• Tropic responses</li> <li>• Homeostasis</li> </ul>
		Reproduction in plants	<ul style="list-style-type: none"> <li>• Asexual and sexual reproduction</li> <li>• Cell division</li> <li>• Sexual reproduction in plants</li> </ul>
		Covalent bonding	<ul style="list-style-type: none"> <li>• Molecules and covalent bonds</li> <li>• Macromolecules</li> </ul>
		Organic 1	<ul style="list-style-type: none"> <li>• Names of compounds</li> <li>• Homologous series</li> <li>• Fuels</li> <li>• Alkanes</li> <li>• Alkenes</li> <li>• Synthetic polymers</li> <li>• Alcohols</li> </ul>
		Electricity 2	<ul style="list-style-type: none"> <li>• Electric charge</li> <li>• Circuit diagrams</li> <li>• Series and parallel circuits</li> <li>• Dangers of electricity</li> </ul>
		Thermal physics	<ul style="list-style-type: none"> <li>• Simple kinetic model of matter</li> <li>• Pressure changes</li> <li>• Matter and thermal properties</li> <li>• Measurement of temperature</li> </ul>
	2	Human reproduction	<ul style="list-style-type: none"> <li>• Sexual reproduction in humans</li> </ul>
		Organisms and environment	<ul style="list-style-type: none"> <li>• Organisms and their environment</li> <li>• Human influences on ecosystems</li> </ul>
		Amount of substance	<ul style="list-style-type: none"> <li>• Stoichiometry</li> <li>• The mole</li> </ul>
		Organic 2	<ul style="list-style-type: none"> <li>• Polymers</li> <li>• Synthetic polymers</li> </ul>
		Mechanics 2	<ul style="list-style-type: none"> <li>• Effects of forces</li> <li>• Turning effect</li> <li>• Centre of mass</li> <li>• Energy</li> <li>• Work</li> <li>• Power</li> <li>• Pressure</li> </ul>
	3	Inheritance and evolution	<ul style="list-style-type: none"> <li>• Chromosomes and genes</li> <li>• Monohybrid inheritance</li> <li>• Variation and selection</li> </ul>
		Redox, electrochemistry and Group VII	<ul style="list-style-type: none"> <li>• Redox</li> <li>• Electricity and chemistry</li> <li>• Extraction of metals from their ores</li> <li>• Group properties</li> </ul>

	Equilibria	<ul style="list-style-type: none"> <li>Physical and chemical changes</li> <li>Nitrogen and fertilisers</li> <li>sulfur</li> </ul>
	Waves	<ul style="list-style-type: none"> <li>General wave properties</li> <li>Electromagnetic spectrum</li> <li>Sound</li> </ul>
	Atomic physics	<ul style="list-style-type: none"> <li>Detection of radioactivity</li> <li>Characteristics of the three kinds of emission</li> <li>Radioactive decay</li> <li>Half-life</li> <li>Safety precautions</li> <li>The nuclear atom</li> </ul>
	Mock examinations and revision	

### Curriculum Overview: Diploma Program Biology

Please see the department MTP for a more in depth scheme of work.

Year	Term	Unit/s of Work	Core Knowledge & Concepts
12	1	Cell Biology	<ul style="list-style-type: none"> <li>Introduction to cells</li> <li>Ultrastructure of cells</li> <li>Membrane structure and transport</li> <li>Origin of cells</li> </ul>
		Molecular Biology	<ul style="list-style-type: none"> <li>Metabolism</li> <li>Water</li> <li>Carbohydrates and Lipids</li> <li>Proteins</li> <li>Enzymes</li> <li>DNA, RNA structure</li> </ul>
		Nucleic Acids	<ul style="list-style-type: none"> <li>DNA Replication</li> <li>Transcription and Gene expression</li> <li>Translation</li> </ul>
	2	Metabolism	<ul style="list-style-type: none"> <li>Metabolism</li> <li>Cell respiration</li> <li>Photosynthesis</li> </ul>
	3	Genetics	<ul style="list-style-type: none"> <li>Genes</li> <li>Chromosomes</li> <li>Cell Division</li> <li>Meiosis</li> <li>Inheritance</li> <li>Genetic Modification and Biotechnology</li> </ul>
	3	Genetics and Evolution	<ul style="list-style-type: none"> <li>Meiosis</li> <li>Inheritance</li> <li>Gene Pools and Speciation</li> </ul>
		Evolution and Biodiversity	<ul style="list-style-type: none"> <li>Evidence for Evolution</li> <li>Natural Selection</li> <li>Classification</li> <li>Cladistics</li> </ul>
		Plant Biology	<ul style="list-style-type: none"> <li>Transport in xylem</li> <li>Transport in Phloem</li> <li>Growth</li> <li>Reproduction</li> </ul>
13	1	Human Physiology	<ul style="list-style-type: none"> <li>Digestion</li> <li>Blood System</li> <li>Infectious Disease</li> <li>Gas Exchange</li> <li>Neurons and Synapses</li> <li>Hormones, Homeostasis, Reproduction</li> </ul>

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	3	Animal Physiology	<ul style="list-style-type: none"> <li>• Antibody production and Vaccination</li> <li>• Movement</li> <li>• Kidney and Osmoregulation</li> <li>• Sexual Reproduction</li> </ul>
	2	Ecology	<ul style="list-style-type: none"> <li>• Species, Communities and Ecosystems</li> <li>• Energy Flow</li> <li>• Carbon Cycling</li> <li>• Climate Change</li> </ul>
		Option	<ul style="list-style-type: none"> <li>• Choice of: <ul style="list-style-type: none"> <li>○ Neurobiology and Behaviour</li> <li>○ Biotechnology and Bioinformatics</li> <li>○ Ecology and Conservation</li> <li>○ Human Physiology</li> </ul> </li> </ul>
	3	Revision and Examinations	

### Curriculum Overview: Diploma Program Chemistry

Please see the department MTP for a more in depth scheme of work.

