#### CURRICULUM AND ASSESSMENT PLAN

SCIENCE



EAR 7

Our faculty mission is to create knowledgeable and scientifically literate learners by nurturing students' curiosity and bringing scientific phenomena into the classroom. We will prepare our students to become educated citizens capable of comprehending global and contemporary issues. The Ormiston SWB Science faculty will develop the minds of life-long learners by providing access to a fully inclusive Science education that will support their development through the acquisition of skills and knowledge through a INTENT progressively challenging curriculum. We want our students to experience and learn new skills and ideas in as many subjects as possible for as long as possible. We want our curriculum to provide students with knowledge and skills to retain and apply knowledge required to be successful and provide deep learning that accelerates our students understanding of the world around them.

	Prior learning	Year 7 focuses on the key fundamentals of Science to build on KS2 understanding of the building blocks of biological life, atoms and their link to materials as well as our solar system.
Ý	Conscious curriculum links	Maths links: In maths students are required to manipulate data including, constructing graphs from tabular data, provide answers to specific significant figures, identify discrete and continuous data as well as calculating percentages etc. Students will practice these skills with a scientific focus throughout this year. Geography links: In geography students will be introduced to the three different rock types and how they influence the landscape. Students will build on this in science by understanding the rock cycle.
6	Fieldwork opportunities	Students will have many opportunities throughout this year to practice their disciplinary skills and put theory into practice with scientific experiments. Students also have the opportunity to attend KS3 Science club and annual SciFest/Big Bang fair.

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	AUTUMN 1	AUTUMN 2		SPRIN	IG 1	SPRING 2		SUMMER 1	SUMMER 2
	BOM5 – Particle	BBL1 – Animal Cells		BBL2 – Human	!	CR3 – Types of		THB8 – Healthy Living	BOM8 - Purity
TOPIC/KNOWLEDGE		BBL1 – Animal Cells           -The function of key subdorganelles.           -The hierarchical organisms           -How to observe, interporecord cell structure usin microscope.           -The structure, functions biomechanic of the hur skeleton and muscles.           OEOO4 – Changing Shater of the hur skeleton and muscles.           OEOO4 – Changing Shater of the hur skeleton and muscles.           OEOO4 – Changing Shater of the hur skeleton and muscles.           OEOO4 – Changing Shater of the hur skeleton and muscles.           OEOO4 – Changing Shater of the hur skeleton and muscles.           -Forces measured in New -Forces as pushes or pull from the interaction bet objects.           -Non-contact forces: grater forces acting at a distar earth and in space.           -Draw contact and non-contact forces, includin magnetism, using force to show each force acting at a distar contact forces and equilibrium.           -Measurements of stretco compression as force is changed.           BE3 – Astrophysics           -Our Sun as a star, other the galaxy and other ga-Gravity force, weight = gravitational fields streng on Earth g=10 N(kg, diffic other planets and stars.	eation of et and ig a light and nan works, s, arising ween avity ice on avity ice on arrows ng hing or stars in alaxies mass x gth (g), erent on	BBL2 – Human reproduction -Reproduction (as an examp mammal) incl structure and the male and reproductive and gametes -The menstrua (without deta hormones) -Fertilisation, g and birth, to ir role of the pla	in in humans be of a luding the function of female systems al cycle its of estation include the iccenta. <b>ges of State</b> of mass, melting, poration, a and iccluding ences, is, liquids tion of ems of the el, juids and rences in		nt of tions and s. hermal i, ins. <b>and</b> gas ems in ding b usion in t of m of iove air he i to gases, e		
SKILLS	Give specific exampl something we can't s world application: fro specific models: Form as categoric, discrete and effect, identifyin median and mode o development, using r	-Gravity forces between and Moon, and between and Sun (qualitative onl with given axis; bescribe pal es of scientific or technologic see with the eye; Recognise t poide answers to 2 significant nulate a prediction based on e or continuous; Interpret freq g sources of random/system of a data set; Calculate perce moral and ethical implication ole algebraic calculations (Fil	n Earth y) terns and cal develo he import figures an learnt scie uency tak utic error; I entage of s to inform	pment, stating th ance of new evi- id give answers i ence; Identify on oles, line graphs, Draw straight forv a value; Formula	he purpose; L dence on the in decimal for ie or more co bar graph ar ward conclus ite an opinior	using a model to c e ideas/laws/theor rm: Identify the str ntrol variables in c nd pie charts: Des- ions from data pro- n for or against a s	tescribe ries of sc engths a an invest cribe ob esented; cientific	the structure of ience and their real- ind weaknesses of igation: Identify data servations using cause Find the mean, or technological	
	Each topic will have an will be formally marked	n end of topic assessment in and feedback will be provid sessment feedback will provi	, the form o ded mear	ingful feedback	on student le	eaming, to aid in a	clearing r	misconceptions with stu	dents before moving onto
E	·		Formative	-			Format		
ASSESSMENT	Live marking Liv Verbal feedback Ve 1,2,3 show me 1, Write, pair, share W	rmative: ve marking erbal feedback 2.3 show me rite, pair, share uestioning	Formative Live mark Verbal fe 1.2.3 show Write, pa Question	ing edback w me ir, share	Formative: Live marking Verbal feed 1.2.3 show r Write, pair, s Questioning	lback ne ;hare	Live ma Verbal 1.2.3 sh	arking feedback ow me pair, share	Formative: Live marking Verbal feedback 1.2.3 show me Write, pair, share Questioning
A	LMB: BOM5 LN	ЛВ: ВЕЗ	LMB: BON	17	LMB: THB7		LMB: BC	DM8	LMB: BBL2
		ver Assessment 2: BBL1 & EOO4	BOM7 & Gold Ass	essment	OE3	ment 4: THB8 &	BE4		Platinum Assessment
VOCAB	Chemical     Compound     Reactants     Products     Conservation of     Mass     Mass     Mass	lectrostatic force (agnitude xtension quilibrium totion fravity /eight .comet steroid	Sublimat     Displace     Concen     Meniscu     Diffusion     Metting     Freezing	tion ement tration s	<ul> <li>Oxidation</li> </ul>	composition ent reactions s 1 city	•Mantle •Atmos •Igneou •Sedim •Metam •Tector •Protoze •Plasmi •Stimulo	phere Js entary norphic nic Sa d	•Distillation •Insoluble •Soluble •Suspension •Mixture •Telescope •Supernova •Nebula
in co variables A book	ntext, during reading we s; after reading we comp bo year 7 students could re	READING SKILLS Iding strategy – before we read the have varying tasks such as plete comprehension question ased on our understanding. ad is DK (Dorling Kindersley), res more than 80 of the world	picking ou ns or cond The Sciend	it experimental duct practical w ce Book: Big Ideo	lany C ork C as	PERSONAL DEVE CAREERS – Molecu midwifer CORE – Integration and social health into scientific	lar biolog ry of perso educati	gist, Studen distributed on supported	NG STUDENT'S AT HOME ts will have homework weekly on a given day, to e. Students can also be to revise and be tested on ent on their knowledge

Simply Explained. This book Explores more than 80 of the world's most scientific theories and big ideas across the fields of physics, chemistry, biology, astronomy, geology and maths

the content on their knowledge organis

## **CURRICULUM AND ASSESSMENT PLAN**

SCIENCE

# YEAR 8



Our faculty mission is to create knowledgeable and scientifically literate learners by nurturing students' curiosity and bringing scientific phenomena into the classroom. We will prepare our students to become educated citizens capable of comprehending global and contemporary issues. The Ormiston SWB Science faculty will develop the minds of life-long learners by providing access to a fully inclusive Science education that will support their development through the acquisition of skills and knowledge through a progressively challenging curriculum. We want our students to experience and learn new skills and ideas in as many subjects as possible for as long as possible. We want our curriculum to provide students with knowledge and skills to retain and apply knowledge required to be successful and provide deep learning that accelerates our students understanding of the world around them.

	Prior learning	Year 8 focuses on building onto the key fundamentals of Science leant in Year 7. Key foci on topics of the biological building blocks of life are revisited and taken further with topics such as 'Cellular respiration' and 'Plants'.
Ý	Conscious curriculum links	Maths links: In maths students will go onto utilise and manipulate equations to change the subject- this skill is taught in this year. Further maths skills include conversion between units as well as graphical skills. Geography links: In geography students will revisit 'The Rock Cycle' taught in year 7 as well as the water and carbon cycle. These are all shared curicular taught in geography. Geographers will further be taught about global warming and climate change, something with is revisited in Science.

#### Fieldwork opportunities

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Students will have many opportunities throughout this year to practice their disciplinary skills and put theory into practice with scientific experiments. Students also have the opportunity to attend KS3 Science club and annual SciFest/Big Bang fair.