Year	Term	Unit/s of Work	Core Knowledge & Concepts
12	1	Stoichiometry and Atomic Structure	<ul style="list-style-type: none"> <li>• Atomic Structure</li> <li>• Electron Structure</li> <li>• Chemical Calculations</li> <li>• Emission Spectrometry</li> </ul>
		Bonding and Periodic Table	<ul style="list-style-type: none"> <li>• Periodic Trends</li> <li>• Trends within groups</li> <li>• Intermolecular Forces</li> <li>• Types of Bonding</li> <li>• Molecular Orbitals</li> <li>• Hybridization</li> <li>• Coloured Complexes</li> </ul>
	2	Redox and Equilibrium	<ul style="list-style-type: none"> <li>• Oxidation and Reduction</li> <li>• Chemical Cells</li> <li>• Equilibrium</li> <li>• Le Chatelier's Principle</li> </ul>
		Acids	<ul style="list-style-type: none"> <li>• Properties of Acids and Bases</li> <li>• Strong and weak acids</li> <li>• pH and pKa</li> <li>• Buffers</li> <li>• pH curves</li> </ul>
3	Organic Chemistry	<ul style="list-style-type: none"> <li>• Functional Groups</li> <li>• Nomenclature</li> <li>• Fundamentals of Organic Chemistry</li> </ul>	
13	1	Energetics	<ul style="list-style-type: none"> <li>• Bond Enthalpies</li> <li>• Hess' Law</li> </ul>
		Rates and Kinetics	<ul style="list-style-type: none"> <li>• Collision Theory</li> <li>• Rate Expression</li> <li>• Kinetics</li> </ul>
	2	Organic Chemistry Mechanisms	<ul style="list-style-type: none"> <li>• Organic Reactions</li> <li>• Synthetic Routes</li> <li>• Stereoisomerism</li> </ul>
		Option	<ul style="list-style-type: none"> <li>• Choice of: <ul style="list-style-type: none"> <li>○ Materials</li> <li>○ Biochemistry</li> <li>○ Energy</li> <li>○ Medicine</li> </ul> </li> </ul>
	3	Revision and Examinations	

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## Curriculum Overview: Diploma Program Physics

Please see the department MTP for a more in depth scheme of work.

Year	Term	Unit/s of Work	Core Knowledge & Concepts
12	1	Measurement and Uncertainties	<ul style="list-style-type: none"> <li>• Measurement in Physics</li> <li>• Uncertainties and errors</li> <li>• Vectors and scalars</li> </ul>
		Mechanics	<ul style="list-style-type: none"> <li>• Motion</li> <li>• Forces</li> <li>• Work, energy and power</li> <li>• Momentum and Impulse</li> </ul>
		Waves	<ul style="list-style-type: none"> <li>• Oscillation</li> <li>• Travelling waves</li> <li>• Wave characteristics</li> <li>• Wave behaviour</li> <li>• Standing waves</li> </ul>
	3	Thermal Physics	<ul style="list-style-type: none"> <li>• Thermal concepts</li> <li>• Modelling a gas</li> </ul>
	2	Wave Phenomena	<ul style="list-style-type: none"> <li>• Simple harmonic motion</li> <li>• Single-slit diffraction</li> <li>• Interference</li> <li>• Resolution</li> <li>• Doppler effect</li> </ul>
		Electricity and Magnetism	<ul style="list-style-type: none"> <li>• Electric fields</li> <li>• Heating effect of currents</li> <li>• Electric cells</li> <li>• Magnetic effects of electric currents</li> </ul>
	3	Circular Motion	<ul style="list-style-type: none"> <li>• Circular motion</li> <li>• Newton's law of gravitation</li> </ul>
		Electromagnetic Induction	<ul style="list-style-type: none"> <li>• Electromagnetic induction</li> <li>• Power generation and transmission</li> <li>• Capacitance</li> </ul>
	13	1	Atomic, Nuclear and Particle Physics
Fields			<ul style="list-style-type: none"> <li>• Describing fields</li> <li>• Fields at work</li> </ul>
2		Energy Production	<ul style="list-style-type: none"> <li>• Energy sources</li> <li>• Thermal energy transfer</li> </ul>
		Quantum and Nuclear Physics	<ul style="list-style-type: none"> <li>• The interaction of matter with radiation</li> <li>• Nuclear physics</li> </ul>
		Option	<ul style="list-style-type: none"> <li>• Choice of <ul style="list-style-type: none"> <li>○ Relativity</li> <li>○ Engineering physics</li> <li>○ Imaging</li> <li>○ Astrophysics</li> </ul> </li> </ul>
3		Revision and Examinations	