	AUTUMN 1	AUTUMN 2	SPRING 1		SPRING 2	SUMMER 1		SUMMER 2
TOPIC,KNOWLEDGE	TH89- The Digestive System -Content of a healthy diet; carbohydrates, lipids, (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed. -Calculations of energy, requirements in a health daily diet The consequences of imbalances in the diet, including obesity, starvation, and deficiency disease. -The fisues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply and biological catalysts). -The importance of bacteria in the human digestive system. <b>CR4- The pH Scale</b> -Define acids and alkalis in terms of neutralisation reactions of acids with metals to produce a salt plus hydrogen -Reactions of acids with alkali to produce a salt plus water. -Energy changes on changes of state (qualitative) -Exothermic and endothermic chemical reactions (qualitative)	BOE10- The Principles of Energy -Energy as a quantity that a be calculated -Internal energy stored in materials. -Using physical processes a mechanisms, rather than energy, to explain the intermediate steps that bir about such changes. -The total energy has the sc value before and after a change. -Comparing the starting wit the final conditions of a sys and describing increases a decreases in amounts of energy associated with movements, temperature, changes in position in field, elastic distortions and chemical compositions. -Other processes that involve energy transfer, changing motion, dropping an object completing an electrical circuit, -Comparing energy values difference. -Comparing energy values and testing) kJ. -Energy transfer from hotter cooler objects by conduct	<ul> <li>the other chemical process necessary from the ord summary for aerobic respirationThe process of anarespiration in humar microorganisms, inc fermentation, and a summary for anaeror respiration. The difference betware aerobic and anaero respiration in terms or reactants, the production of the organisms.</li> <li>BBL4-Plant Cells - The function of the wall, vacuole and chloroplastsCells as the fundamunit of living organismin including how to ab interpret and record structure using a light microscopeThe similarities and differences betwee and animal cellsReproduction in ploilination, fertilisatif seed and fruit forma and dispersal, including flower struwind and insect pollination, fertilisatif seed and fruit forma and dispersal, including flower struwing and ispersal mechanisms</li> </ul>	obic the nic all or life. or erobic is and luding, word obic ceen obic of ceen obic of ceen obic of ceen obic of ceen obic of ceen obic of ceen obic of ceen obic of ceen obic of ceen obic of ceen obic of ceen obic of ceen obic of ceen obic of ceen obic of of of of of of of of of of	OEOOS- Electrical Circ Electrical current measured in amperes, circuits, series and para circuits, current and where branches meet and current flow of charge. -Potential difference, measured in volts, batt and bulb ratings; resistance, measured ir ohms, as the ratio of potential difference. -differences in resistance between conducting c insulating components (quantitative) OEOO6- Forces and Motion -The representation of a journey on distance on distance-time graph -Speed and the quantitative relationshi between average speed distance, and time § Speed = distance ÷ tim -Relative motion: trains and cars passing each other. -Forces being needed cause objects to stop c start moving, or to chart their speed or direction motion (qualitative) resolving forces with multiple forces acting in parallel. -Change depending o direction of force and i size.	The principles underpin the Mendeleev periodic table. The periodic table; peri- and groups; metals and non-metals -How patterns in reaction can be predicted with reference to the periodic table -The properties of metal and non-metals -The chemical propertie metal and non-metal oxides with respect of acidity BOE12- Energy in the Ho -Fuels and energy resou -Compare the powerra of appliances in watts (' kW). -Comparing amounts of energy transferred (J, kJ hour). -Domestic fuel bills, fuel and costs. BOE13- Mechanical Wa e. Waves on water as undulations which trave through water with fram- motion. or -Frequencies of sound w reflection and absorptic sound. -Sound needs a medium travel, the speed of sou dir, in water, in solids. -Sound produced by vibrations of objects, in loudspeakers.	ring c iods c s s s s s of f t, kw use v vaves, on of n to nd in ring	IOL12- Photosynthesis -The reactants in, and products of photosynthesis and a word summary of photosynthesis. -The dependence of almost all life on earth on the ability of photosynthesis organisms such as algae to use photosynthesis to build organic molecules that are an essential energy store and maintain levels of oxygen and carbon dioxide. -The adaptations of leaves for photosynthesisThe role of stomata in gas exchange for plants. -Plants making carbohydrates in their leaves by photosynthesis and gains Disciplinary (those in bold being revisited in this unit) OEOO7- Changing Forces: -Forces: associated with deforming objects; stetching and squashing springsForce extension linear relation; Hooke's Law as a special case § Moment as the turning effect of a force -Simple machines give bigger force but at the expense of smaller movement
SKILLS	approaches to specif data presented WCa	nd mathematical convention ic experiments or investigation 3ii Construct scientific plans w ret frequency tables, line grap	ns may improve the evide hich will allow for reliable	ence co results t	ollected WCc3 Draw strai	ght forward conclusions from	ì	
ASSESSMENT	will be formally marked	n end of topic assessment in th I and feedback will be provid sessment feedback will provic	ed meaningful feedback	on stud	lent learning, to aid in cl	earing misconceptions with st	tudents	before moving onto
SSI	LMB: THB9 LN	1B: OE4	LMB: BBL3	LMB: (	DEOO5	MB: BOM9	LMB:	IOL12
ASSE			Silver Assessment 3: BBL3 and BBL4	Silver A And O		Silver Assessment 5: BOE12 and BOE13		Assessment 5: IOL12 OEOO7
AB	•Enzyme     •C     •Lipid     •Pancreas		Cellular respiration Aerobic respiration Anaerobic respiration Fermentation	•Curre •Resiste	nt ance atial difference	Malleable Sub-atomic Periodicity Crude oil	•End	m ird cells othermic
VOCAB	Oesophagus     Ki     Acid     Neutralization	ubricant inetic Store hermal Store hermal Equilibrium	•Stamen •Carpel •Stigma •Ovule	•Speed •Journ	d	Non-renewable Efficiency	•Roto •Pivo •Exte	

#### **READING SKILLS**

In Science we use the careful reading strategy – before we read, we pre-teach vocabulary in context, during reading we have varying tasks such as picking out experimental variables; after reading we complete comprehension questions or conduct practical work based on our understanding. A book year 8 students could read is DK (Dorling Kindersley). The Science Book;

A book year 8 students could read is DK (Dorling Kindersley), The Science Book: Big Ideas Simply Explained. This book Explores more than 80 of the world's most scientific theories and big ideas across the fields of physics, chemistry, biology, astronomy, geology and maths

#### PERSONAL DEVELOPMENT

CAREERS – Plant Geneticist; Environmental Impact Assessor; Industrial hygienist

CORE – Integration of personal and social health education into scientific contexts.

#### SUPPORTING STUDENT'S AT HOME

Students will have homework distributed weekly on a given day, to complete. Students can also be supported to revise and be tested on the content on their knowledge organisers.

### **CURRICULUM AND ASSESSMENT PLAN** SCIENCE YEAR 9



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	Prior learning	Year 9 focuses on interleaving topics to deepen learning and a establish a solid foundation to begin GCSE content. This year the basic concepts of Science are revisited and built on to ensure building on current knowledge occurs in all lessons.
Ý	Conscious curriculum links	Maths links: In maths students are required to rank order numbers based on their place value- these skills are used in topic such as OEOO9
	Extra-curricular	Students will have many opportunities throughout this year to practice their disciplinary skills and put theory into practice with scientific experiments. Students also have the opportunity to attend KS3 Science club and annual Scifest/Bia Bana fair.

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC, KNOWLEDGE	KS3- OEOO8. Magnetism     -Magnetic poles; attraction     and repulsion.     -Magnetic fields by plotting     with compass,     representation by field     lines.     -Earth magnetic effect of a     current, electromagnets,     DC motors (principles only).     KS3- IOL13.     Interdependence     -The interdependence of     organisms in an ecosystem,     including food webs and     insect pollinated crops     -Differences between     species     -The interdependence of     organisms in an ecosystem,     including food webs and     insect pollinated crops     -Differences between     species     -The interdependence of     organisms in an ecosystem,     including food webs and     insect pollinated crops     the importance of plant     reproduction through insect     pollination in human food     security     -How organisms affect, and     are affected by, their     environment, including the     accumulation of toxic     material	K33- OEOO9. Gas Pressure     -Atmospheric pressure     decreases with increase of     height as weight of air above     decreases with height.     -Pressure in liquids, increasing     with depth, upthrust effects,     floating and sinking.     -Pressure measured by ratio     force over area - acting normal     to any surface.     -Forces: associated; resistance     to motion of air and water.     KS3- BB15. Inheritance and     Evolution     -Heredity as the process by     which genetic information is     transmitted from one     generation to the next.     -A simple model of     chromosomes, genes and     DNA in heredity     -Differences between species.     -The variation between     species means some     organisms compete more     successfully, which can drive     natural selection.     -Changes in the environment     may lead to lack of     adaptation, which in turn may     lead to lack of     adaptation, which in turn may     lead to lack of     adaptation.     -The importance of     maintaining biodiversity and     the use of gene banks to     preserve hereditary material.	contact <u>KS3- CR5. The reactivity</u> <u>-Series of Metals.</u> -The order of metals and carbon in the reactivity series -The use of carbon in obtaining metals from metal oxides -What catalysts do -Properties of ceramics, polymers and composites (qualitative) -Introduction to symbol equations	GCSE-BBL6-Cells to Systems AQA Chemistry Specification points. 4.1.1.1 Eukaryotes and prokaryotes 4.1.1.2 Animal and Plant cells 4.1.1.5 Microscopy 4.1.1.3 Cell specialisation 4.1.1.4 Cell differentiation 4.1.2.3 Stem cells 4.2.1 Principles of organisation 4.2.2.9 Heart and blood vessels 4.2.2.3 Blood 4.2.2.5 Health issues 4.2.2.4 The effect of lifestyle style on some non-communicable diseases 4.2.2.4 Coronary heart disease	GCSE-BOM10. Atoms and the Periodic table AQA Chemistry Specification points 4.1.1.3 Development of the atomic model 4.1.1.1 Atoms, Elements and Compounds 4.1.1.4 Relative electrical charges of subatomic particles 4.1.1.5 Size and mass of atoms 4.1.2.1 The periodic table 4.1.2.3 Metals and Non-metals 4.1.2.2 Development of the periodic table 4.1.2.3 Metals and Non-metals 4.1.2.2 Development of the periodic table 4.1.2.4 Mixtures 4.1.2.5 Group 1 4.1.2.6 Group 7 4.1.2.4 Group 4.4.1.3 The development of the model of the atom 4.4.1.1 The structure of the atom 4.4.1.2 Mass number, atomic number and isotopes <b>GCSE-BOM11. Energy and the particle model</b> AQA Chemistry Specification points 4.2.2.2 State symbols 4.2.2.1 The three states of matter AQA Physics Specification points 4.3.1.2 Changes of state 4.3.1.1 Density of Materials 4.3.2.1 Internal Energy 4.3.2.2 Emperature changes in a system and specific latent heat 4.3.3.1 Particle motion in gases	GCSE- OEOO11. Defining a force. AQA Chemistry Specification points 4.5.1.1 Scalar and Vector Quantifies 4.5.1.2 Contact and non-contact forces 4.5.1.3 Gravity 4.5.1.4 Resultant Forces 4.5.6.1.1 Distance and Displacement 4.5.2 Work done and energy transfer 4.5.3 Forces and Elasticity 4.1.2 Changes in Energy (GPE only) *the relationship between Work done and Changes in energy will be explored in BOE16 (with the exception of GPE GCSE - CR6. Chromatography and Analysis. AQA Chemistry Specification points 4.1.1.2 Mixtures 4.8.1.1 Pure Substances 4.8.1.2 Formulations 4.8.1.3 Chromatography 4.8.2.1 Test for Hydrogen 4.8.2.2 Test for Oxygen 4.8.2.3 Test for Carbon Dioxide 4.8.2.4 Test for Chlorine
	TSc5ii Categorise data as quant	titative or qualitative;WCc3 Draw stro				

which are based on scientific ideas.; ASc4 Identify simple ethical or moral issues linked to scientific or technological developments; ISb5 Use abstract models when describing processes

The function of the contract o

data ASc6 Recognise complex moral and ethical implications of a scientific or technological development (WS1c) CCa8 Critically evaluate information, data and evidence from various sources, explaining limitations, misrepresentation or lack of balance in the process of interpretation IAa6ii Independently making and recording observations and measurements using a range of apparatus and methods. IAb6 Independently recognise familiar risks and make suggestions on how to control them. ATb7 Use a microscope to make observations of biological specimens and produce labelled scientific drawings. ATp1 Use of appropriate apparatus to make and record a range of measurements accurately, including length, area, mass, time, volume and temperature. Use of such measurements to determine densities of solid and liquid objects.

		111033, 11110, 40101110 0110 10					
ASSESSMENT	AGGEOGMICINI	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 1 Live mark book assessment • 1 silver assessment	Formative:     Live marking     Verbal feedback     1,2,3 show me     Write, pair, share     Questioning     Cold calling     Summative:         1 Live mark book         assessment         1 silver assessment	Formative: Live marking Verbal feedback 1.2.3 show me Write, pair, share Questioning Cold calling Summative: 1 Live mark book assessment 1 silver assessment Common Assessment 1	Formative:     Live marking     Verbal feedback     1,2,3 show me     Write, pair, share     Questioning     Cold calling     Summative:         1 live mark book         assessment         1 silver assessment	Formative: Live marking Verbal feedback 1,2,3 show me Write, pair, share Questioning Cold calling Summative: 1 Live mark book assessment 1 silver assessment	Formative: Live marking Verbal feedback 1,2,3 show me Write, pair, share Questioning Cold calling Summative: 1 Live mark book assessment 1 silver assessment Common Assessment 2
VOCAB		Magnetic field     Aroura Borealis     Electromagnet     DC Motor     Population     Ecosystem     Food security	Fluid     Upthrust     Upthrust     Surface area     Air resistance     Genome     Natural     Selection     Conservation	Friction     Electrostatic force     Van-de-Graaff     Highest common     factor     Extraction     Polymer     Composite	Ribosome     Prokaryotic     Embryonic stem cell     Platelets	Neutron     Nuclear attraction     Electron configuration     Aqueous solution     Absolute zero     Resolution     Specific heat capacity	Elastic deformation     Resultant force     Weight     Work done     Formulation     Retention factor     Bleach     Chromatography

#### READING SKILLS

SKILLS

READING SKILLS In science we use the careful reading strategy with our core practicals and other relevant tasks – before we read, we cover the theory behind the practical using carefully selected tasks that apply, during reading we highlight the method and identify equipment and variables; after reading, we allow pupils to demonstrate the practical, collect data and use data where applicable e.g drawing a graph using raw results.

#### PERSONAL DEVELOPMENT

Career: Jeweller, Ecologist: Particle physicist CORE: Character – Being a kind critical friend when giving peer feedback. Ensuring learners aspire to high expectations in their attitude to Science because they see the relevance of the taught content to their everyday experiences. Organisation – Completing all homework. Ensuring that they are equipped for lessons. Method

Organisation – Completing all nomework. Ensuing that they are equipped for lessons. Method writing to help learners sequence processes Resilience – Not giving up when attempting hard skills. Working independently and being prepared to make mistakes in a safe and supportive environment Excellence – Having high expectations with quality of one's own written work and presentation. Using Contextual Science to inspire learners about how science works around them every day. Communicating successes with pastoral leaders and parents/guardians regularly using the Academy's behaviour and rewards system

#### SUPPORTING STUDENT'S AT HOME

Students have knowledge organisers and Students have knowledge organisers and revision guides which correspond to the topics being taught at school. These are used to promote and assist SOLO work. Students are provided with a fully detailed revision list prior to their mock exams with clear learning outcomes corresponding to the exam board specification. Students are given revision homework tailored to their learning needs and assessment which is set and marked in clase every week leading up to their assessment.

### ORMISTON **CURRICULUM AND ASSESSMENT PLAN /B COMBINED SCIENCE** YEAR

Our faculty mission is to create knowledgeable and scientifically literate learners by nurturing students' curiosity and **INTENT** bringing scientific phenomena into the classroom. We will prepare our students to become educated citizens capable of comprehending global and contemporary issues. The Ormiston SWB Science faculty will develop the minds of life-long learners by providing access to a fully inclusive Science education that will support their development through the acquisition of skills and knowledge through a progressively challenging curriculum.



CC Topics 1-4:

States of Matter, Purifying Substances, Atomic Structure & The Periodic Table

CP Topics 1 & 3: Motion & Conservation of Enerav

CB Topics 1 & 4: Key Concepts of Biology & Natural Selection and Genetic Modification

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2	
TOPIC, KNOWLEDGE	CC Topics 5-14 All students will know: How the concentration of ions in acids and alkalis link to their pH The reactions of acids and different types of bases Indicators and their use in titrations Preparation of soluble and insoluble salts Quantitative chemistry Calculating r.f.m, empirical formula ad molecular formulae of compounds Calculating the number of particles in a substance and the Avogadro constant	Haber process	CP Topics 2-9 All students will know: • Newton's Laws of Motions • Factors affecting stopping distance of a car • Dangers of large decelerations • Momentum • Characteristics of waves, including wave speed • Reflection, refraction transmission and absorbance of waves • Ray diagrams • Properties, uses, dang ers of the EM spectrum	CP Topics 2-9 All students will know: • Types of radiation on their effect on atoms • Background radiation • Dangers of radiation • Uses of radioactive materials in medicine • Work and power • Current, charge and potential difference • Calculating resistance, power and energy transferred • UK domestic electricity supply and earthing • Permanent and induced magnets and magnetic fields • How fields from individual coils in a solenoid react • Using the power equation for transformers	CB Topics 2-6 All students will know: Mitosis and its importance for growth, repair and asexual reproduction Stem cells and cell differentiation Neuronal communication The need for meiosis Structure and function of DNA Mutations and causes of genetic variation Mechanisms of inheritance	<ul> <li>CB Topics 2-6</li> <li>All students will know:</li> <li>Photosynthesis and the factors affecting its rate</li> <li>How transpiration is affected by different factors</li> <li>How the reactants and products of photosynthesis are transported</li> <li>Leaf structure and specialised plant cells</li> </ul>	
SKILLS	Working scientifically:         - Development of scientific thinking         - Experimental skills and strategies         - Representation, handling and manipulation of primary and secondary data in the form a graphs and tables         - Analysis and evaluation         - Scientific vocabulary, quantities, units, symbols, numerical conversion and nomenclature						
ASSESSMENT	Formative: Live marking Verbal feedback 1,2,3 show me Write, pair, share Questioning Cold calling Summative: 2 Live mark book assessments	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 3 Live mark book assessments • Mock exam: CC1	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments • Mock exam: CP1	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 1 Live mark book assessment	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments • Mock exam: CC1,	
VOCAB	<ul> <li>Cation</li> <li>Anion</li> <li>Electrostatic force</li> <li>Intermolecular</li> <li>Ionic bond</li> <li>Covalent bond</li> <li>Covalent bond</li> <li>Neutralisation</li> <li>Indicator</li> <li>Precipitate</li> <li>Empirical formula</li> <li>Molecular formula</li> <li>Relative formula mass</li> <li>Conservation of mass</li> <li>Electrolysis</li> <li>Cathode</li> <li>Anode</li> <li>Electrolyte</li> </ul>	Reactivity     Extraction     Carbon reduction     Reduction     Oxidation     Equilibrium     Haber process     Reversible reaction     Yield     Attainment     Energy profile     Exothermic     Endothermic	Force     Acceleration     Balanced forces     Unbalanced forces     Resultant force,     Action force     Reaction force     Braking distance     Braking distance     Momentum     Collision     Waves     Oscillation     Particle     Longitudinal     Transverse     Amplitude     Frequency     Wavelength     Refraction     Refraction     Incidence     Electromagnetic	Radioactivity     Alpha     Beta     Gamma     Positron radiation     Background radiation     Background radiation     Background radiation     Background radiation     Background radiation     Background radiation     Geiger-muller tube     Bacquerels     Half-life     Contaminated     Irradiated     Resistance     Current     Potential difference     Charge     Alternating, direct current     Magnetic induction     Magnetic field     Induced magnet     Solenoid     Electromagnet     Power     Transformer	Mitosis     Asexual reproduction     Neurons,     Axon     Myelin sheath,     Sensory     Relay     Motor     Meiosis     DNA     Mutation     Genetic diagram     Homozygous     Heterozygous     Dominant     Allele     Recessive	CP1, CB1  Photosynthesis Transpiration Translocation View, Phioem Palisade Stoma Guard cells Diffusion Lignin Sieve cells	
READING SKILLS         In science we use the careful reading strategy with our core practicals and other relevant tasks – before we read, we cover the theory behind the practical using carefully selected tasks that apply, during reading we highlight the method and identify equipment and variables; after reading, we allow pupils to demonstrate the practical, collect data and use data where applicable e.g drawing a graph using raw results.          • CAREERS LINKS         • Health care professions         • Automotive safety engineer         • Automotive safety         • Industrial chemistry         • Industrial chemistry         • Life Cycle Assessment Certified Professional			Character – Being a kin- peer feedback. Ensurin, expectations in their att see the relevance of th everyday experiences. Organisation – Complet they are equipped for l learners sequence proc Resilience – Not giving u Working independently mistakes in a safe and s Excellence – Having hig one's own written work Contextual Science to i science works around ti successes with pastoral	itude to Science because they e laught content to their ing all homework. Ensuring that essons. Method writing to help esses up when attempting hard skills. and being prepared to make uppartive environment h expectations with quality of and presentation. Using nspire learners about how hem every day. Communicating leaders and lardy using the Academy's	Students have know correspond to the topic These are used to prom during revision of Students are provide revision list prior to the learning outcomes co board sp Students are given revis their learning needs an and marked in class e their assessment. We of twice a week tailored	UDENT'S AT HOME edge organisers which ss being taught at school. tote and asist SOLO work and/or homework. ed with a fully detailed ir mock exams with clear rresponding to the exam ecification. tion homework tailored to d assessment which is set very week leading up to also offer homework club for science SEND students r specialist TA.	

## **CURRICULUM AND ASSESSMENT PLAN** BIOLOGY **YEAR 10**



club twice a week tailored for science SEND students lead by our specialist TA.

Our faculty mission is to create knowledgeable and scientifically literate learners by nurturing students' curiosity and **INTENT** bringing scientific phenomena into the classroom. We will prepare our students to become educated citizens capable of comprehending global and contemporary issues. The Ormiston SWB Science faculty will develop the minds of life-long learners by providing access to a fully inclusive Science education that will support their development through the acquisition of skills and knowledge through a progressively challenging curriculum.



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CB Topics 1 & 4: Key Concepts of Biology & Natural Selection and Genetic Modification

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC, KNOWLEDGE	<ul> <li>SB Topic 2 All students will know:</li> <li>Mitosis and its importance for growth, repair and asexual reproduction</li> <li>Stem cells and cell differentiation</li> <li>Neuronal communication</li> </ul>	<ul> <li>SB Topic 3 All students will know:</li> <li>The need for meiosis</li> <li>Structure and function of DNA</li> <li>Mutations and causes of genetic variation</li> <li>Mechanisms of inheritance</li> </ul>	<ul> <li>SB Topic 5 All students will know:</li> <li>Mutations and causes of genetic variation</li> <li>Mechanisms of inheritance</li> </ul>	<ul> <li><u>SB Topic 5</u></li> <li><u>All students will know:</u> <ul> <li>Mutations and causes of genetic variation</li> <li>Mechanisms of inheritance</li> </ul> </li> </ul>	<ul> <li>SB Topic 6 All students will know:</li> <li>Photosynthesis and the factors affecting its rate</li> <li>How transpiration is affected by different factors</li> <li>How the reactants and products of photosynthesis are transported</li> <li>Leaf structure and specialised plant cells</li> </ul>	<ul> <li>SB Topic 6 All students will know:</li> <li>Photosynthesis and the factors affecting its rate</li> <li>How transpiration is affected by different factors</li> <li>How the reactants and products of photosynthesis are transported</li> <li>Leaf structure and specialised plant cells</li> </ul>
SKILLS	<ul> <li>Working scientifically:</li> <li>Development of scientific thinking</li> <li>Experimental skills and strategies</li> <li>Representation, handling and manipulation of primary and secondary data in the form a graphs and tables</li> <li>Analysis and evaluation</li> <li>Scientific vocabulary, quantities, units, symbols, numerical conversion and nomenclature</li> </ul>					
ASSESSMENT	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments • Mock exam: SB1 (partial paper)	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments • Mock exam: SB1 (partial paper)	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 1 Live mark book assessment	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments • Mock exam: SB1 (full paper)
VOCAB	<ul> <li>Mitosis</li> <li>Asexual reproduction</li> <li>Neurons,</li> <li>Axon</li> <li>Myelin sheath,</li> <li>Sensory</li> <li>Relay</li> <li>Motor</li> </ul>	<ul> <li>Meisosis</li> <li>DNA</li> <li>Mutation</li> <li>Genetic variation</li> </ul>	<ul> <li>Inheritance</li> <li>Genetic diagram</li> <li>Punnett square</li> <li>Pedigree diagram</li> <li>Homozygous</li> <li>Heterozygous</li> <li>Dominant</li> <li>Allele</li> <li>Recessive</li> </ul>	<ul> <li>Inheritance</li> <li>Genetic diagram</li> <li>Punnett square</li> <li>Pedigree diagram</li> <li>Homozygous</li> <li>Heterozygous</li> <li>Dominant</li> <li>Allele</li> <li>Recessive</li> </ul>	<ul> <li>Photosynthesis</li> <li>Transpiration</li> <li>Translocation</li> <li>Xylem,</li> <li>Phloem</li> <li>Palisade</li> <li>Mesophyll</li> <li>Stoma</li> <li>Guard cells</li> <li>Diffusion</li> <li>Lignin</li> <li>Sieve cells</li> </ul>	<ul> <li>Photosynthesis</li> <li>Transpiration</li> <li>Translocation</li> <li>Xylem,</li> <li>Pholeem</li> <li>Palisade</li> <li>Mesophyll</li> <li>Stoma</li> <li>Guard cells</li> <li>Diffusion</li> <li>Lignin</li> <li>Sieve cells</li> </ul>

READING SKILLS	CAREERS LINKS	CORE	SUPPORTING STUDENT'S AT HOME
In science we use the careful reading strategy with our core practicals and other relevant tasks – before we read, we cover the theory	<ul> <li>Health care profession</li> </ul>	Character – Being a kind critical friend when giving peer feedback. Ensuring learners aspire to high expectations in their attitude to Science because they see the relevance of the taught content to their everyday experiences. Organisation – Completing all homework. Ensuring that they are equipped for lessons.	Students have knowledge organisers and revision guides which correspond to the topics being taught at school. These are used to promote and assist SOLO work during revision and/or homework.
behind the practical using carefully selected tasks that apply, during reading we highlight the method and identify equipment and		Method writing to help learners sequence processes Resilience – Not giving up when attempting hard skills. Working independently and being prepared to make mistakes in a safe and supportive environment	Students are provided with a fully detailed revision list prior to their mock exams with clear learning outcomes corresponding to the exam board specification.
variables; after reading, we allow pupils to demonstrate the practical, collect data and use data where applicable e.g drawing a graph using raw results.		Excellence – Having high expectations with quality of one's own written work and presentation. Using Contextual Science to inspire learners about how science works around them every day. Communicating successes with pastoral leaders and parents/guardians regularly using the Academy's behaviour and rewards system	Students are given revision homework tailored to their learning needs and assessment which is set and marked in class every week leading up to their assessment. We also offer homework club twice a week tailored for science SEND

# **CURRICULUM AND ASSESSMENT PLAN** CHEMISTRY YEAR 10



INTENT

Our faculty mission is to create knowledgeable and scientifically literate learners by nurturing students' curiosity and bringing scientific phenomena into the classroom. We will prepare our students to become educated citizens capable of comprehending global and contemporary issues. The Ormiston SWB Science faculty will develop the minds of life-long learners by providing access to a fully inclusive Science education that will support their development through the acquisition of skills and knowledge through a progressively challenging curriculum.



CC Topics 1-4: States of Matter, Purifying Substances, Atomic Structure & The Periodic Table

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC, KNOWLEDGE	<ul> <li>SC Topics 5-10 All students will know:</li> <li>How the concentration of ions in acids and alkalis link to their pH</li> <li>The reactions of acids and different types of bases</li> <li>Indicators and their use in titrations</li> <li>Preparation of soluble and insoluble salts</li> <li>Quantitative chemistry</li> <li>Calculating r.f.m, empirical formula ad molecular formulae of compounds</li> <li>Calculating the number of particles in a substance and the Avogadro constant</li> <li>Electrolysis</li> </ul>	SC Topics 5-10 All students will know: • How the concentration of ions in acids and alkalis link to their pH • The reactions of acids and different types of	SC Topics 11-15 All students will know: • Obtaining & Using Metals, • Equilibrium, • Transition Metals, Allovs & Corrosion	SC Topics 11-15 All students will know: • Obtaining & Using Metals, • Equilibrium, • Transition Metals, Alloys & Corrosion • Quantitative Analysis	SC Topics 16-19 All students will know: Chemical & Fuel Cells Groups in the Periodic Table, Rates of Reaction Energy Changes in Chemical Reactions	SC Topics 16-19 All students will know: Chemical & Fuel Cells Groups in the Periodic Table, Rates of Reaction Energy Changes in Chemical Reactions
SKILLS	- Analysis and evalue	nd strategies ndling and manipulation of p		i in the form a graphs and table iomenclature	s	
ASSESSMENT	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments • Mock exam: SC1 (partial paper)	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments • Mock exam: SC1 (partial paper)	Formative: Live marking Verbal feedback 1,2,3 show me Write, pair, share Questioning Cold calling Summative: 1 Live mark book assessment	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments • Mock exam: SC1 (full paper)
VOCAB	Cation     Anion     Electrostatic force     Intermolecular     Proton     Neutron     Electron shell     Nucleus     Ionic bond     Covalent bond     Metallic bond     Melting point     Boiling point	<ul> <li>Acid,</li> <li>Alkali</li> <li>Neutralisation</li> <li>Indicator</li> <li>Precipitate</li> <li>Empirical formula</li> <li>Molecular formula</li> <li>Relative formula mass</li> <li>Conservation of mass</li> <li>Electrolysis</li> <li>Cathode</li> <li>Anode</li> <li>Electrolyte</li> </ul>	Reactivity     Reduction     Oxidation     Avogadro     constant     Mole     Limiting reactant     Corrosion     Tarnish     Alloy ,	Reactivity     Reduction     Oxidation     Avogadro constant     Mole     Limiting reactant     Corrosion     Tarnish     Alloy	Reactivity     Extraction     Carbon reduction     Reduction     Oxidation     Equilibrium     Haber process     Reversible reaction     Yield     Attainment     Energy profile     Exothermic     Endothermic	Reactivity     Extraction     Carbon reduction     Reduction     Reduction     Equilibrium     Haber process     Reversible reaction     Yield     Attainment     Energy profile     Exothermic     Endothermic

READING SKILLS	CAREERS LINKS	CORE	SUPPORTING STUDENT'S AT HOME
In science we use the careful reading strategy with our core practicals and other relevant tasks – before we read, we cover the theory behind the practical using carefully selected tasks that apply, during reading we highlight the method and identify equipment and variables; after reading, we allow pupis to demonstrate the practical, collect data and use data where applicable e.g drawing a graph using raw results.	<ul> <li>Health care profession</li> <li>Industrial chemistry</li> <li>Life Cycle Assessment Certified Professiona I</li> </ul>	Character – Being a kind critical friend when giving peer feedback. Ensuring learners aspire to high expectations in their attitude to Science because they see the relevance of the taught content to their everyday experiences. Organisation – Completing all homework. Ensuring that they are equipped for lessons. Method writing to help learners sequence processes Resilience – Not giving up when attempting hard skills. Working independently and being prepared to make mistakes in a safe and supportive environment Excellence – Having high expectations with quality of one's own written work and presentation. Using Contextual Science to inspire learners about how science works around them every day. Communicating successes with pastoral leaders and parents/guardians regularly using the Academy's behaviour and rewards system	Students have knowledge organisers and revision guides which correspond to the topics being taught at school. These are used to promote and assist SOLO work during revision and/or homework. Students are provided with a fully detailed revisionlist prior to their mock exams with clear learning outcomes corresponding to the exam board specification. Students are given revision homework tailored to their learning needs and assessment which is set and marked in class every week leading up to their assessment. We also offer homework club twice a week tailored for science SEND students lead by our specialist TA.

### **CURRICULUM AND ASSESSMENT PLAN** PHYSICS **YEAR 10**



Our faculty mission is to create knowledgeable and scientifically literate learners by nurturing students' curiosity and **INTENT** bringing scientific phenomena into the classroom. We will prepare our students to become educated citizens capable of comprehending global and contemporary issues. The Ormiston SWB Science faculty will develop the minds of life-long learners by providing access to a fully inclusive Science education that will support their development through the acquisition of skills and knowledge through a progressively challenging curriculum.



CP Topics 1 & 3: Motion & Conservation of Energy

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC,KNOWLEDGE	<ul> <li><u>SP Topic 2</u></li> <li>All students will know:         <ul> <li>Newton's Laws of Motions</li> <li>Factors affecting stopping distance of a car</li> <li>Dangers of large decelerations</li> <li>Momentum</li> </ul> </li> </ul>	<ul> <li>SP Topic 4</li> <li>All students will know:</li> <li>Characteristics of waves, including wave speed</li> <li>Reflection, refraction transmission and absorbance of waves</li> <li>Ray diagrams</li> </ul>	SP Topic 5 All students will know: • Properties,uses,dan gers of the EM spectrum	<ul> <li><u>SP Topics 6</u></li> <li>All students will know:         <ul> <li>Types of radiation on their effect on atoms</li> <li>Background radiation</li> <li>Dangers of radiation</li> <li>Uses of radioactive materials in medicine</li> </ul> </li> </ul>	SP Topics 7 All students will know: • Astronomy	CP Topics 10 All students will know: • Electricity & Circuits
SKILLS	Working scientifically:         -       Development of scientific thinking         -       Experimental skills and strategies         -       Representation, handling and manipulation of primary and secondary data in the form a graphs and tables         -       Analysis and evaluation         -       Scientific vocabulary, quantities, units, symbols, numerical conversion and nomenclature					
ASSESSMENT	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments • Mock exam: SP1 (partial paper)	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 2 Live mark book assessments • Mock exam: SP1 (partial paper)	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • 1 Live mark book assessment	Formative: Live marking Verbal feedback 1,2,3 show me Write, pair, share Questioning Cold calling Summative: 2 Live mark book assessments Mock exam: SP1 (full paper)
VOCAB	<ul> <li>Force</li> <li>Acceleration</li> <li>Balanced forces</li> <li>Unbalanced forces</li> <li>Resultant force,</li> <li>Action force</li> <li>Reaction force</li> <li>Stopping distance</li> <li>Braking distance</li> <li>Momentum</li> <li>Collision</li> </ul>	<ul> <li>Waves</li> <li>Oscillation</li> <li>Particle</li> <li>Longitudinal</li> <li>Transverse</li> <li>Amplitude</li> <li>Frequency</li> <li>Wavelength</li> <li>Reflection</li> </ul>	<ul> <li>Refraction</li> <li>Incidence</li> <li>Electromagnetic spectrum</li> <li>X-ray</li> <li>Gamma ray</li> <li>Radio wave</li> <li>Microwave</li> <li>Infrared</li> <li>Visible light</li> <li>Ultraviolet</li> </ul>	<ul> <li>Radioactivity</li> <li>Alpha</li> <li>Beta</li> <li>Gamma</li> <li>Positron radiation</li> <li>Background radiation</li> <li>Geiger-muller tube</li> <li>Becquerels</li> <li>Half-life</li> <li>Contaminated</li> <li>Irradiated</li> </ul>	<ul> <li>Planet</li> <li>Star</li> <li>Comet</li> <li>Asteroid</li> <li>Gravitational field strength</li> <li>Orbit</li> <li>Geocentric</li> <li>Heliocentric</li> <li>Elliptical</li> <li>Protostar</li> <li>Supernova</li> <li>Nebula</li> <li>Black hole</li> <li>Neutron star</li> <li>Cosmic microwave</li> <li>Background radiation</li> <li>Steady state</li> <li>Doppler effect</li> <li>Red shift</li> <li>White dwarf</li> <li>Red giant</li> </ul>	<ul> <li>Resistance</li> <li>Current</li> <li>Potential difference</li> <li>Charge</li> <li>Alternating current</li> <li>Direct current</li> <li>Magnetic induction</li> <li>Magnetic field</li> <li>Induced magnet</li> <li>Permanent magnet</li> <li>Solenoid</li> <li>Electromagnet</li> <li>Power</li> <li>Transformer</li> </ul>

READING SKILLS	CAREERS LINKS	CORE	SUPPORTING STUDENT'S AT HOME
In science we use the careful reading strategy with our care practicals and other relevant tasks – before we read, we cover the theory behind the practical using carefully selected tasks that apply, during reading we highlight the method and identify equipment and variables: after reading, we allow pupils to demonstrate the practical, collect data and use data where applicable e.g. drawing a graph using raw results.	<ul> <li>Electrician</li> <li>Automotiv e safety engineer</li> <li>Optician</li> </ul>	<ul> <li>Character – Being a kind critical friend when giving peer feedback. Ensuring learners aspire to high expectations in their attitude to Science because they see the relevance of the taught content to their everyday experiences.</li> <li>Organisation – Completing all homework. Ensuring that they are equipped for lessons. Method writing to help learners sequence processes</li> <li>Resilience – Not giving up when attempting hard skills. Working independently and being prepared to make mistakes in a safe and supportive environment</li> <li>Excellence – Having high expectations with quality of one's own written work and presentation. Using Contextual Science to inspire learners about how science works around them every day. Communicating successes with pastoral leaders and parents/guardians regularly using the Academy's behaviour and rewards system</li> </ul>	Students have knowledge organisers and revision guides which correspond to the topics being taught at school. These are used to promote and assist SOLO work during revision and/or homework. Students are provided with a fully detailed revision list prior to their mock exams with clear learning outcomes corresponding to the exam board specification. Students are given revision homework tailored to their learning needs and assessment which is set and marked in class every week leading up to their assessment. We also offer homework club twice a week tailored for science SEND students lead by our specialist TA.

### ORMISTON **CURRICULUM AND ASSESSMENT PLAN** SWB CADE **COMBINED SCIENCE** YEAR 1

INTENT

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CC Topics 5-13: Chemical Bonding, Acids & Alkalis, Calculations Involving Masses, Electrolytic Processes, Obtaining & Using Metals, Dynamic Equilibrium and Groups in the Periodic Table

#### CP Topics 2, 4, 5, 6, 7, 8 & 9:

Motion & Forces, Waves, Light & the EM Spectrum, Radioactivity, Forces Doing work, Forces & their Effects and Electricity & Circuits

CB Topics 2, 3, 5-7 Cells & Control, Genetics, Health, Disease & the Development of Medicine, Plant Structures & their Functions and Animal Control & Coordination

Γ		AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
	TOPIC,KNOWLEDGE	<ul> <li>CP10-13, CC14</li> <li>All students will know:</li> <li>Permanent and induced magnets and magnetic fields</li> <li>How fields from individual coils in a solenoid react</li> <li>Using the power equation for transformers</li> <li>Calculating density</li> <li>Specific heat capacity and specific latent heat Kelvin and Celsius temperature scales</li> <li>The relationship between force and extension</li> <li>Calculating spring constant and work done when stretching a spring</li> </ul>	CC15-17.CB 7         All students will know:         •       Measuring and calculating rates of chemical reactions         •       Energy transfers in a chemical reaction         •       Alkanes as a homologous series         •       Fractional distillation of crude oil and cracking of alkanes         •       Changes in the Earth's atmosphere over time         •       Endocrine glands         •       How the menstrual cycle is controlled by hormones are used in contraception         •       How glucoregulation occurs	CB8-9         All students will know:         • Gas exchange and surface area:volume ratio         • Anaerobic and aerobic respiration         • The circulatory system         • How ecosystems are organised         • How communities are affected by abiotic and biotic factors         • How the abundance and distribution of organisms are measured         • How energy is transferred through trophic levels         • How humans affect ecosystems and biodiversity         • Carbon, nitrogen and water cycle	REVISION PROGRAMME         All students will recop         knowledge and skills from:         CB1-5         ·         Key concepts in biology         ·         Genetics         ·         Natural Selection &         Genetic Modification         ·	REVISION PROGRAMME         All students will recap         Knowledge and skills from:         CB6-9         • Plant structure & function         • Control         • Exchange & transport in animals         • Eccosystems & material cycles         CC13-17         • Groups of the periodic table         • Rates of reaction         • Energy changes in reactions         • Fuels         • Earth & atmospheric science	REVISION PROGRAMME         All students will recap         knowledge and skills         from:         CP7-13         • Energy         • Forces & their effects         • Electricity & circuits         • Magnetism & the motor effect         • Electromagnetic induction         • Particle model         • Forces & matter
	SKILLS	- Analysis and evaluation			0 1		
	ASSESSMENT	Formative: Live marking Verbal feedback 1,2,3 show me Write, pair, share Questioning Cold calling Summative: Two Live mark book assessments	One summative assessment (exam) per discipline (3 exams total)	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • Two Live mark book assessment (exam) per discipline (3 exams total)	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Questioning • Cold calling	Formative: Live marking Verbal feedback 1,2,3 show me Questioning Cold calling Summative GCSE examination - two exam papers per discipline (6 total)	Formative: Live marking Verbal feedback 1,2,3 show me Questioning Cold calling Summative GCSE examination – two exam papers per discipline (6 total)
	VOCAB	Magnetic field     Permanent     magnet     Induced magnet     Plotting compass     Solenoid     Electromagnet     Motor effect     Magnetic flux     density     Alternating,     direct current     Transmission line     Kinetic theory     Conserved     Density     Specific heat     capacity     Specific latent     heat     Kelvin	Rate of reaction     Successful collisions     Frequent collisions     Exothermic     Endothermic     Reaction profile     Fractional distillation     Hydrocarbon     Alkane     Cracking     Endocrine gland     Hormone     Oestrogen     Progesterone     Insulin     Glycogen     Diabetes     Target organ	Alveoli     Aerobic respiration     Anaerobic     respiration     Milochondria     Blood vessel     Artery     Vein     Capillary     Biofic     Abiotic     Gas exchange     Belt transect     Quadrat     Random sampling     Eutrophication     Fertilisers     Biodiversity     Fish farming     Abundance     Distribution			
reading strategy with our core practicals and other relevant tasks – before we read, we cover the theory behind the practical using carefully selected tasks that identify equipment and variables; after reading, we allow pupils to demonstrate the practical, collect data     • profession Electrician     aspire to relevant • Electrician       • National Grid engineer     • National Grid engineer     Method       • Environmenta identify equipment and variables; after reading, we allow pupils to demonstrate     • Environmenta I Biologist     Excellen present around:			Health care profession Electrician National Grid engineer I Biologist Health care arguine transformation Environmenta I Biologist	ter – Being a kind critical friend wi b high expectations in their attitu- ce of the taught content to their ation – Completing all homework writing to help learners sequence ce – Not giving up when attempti- repared to make mistakes in a sc ce – Having high expectations w ation. Using Contextual Science F them every day. Communicating	c. Ensuring that they are equipped for la e processes ing hard skills. Working independently c	armers Students have kn revision guides whic being taught at s promote and assist essons. Students are prov revision list prior to ft learning outcomes : board works Students are given n to their learning nee n set and marked in c to their assessment club twice a week	STUDENT'S AT HOME bowledge organisers and h correspond to the topics chool. These are used to SOLO work during revision or homework. ided with a fully detailed heir mock exams with clear corresponding to the exam specification. evision homework tailored ds and assessment which is lass every week leading up . We also offer homework tailored for science SEND lby our specialist TA.

## CURRICULUM AND ASSESSMENT PLAN BIOLOGY YEAR 11



INTENT

Our faculty mission is to create knowledgeable and scientifically literate learners by nurturing students' curiosity and bringing scientific phenomena into the classroom. We will prepare our students to become educated citizens capable of comprehending global and contemporary issues. The Ormiston SWB Science faculty will develop the minds of lifelong learners by providing access to a fully inclusive Science education that will support their development through the acquisition of skills and knowledge through a progressively challenging curriculum.



SB Topics 2, 3, 5 & 6

Cells & Control, Genetics, Health, Disease & the Development of Medicine, Plant Structures & their Functions

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC, KNOWLEDGE	<ul> <li>SB7</li> <li>All students will know:</li> <li>Endocrine glands</li> <li>How the menstrual cycle is controlled by hormones and how hormones are used in contraception</li> <li>The importance of hormeostasis</li> <li>How thermoregulation, and glucoregulation and glucoregulation occurs</li> <li>How thyroxine and adrenaline affect the body</li> <li>How a negative feedback mechanism works</li> </ul>	SB8         All students will know:         • Gas exchange and surface area:volume ratio         • Fick's law and diffusion         • Anaerobic and aerobic respiration         • The circulatory system	SB9           All students will know:           How ecosystems are organised           How communities are affected by abiotic and biotic factors           How the abundance and distribution of organisms are measured           How energy is transferred through trophic levels           Parasitism and mutualism           How humans affect ecosystems and biodiversity           Carbon, nitrogen and water cycle           Indicator species to assess pollution levels           Rates of decomposition and why they vary	REVISION PROGRAMME         All students will recap         knowledge and skills from:         SB1-5         • Key concepts in biology         • Cells and control         • Genetics         • Natural Selection & Genetic Modification         • Health, disease and development of medicine	REVISION PROGRAMME         All students will recap         knowledge and skills from:         SB6-8         • Plant structure & function         • Animal coordination & control         • Exchange & transport in animals	REVISION PROGRAMME All students will recap knowledge and skills from: SB9 • Ecosystems & material cycles
SKILLS	- Analysis and evalue	nd strategies ndling and manipulation of p		in the form a graphs and table omenclature	s	
ASSESSMENT	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • Two Live mark book assessments	One summative assessment (exam) per discipline (3 exams total)	Formative: • Live marking • Verbal feedback • 1.2.3 show me • Write, pair, share • Questioning • Cold calling Summative: • Two Live mark book assessments • One assessment (exam) per discipline (3 exams total)	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Questioning • Cold calling	Formative: • Live marking • Verbal feedback • 1.2,3 show me • Questioning • Cold calling Summative GCSE examination – two exam papers per discipline (6 total)	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Questioning • Cold calling Summative GCSE examination – two exam papers per discipline (6 total)
VOCAB	Endocrine gland     Hormone     Oestrogen     Progesterone     Insulin     Glycogen     Diabetes     Target organ	<ul> <li>Alveoli</li> <li>Aerobic respiration</li> <li>Anaerobic respiration</li> <li>Mitochondria</li> <li>Blood vessel</li> <li>Artery</li> <li>Vein</li> <li>Capillary</li> </ul>	Biotic     Abiotic     Abiotic     Gas exchange     Belt transect     Quadrat     Random sampling     Eutrophication     Fertilisers     Biodiversity     Fish farming     Abundance     Distribution			

READING SKILLS	CAREERS LINKS	CORE	SUPPORTING STUDENT'S AT HOME
In science we use the careful reading strategy with our core practicals and other relevant tasks – before we read, we cover the theory behind the practical using carefully selected tasks that apply, during reading we highlight the method and identify equipment and variables; after reading, we allow pupils to demonstrate the practical, collect data and use data where applicable e.g. drawing a graph using raw results.	<ul> <li>Health care profession</li> <li>Environmenta I Biologist</li> </ul>	<ul> <li>Character – Being a kind critical friend when giving peer feedback. Ensuring learners aspire to high expectations in their attitude to Science because they see the relevance of the taught content to their everyday experiences.</li> <li>Organisation – Completing all homework. Ensuring that they are equipped for lessons. Method writing to help learners sequence processes</li> <li>Resilience – Not giving up when attempting hard skills. Working independently and being prepared to make mistakes in a safe and supportive environment</li> <li>Excellence – Having high expectations with quality of one's own written work and presentation. Using Contextual Science to inspire learners about how science works around them every day. Communicating successes with pastoral leaders and parents/guardians regularly using the Academy's behaviour and rewards system</li> </ul>	Students have knowledge organisers and revision guides which correspond to the topics being taught at school. These are used to promote and assist SOLO work during revision and/or homework. Students are provided with a fully detailed revisionlist prior to their mock exams with clear learning outcomes corresponding to the exam board specification. Students are given revision homework tailored to their learning needs and assessment which is set and marked in closs every week leading up to their assessment. We also offer homework club Wrice a week tailored for science SEND students lead by our specialist TA.

# CURRICULUM AND ASSESSMENT PLAN CHEMISTRY YEAR 11



INTERNT Our faculty mission is to create knowledgeable and scientifically literate learners by nurturing students' curiosity and bringing scientific phenomena into the classroom. We will prepare our students to become educated citizens capable of comprehending global and contemporary issues. The Ormiston SWB Science faculty will develop the minds of life-long learners by providing access to a fully inclusive Science education that will support their development through the acquisition of skills and knowledge through a progressively challenging curriculum.



#### SC Topics 5-19:

Chemical Bonding, Acids & Alkalis, Calculations Involving Masses, Electrolytic Processes, Obtaining & Using Metals, Dynamic Equilibrium, Transition Metals, Alloys & Corrosion, Quantitative Analysis, Chemical & Fuel Cells, Groups in the Periodic Table and Energy Changes in Chemical Reactions

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2	
TOPIC, KNOWLEDGE	SC20-22 All students will know: Changes in the Earth's atmosphere Causes and effects of climate change Structures and properties of alkanes and alkenes	<ul> <li><u>SC23-24</u></li> <li>All students will know:</li> <li>Structures and properties of alcohols and carboxylic acids</li> <li>Production of ethanol from carbohydrates</li> <li>Composition of biological polymers</li> <li>Production of poly(ethane) and other polymers</li> <li>Disposal and recycling of polymers</li> </ul>	<ul> <li>SC25-26</li> <li>All students will know:         <ul> <li>Identification of metal ions</li> <li>Chemical tests for non-metal ions and ammonia</li> <li>Instrumental methods of analysis and their advantages</li> <li>Comparing the physical properties of different materials</li> <li>Composite materials</li> <li>Uses, properties and risks of nanoparticles</li> </ul> </li> </ul>	REVISION PROGRAMME         All students will recap         knowledge and skills from:         SC1-16         • States of matter         • Atomic structure         • Periodic table         • Ionic & Covalent         bonding         • Types of substances         • Acids & alkalis         • Calculations involving masses         • Electrolytic Processes         • Using & Obtaining Metals         • Transition metals, corrosion & alloys         • Quantitative analysis         • Reversible reactions & Equilibria         • Chemical and fuel cells	REVISION PROGRAMME         All students will recap         knowledge and skills         from:         SC17-25         Groups of the periodic table         Rates of reaction         Energy changes in reactions         Fuels         Earth & atmospheric science         Hydrocarbons         Qualitative analysis         Polymers         Alcohols & carboxylic acids	REVISION PROGRAMME All students will recap knowledge and skills from: SC26 • Bulk & surface properties of matter including nanoparticles	
SKILLS	Working scientifically:         - Development of scientific thinking         - Experimental skills and strategies         - Representation, handling and manipulation of primary and secondary data in the form a graphs and tables         - Analysis and evaluation         - Scientific vocabulary, quantities, units, symbols, numerical conversion and nomenclature						
ASSESSMENT	Formative: • Live marking • Verbal feedback • 1.2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • Two Live mark book assessments	One summative assessment (exam) per discipline (3 exams total)	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • Two Live mark book assessments • One assessment (exam) per discipline (3 exams total)	Formative: • Live marking • Verbal feedback • 1.2.3 show me • Questioning • Cold calling	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Questioning • Cold calling Summative GCSE examination – two exam papers per discipline (6 total)	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Questioning • Cold calling Summative GCSE examination – two exam papers per discipline (6 total)	
VOCAB	<ul> <li>Fractional distillation</li> <li>Hydrocarbon</li> <li>Alkane</li> <li>Alkene</li> <li>Cracking</li> <li>Functional group</li> <li>Double bond</li> <li>Saturated</li> <li>Unsaturated</li> <li>Bromine water</li> <li>Decolourise</li> <li>Addition reaction</li> </ul>	<ul> <li>Carboxylic acid,</li> <li>Alcohol</li> <li>Fermentation</li> <li>Polymer</li> <li>Addition polymerisation</li> <li>Condensation polymerisation</li> <li>Ester link</li> <li>Oxidation</li> </ul>	<ul> <li>Cation</li> <li>Anion</li> <li>Flame test</li> <li>Flame photometry</li> <li>Qualitative test</li> <li>Precipitate</li> <li>Nanoparticle</li> <li>Bulk material</li> <li>Property</li> </ul>				

READING SKILLS	CAREERS LINKS	CORE	SUPPORTING STUDENT'S AT HOME
In science we use the careful reading strategy with our core practicals and other relevant tasks – before we read, we cover the theory behind the practical using carefully selected tasks that apply, during reading we highlight the method and identify equipment and variables; after reading, we allow pupils to demonstrate the practical, collect data and use data where applicable e.g drawing a graph using raw results.	<ul> <li>Health care profession</li> <li>Industrial chemistry</li> <li>Life Cycle Assessment Certified Professional</li> </ul>	Character – Being a kind critical friend when giving peer feedback. Ensuing learners aspire to high expectations in their attitude to Science because they see the relevance of the taught content to their everyday experiences. Organisation – Completing all homework. Ensuing that they are equipped for lessons. Method writing to help learners sequence processes Resilience – Not giving up when attempting hard skills. Working independently and being prepared to make mistakes in a safe and supportive environment Excellence – Having high expectations with quality of one's own written work and presentation. Using Contextual Science to inspire learners about how science works around them every day. Communicating successes with pastoral leaders and parents/guardians regularly using the Academy's behaviour and rewards system	Students have knowledge organisers and revision guides which correspond to the topics being taught at school. These are used to promote and assist SOLO work during revision and/or homework. Students are provided with a fully detailed revision list prior to their mack exams with clear learning outcomes corresponding to the exam board specification. Students are given revision homework tailored to their learning needs and assessment which is set and marked in class every week leading up to their assessment. We also offer homework club twice a week tailored for science SEND students lead by our specialisi TA.

## CURRICULUM AND ASSESSMENT PLAN PHYSICS YEAR 11



INTENT

Our faculty mission is to create knowledgeable and scientifically literate learners by nurturing students' curiosity and bringing scientific phenomena into the classroom. We will prepare our students to become educated citizens capable of comprehending global and contemporary issues. The Ormiston SWB Science faculty will develop the minds of lifelong learners by providing access to a fully inclusive Science education that will support their development through the acquisition of skills and knowledge through a progressively challenging curriculum.

### **Prior learning**

CP Topics 2, 4, 5, 6 & 7:

Motion & Forces, Waves, Light & the EM Spectrum, Radioactivity, Astronomy

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2	
TOPIC,KNOWLEDGE	<ul> <li>SP8,9,11,12</li> <li>All students will know:</li> <li>Work and power</li> <li>Rotational forces, levers and moments</li> <li>Current, charge and potential difference</li> <li>Calculating resistance, power and energy transferred</li> <li>Changing resistance</li> <li>UK domestic electricity supply and earthing</li> <li>Shape and size of electric fields</li> <li>Phenomena caused by static electricity</li> </ul>	<ul> <li>SP13,14</li> <li>All students will know: <ul> <li>Permanent and induced magnets</li> <li>Magnetic fields</li> <li>Electromagnetic fields around a coil of wire and factors that affect it</li> <li>How fields from individual coils in a solenoid react</li> <li>Using the power equation for transformers in the national grid</li> <li>Calculating the size and direction of the force in a wire carrying a current in a magnetic field</li> <li>Calculating density</li> <li>Specific heat capacity and specific latent heat</li> </ul></li></ul>	<ul> <li>SP15 All students will know:</li> <li>Kelvin and Celsius temperature scales</li> <li>The relationship between force and extension</li> <li>Calculating spring constant and work done when stretching a spring</li> </ul>	REVISION PROGRAMME         All students will recap         knowledge and skills from:         SP1-6         • Forces & Motion         • Conservation of energy         • Waves         • Light & the electromagnetic spectrum         • Radioactivity         • Astronomy	REVISION PROGRAMME         All students will recap         knowledge and skills from:         SP8-14         • Energy         • Forces & their effects         • Electricity & circuits         • Static electricity         • Magnetism & the motor effect         • Electromagnetic induction         • Particle model	REVISION PROGRAMME All students will recap knowledge and skills from: SP15 • Forces & matter	
SKILLS	<ul> <li>Working scientifically:</li> <li>Development of scientific thinking</li> <li>Experimental skills and strategies</li> <li>Representation, handling and manipulation of primary and secondary data in the form a graphs and tables</li> <li>Analysis and evaluation</li> <li>Scientific vocabulary, quantities, units, symbols, numerical conversion and nomenclature</li> </ul>						
ASSESSMENT	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • Two Live mark book assessments	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, poir, share • Questioning • Cold calling One summative assessment (exam) per discipline (3 exams total)	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning • Cold calling Summative: • Two Live mark book assessments • One assessment (exam) per discipline (3 exams total)	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Questioning • Cold calling	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Questioning • Cold calling Summative GCSE examination – two exam papers per discipline (6 total	Formative: Live marking Verbal feedback 1,2,3 show me Questioning Cold calling Summative GCSE examination – two exam papers per discipline (6 total)	
VOCAB	<ul> <li>Free body diagram.</li> <li>Resultant force</li> <li>Component</li> <li>Moment</li> <li>Rotatian</li> <li>Static induction</li> <li>Electrostatic</li> <li>Force field</li> <li>Field lines</li> <li>Charge,</li> <li>Caulomb (c)</li> <li>Alternator</li> <li>Diode</li> <li>Lidr</li> <li>Thermistor</li> <li>Thermistor</li> <li>Thermistor</li> <li>Thermistor</li> <li>Thermistor</li> <li>Thermistor</li> <li>Thermistor</li> <li>Thermistor</li> <li>National grid</li> <li>Specific theat comparison</li> <li>Specific theat comparence</li> <li>Kinetic theory</li> <li>Specific theat comparence</li> <li>Kelvin</li> </ul>		Elastic     Inelastic     Inelastic     Compress     Linear     Non-linear     Proportional     Distortion     Spring constant     Extension     Work done     Immersion     Magnitude     Displacement				
reading strategy with our core practicals and other relevant tasks - before we safety read, we cover the theory engineer Or behind the practical using carefully selected tasks that opply, during reading we highlight the method and identify equipment and variables; after reading, we allow pupils to demonstrate the practical, collect data opply.		re to high expectations in their at vance of the taught content to th anisation – Completing all homev had writing to help learners seque ience – Not giving up when atter g prepared to make mistakes in sellence – Having high expectation entation. Using Contextual Sciem and them every day. Communica	CORE ter – Being a kind critical friend when giving peer feedback. Ensuring learners o high expectations in their attitude to Science because they see the ice of the laught content to their everyday experiences. sation – Completing all homework. Ensuring that they are equipped for lessons. d writing to help learners sequence processo ce – Not giving up when attempting hard skills. Working independently and arepared to make mistakes in a safe and supportive environment nce – Having high expectations with quality of one's own written work and tation. Using Contextual Science to inspire learners about how science works them every day. Communicating successes with pastoral leaders and s/guardians regularly using the Academy's behaviour and rewards system		SUPPORTING STUDENT'S AT HOME Students have knowledge organisers and revision guides which correspond to the topics being taught at school. These are used to promote and assist SOLO work during revision and/or homework. Students are provided with a fully detailed revision list prior to their mock exams with clear learning outcomes corresponding to the exam board specification. Students are given revision homework tailored to their learning needs and assessment which is set and marked in class every week leading up to their assessment. We also offer homework club twice a week tailored for science SEND students lead by our specialist TA.		

## **CURRICULUM AND ASSESSMENT PLAN BTEC AAQ APPLIED SCIENCE**



INTENT

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Prior learning		<ul> <li>KS3 link: Structure of the atom, structure and function of eukaryotic cells, energy transfers, changes of state, writing word equations, the periodic table</li> <li>KS4 link: Thermoregulation, osmoregulation, waves, Newtons laws of motion, refraction, ionic bonding, covalent bonding, metallic bonding, incomplete combustion, Ohms law, equations</li> </ul>		
۷	Extra- curricular	University visits focused on healthcare careers, visits from meducators UK to deliver science/medical based workshops and 1 to 1 careers meetings to help pupils access subject specific work experience.		

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1 & 2		
TOPIC,KNOWLEDGE	<ul> <li>Unit 3: Principles and Applications of Physics</li> <li>A1 Working with waves</li> <li>A2 Principles of optical fibres</li> <li>B1 Measurement and representation of motion</li> <li>B2 Laws of motion</li> <li>C1 Use of electrical components</li> <li>C2 Equations</li> <li>C3 Electrical energy usage</li> <li>C4 Energy transfer</li> <li>C5 Change of state</li> </ul>	<ul> <li>Unit 1: Principles and Applications of Biology <ul> <li>A1 Structure and function of cells and tissues</li> <li>A2 Structure and function of specialised cells in multicellular organisms</li> <li>A3 Structure and function of biological tissues</li> <li>B1 Structure and function of water</li> <li>B2 Structure and function of carbohydrates</li> <li>B3 Structure and function of proteins</li> <li>B4 Structure and function of nucleic acids</li> <li>B5 Structure and function of lipids</li> <li>C1 Cell transport mechanisms</li> <li>C23 Factors affecting enzyme activity</li> <li>C3 Homeostasis</li> </ul></li></ul>	<ul> <li>Unit 2: Principles and Applications of Chemistry <ul> <li>A1.1 Features of the periodic table and their relationship with atomic structure.</li> <li>A1.2 Electronic structure</li> <li>A1.3 Ionisation energy</li> <li>B1.1 Metallic bonding and giant metallic structures</li> <li>B1.2 Ionic bonding and giant ionic structures</li> <li>B1.3 Covalent bonding and molecules</li> <li>B1.4 Typical physical properties of substances</li> <li>B1.5 Molecular shape</li> <li>B1.6 Electronegativity and polarity</li> <li>B1.7 Intermolecular forces</li> <li>B1.8 Effect of hydrogen bonding on the properties of water</li> <li>C1.1 Changes in physical properties for the elements across Period 3</li> <li>C1.2 Oxidation number concept, oxidation and reduction</li> <li>C1.3 Trends and observations for the reactions of the Period 3</li> <li>C1.4 Differences in physical properties</li> <li>C1.5 Acid-base behaviour of Period 3 chlorides</li> <li>C1.6 The action of water with Period 3 chlorides</li> <li>C1.7 Write balanced equations for reactions</li> <li>C1.8 Predict the physical and chemical properties</li> <li>C1.9 Uses of Period 3 elements and compounds</li> </ul></li></ul>	<ul> <li>D1.1 Concept of the mole and use in calculations</li> <li>D1.2 Chemical kinetics</li> <li>D1.3 Chemical energetics</li> <li>D1.4 Chemical equilibrium</li> <li>D1.5 Application of chemical kinetics, energetics and equilibrium to the chemical industry</li> <li>D1.6 Application of green chemistry in the chemical industry</li> <li>D1.6 Application of green chemistry in the chemical industry</li> <li>D1.7 Application of green chemistry in the chemical industry</li> <li>D1.6 Application of green chemistry in the chemical industry</li> <li>D1.6 Application of green chemistry in the chemical industry</li> <li>D1.6 Application of green chemistry in the chemical industry</li> <li>D1.6 Application of green chemistry in the chemical industry</li> <li>D1.7 Nowledge and understanding of key terms used in organic compounds</li> <li>E1.3 Naming alkanes, alkenes, halogenoalkanes and alcohols, using International Union of Pure and Applied Chemistry (IUPAC) nomenclature rules</li> <li>E1.4 Isomerism</li> <li>E1.5 Sigma and pi molecular orbitals</li> <li>E1.6 Changes in boiling point</li> <li>E1.7 Types of reactions of organic compounds</li> <li>E1.8 Reactions of commercial importance</li> <li>E1.9 Benefits and problems arising from combustion</li> <li>E1.10 Solutions to environmental problems</li> </ul>	<ul> <li>Bespoke revision programme created by KS5 lead leading up to their first unit 1, 2 and 3 exam sitting:</li> <li>Students to cover skills and knowledge in a series of booklets consisting of exam questions</li> <li>Students also complete a perfect paper, walking talking mock for each module and topic led by an expert teacher.</li> </ul>		
SPEC			nework can be found: c-aaqs,applied-science,2025,specificatic	on-and-sample-assessments,bte	ec-national-in-applied-		
ASSESSMENT	Formative:       Summative:         Live marking       Baseline assessment in Autumn 1         Verbal feedback       End of topic tests for each sub sec         1,2,3 show me       Unit 1 Biology: 3 end of to         Write, pair, share       Unit 2 Chemistry: 5 end of         Questioning and use of cold calling       Mid year assessment for Unit 2 and         Mid year assessment for Unit 2 and       Unit 1, 2 and 3 mock exam in sum			ic tests (A, B ,C) opic tests (A, B ,C, D, E) c tests (A, B ,C) 1 in Autumn 2			
VOCAB	Key terms and command words for the year 12 units can be found: https://qualifications.pearson.com/content/dam/pdf/btec-aags/applied-science/2025.specification-and-sample-assessments.btec-national-in-applied- science-specification.pdf						

#### **READING SKILLS**

In science we use the careful reading strategy which are demonstrated in the following ways

- Reading and comprehension of practical instructions
- Reading and consolidation of large texts into notes for their books and/or knowledge organisers
- Use of mark schemes to self assess exam questions which emphasises exam specific vocabulary

#### CAREERS LINKS

Nurse, science teacher, medical lab technician, dental hygienist, midwife, clinical researcher assistant radiographer, dietitian, mental health nursing etc.

#### CORE

Character – Being a kind critical friend when giving peer feedback. Ensuring learners aspire to high expectations in their attitude to Science because they see the relevance of the taught content to their evenday experiences

see the relevance of the taught content to their everyday experiences. Organisation – Completing all homework. Ensuring that they are equipped for lessons. Method writing to help learners sequence processes Resilience – Not giving up when attempting hard skills. Working independently and being prepared to make mistakes in a safe and supportive environment Excellence – Having high expectations with quality of one's own written work and presentation. Using Contextual Science to inspire learners about how science works around them every day. Communicating science works around them every day. Communicating successes with pastoral leaders and

parents/guardians regularly using the Academy's behaviour and rewards system

#### SUPPORTING STUDENT'S AT HOME

Students are given transition packs when they attend sixth form taster day containing knowledge questions, books, videos and topics to research before their September start. Students are also provided with A3 empty knowledge organiser cheats which are used to consolidate to are a so sheets which are used to consolidate learning at the end of the topics.

udents are provided with detailed assignment feedback which indicate any improvements. Students have access to classroom resources which are uploaded onto teams. Students are given 5 hours worth of homework every week tailored to their learning needs and exam board. Part of their homework includes the use of exam questions to strengthen their practice

## **CURRICULUM AND ASSESSMENT PLAN BTEC APPLIED SCIENCE**



INTENT

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Prior learning	<b>KS4 link</b> : Identifying variables. Planning a practical. Safe use of laboratory equipment. Selecting appropriate laboratory equipment. Identifying risks and working safely. Data collection. Displaying and analysis of data. Identifying patterns and trends in data collected. CP9: electricity and circuits. CB9: ecosystems and material cycles. CB1: key concepts. CC1: States of matter & CP12: Particle model.
	<b>K\$5 link</b> : Unit 1: Principles and Applications of Science I & Unit 2 – Practical Scientific Procedures

cip les a ٩p IIC I rocedures and Techniques

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC, KNOWLEDGE	<ul> <li>A Planning a scientific investigation</li> <li>A1 Developing a hypothesis for an investigation</li> <li>A2 Selection of appropriate equipment, techniques and standard procedures</li> <li>A3 Health and safety associated with the investigation</li> <li>A4 Variables in the investigation</li> <li>A5 Method for data collection and analysis</li> <li>B Data collection, processing and analysis, interpretation</li> <li>B1 Collection of quantitative, qualitative data</li> <li>B2 Processing data</li> <li>C Drawing conclusions and evaluation</li> <li>C1 Interpretation, analysis of data</li> <li>C2 Evaluation</li> <li>D1 Protein structure</li> <li>D2 Enzymes in action</li> <li>D3 Factors that can affect enzyme activity</li> </ul>	<ul> <li>E Diffusion of molecules</li> <li>E1 Factors affecting the rate of diffusion</li> <li>E2 Arrangement and movement of molecules</li> <li>F Plants and their environment</li> <li>F1 Factors that can affect plant growth and, or distribution</li> <li>F2 Sampling technique</li> <li>F3 Sampling sizes</li> <li>G Energy content of fuels</li> <li>G3 Units of energy</li> <li>H Electrical circuits</li> <li>H1 Use of electrical components in series and parallel circuits</li> <li>H2 Equations</li> <li>H3 Energy usage</li> </ul>	by KS5 lead leading up to January Unit 3 exam: Learning aim A: Understand the interrelationship and nervous control of the cardiovascular and respiratory systems	Learning aim B: Understan the homeostatic mechanisms used by the human body Learning aim C: Understar the role of hormones in the regulation and control of the reproductive system	Bespoke revision progra lead leading up to May - Students cover all knowledge in a see of exam questions - Students also com	y resit exams unit 3 skills and ries of booklets consisting plete a perfect paper, ock for each module and
SPEC	The full specification list including Science,2016,specification-and-				ent,dam,pdf,BTEC-National	s,Applied-
SKILLS	The full skills list can be found her assessments, <u>BTEC-L3-Nat-ExtCer</u> - Unit 1: Principles and Applic - Unit 2: Practical Scientific Pr - Unit 3: Science Investigation - Unit 9: human regulation an	t-in-Applied-Science-Spec.p ations of Science I ocedures and Techniques Skills. Id reproduction	<u>df</u>	NTEC-Nationals, Applied-Scier	nce,2016,specification-and	<u>-sample-</u>
ASSESSMENT	Formative: Live marking Verbal feedback 1,2,3 show me Write, pair, share Questioning and use of colo	Enc - Ass	nmative: d of topic tests for each module D, E, F, G, H ignment feedback and resubmission feedback for learning aims A Understand the interrelationship and nervous control of the cardiovascular and respiratory systems B Understand the homeostatic mechanisms used by the human body C Understand the role of hormones in the regulation and control of the reproductive system			
VOCAB	Topics A, B, C: Hypothesis, null hypothesis, equij safety, risk, hazard, independen variable, control variable, methu precision, data, repeat, anomal calculation, mean, standard de trends, patterns, conclusion, sign anomaly, error, reliability, evalue	t variable, dependent od, accuracy, reliability, y, observation, inference, viation, graph, statistical tes iificance, null hypothesis,	activation energy, specificity, substrate, temperature, pH, concentration, diffusion, gradient, surface area, membrane, light joule, calorie, energy, heat capacity, series			arbohydrate, lipid, on, toxicity, pollution, apacity, series, parallel,

#### **READING SKILLS**

In science we use the careful reading strategy which are demonstrated in the following ways

- Reading and comprehension of practical instructions
- Reading and consolidation of large texts into notes for their books and/or knowledge organisers
- Use of mark schemes to self assess exam questions which emphasises exam specific vocabulary

### CAREERS LINKS

Nurse, science teacher, medical lab technician, dental hygienist, midwife, clinical researcher assistant radiographer, dietitian, mental health nursing etc.

#### CORE

Character – Being a kind critical friend when giving peer feedback. Ensuring learners aspire to high expectations in their attitude to Science because they see the relevance of the taught content to their evenday experiences

see the relevance of the taught content to their everyday experiences. Organisation – Completing all homework. Ensuring that they are equipped for lessons. Method writing to help learners sequence processes Resilience – Not giving up when attempting hard skills. Working independently and being prepared to make mistakes in a safe and supportive environment Excellence – Having high expectations with quality of one's own written work and presentation. Using Contextual Science to inspire learners about how science works around them every day. Communicating successes with pastoral leaders and parents/auradians requilatly using the Academy's

parents/guardians regularly using the Academy's behaviour and rewards system

#### SUPPORTING STUDENT'S AT HOME

Students are given transition packs when they attend sixth form taster day containing knowledge questions, books, videos and topics to research before their September start. Students are also provided with A3 empty knowledge organiser beats which are used to consolidate to are a so sheets which are used to consolidate learning at the end of the topics.

udents are provided with detailed assignment feedback which indicate any improvements. Students have access to classroom resources which are uploaded onto teams. Students are given 5 hours worth of homework every week toilored to their learning needs and exam board. Part of their homework includes the use of exam questions to strengthen their practice

## **CURRICULUM AND ASSESSMENT PLAN** BIOLOGY **YEAR** 12



INTENT

Our faculty mission is to create knowledgeable and scientifically literate learners by nurturing students' curiosity and bringing scientific phenomena into the classroom. We will prepare our students to become educated citizens capable of comprehending global and contemporary issues. The Ormiston SWB Science faculty will develop the minds of life-long learners by providing access to a fully inclusive Science education that will support their development through the acquisition of skills and knowledge through a progressively challenging curriculum.

Prior learning         variation. Changes in the environment of Ks4 link: Interdependence between org		<ul> <li>KS3 link: Development of DNA model by Watson and Crick. Differences between environmental and inherited variation. Changes in the environment and maintaining biodiversity.</li> <li>KS4 link: Interdependence between organisms. Evolution and natural selection. Pathogens and spreading diseases. Body's defence against a pathogen. Photosynthesis.</li> </ul>
	Extra- curricular	University visits focused on healthcare careers, visits from meducators UK to deliver science/medical based workshops and 1 to 1 careers meetings to help pupils access subject specific work experience.

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2		
TOPIC,KNOWLEDGE	<ul> <li>Module 2.1: Cell</li> <li>Structure</li> <li>PAG 1.1 Using a microscope to study mitosis</li> <li>Module 2.2: Biological Molecules</li> <li>PAG 9.3 Qualitative test for reducing sugars</li> <li>PAG 5.2 Determine glucose concentration</li> <li>PAG 6.1 Identifying amino acids using TLC</li> <li>PAG 9.2 Qualitative test for lipids</li> <li>Module 2.3: Nucleic Acids</li> <li>Module 2.5: Biological Membranes</li> <li>PAG 8.3 Investigate rate of diffusion</li> </ul>	<ul> <li>Module 2.4: Enzymes</li> <li>PAG 4.1 The effect of substrate concentration on rate of reaction</li> <li>Module 2.6: Cell Division, Cell Diversity and Cell Differentiation</li> </ul>	Module 3.1: Exchange Surfaces & Breathing Module 3.2: Transport in Animals - PAG 2.1 Dissection of mammalian heart Module 3.3: Transport in Plants	Module 4.1: Communicable Disease Module 4.2: Biodiversity - PAG 3.1 The calculation of species diversity - PAG 3.2 Measurement of the distribution and abundance of plants	Module 4.1: Communicable Disease Module 4.3: Classification & Evolution	- PAG 12.1 Rate of Respiration of Saccharomyces		
SPEC	The full specification list including individual learning outcomes can be found in section 2c: <u>https://www.ocr.org.uk.lmages.687834-download-a-level-specification.pdf</u>							
SKILLS	The full skills list can be fou Section 5c: How science Section 5d: Mathematica Section 5f: Practical endo	works Il requirements	.org.uk.Images,687834-dc	ownload-a-level-specification	<u>n.pdf</u>			
ASSESSMENT	Formative:       Live marking         • Live marking       Baseline assessment in Autumn 1         • Verbal feedback       2 Synoptic Live mark book assessments per term per staff member         • Mrite, pair, share       2 Synoptic Live mark book assessments per term per staff member         • Questioning and use of cold calling       Breadth mock exam during Summer 2 (UCAS)         • Practical assessments (PAG's) demonstrating skills surrounding the module.       Practical assessments (PAG's) completion and feedback of the extended tasks							
VOCAB	Electron micrograph, ma resolution, graticule, cond hydrogen bond, hydrolys polymer, carbohydrates, phase, mobile phase, rep osmosis, water potential, endocytosis, exocytosis, c prophase,, guard cells, po meristem,	densation reaction, is reaction, monomer, glycosidic bond, lipids, vilication, diffusion, active transport, cytokinesis, interphase,	ciliated epithelium, veir hydrostatic pressure, lyr plasma, tissue fluid, atric heartbeat, electrocard	chea, ventilation, cartilage, is, venules, blood, mph, oncotic pressure, o-ventricular valves, ectopic iogram, fibrillation, yne tissue, Sino-atrial node nity, dissociation,	cells, agglutinins, anti-t clonal expansion, bioc	memory cells, T regulator oxins, differentiation, liversity, habitat, species, cus, polymorphic gene of biodiversity, species ness, climate change, rvation ex situ, CITES,		
READING SKILLS In science we use the careful reading strategy which are demonstrated in the following			Character – Being a kind crit peer feedback. Ensuring lea expectations in their attitude see the relevance of the tau	ical friend when giving mers aspire to high a to Science because they	SUPPORTING STUDENT'S AT HOME Students are given transition packs when they attend sixth form taster day containing knowledge questions boaks videos and topics to research			

demonstrated in the following ways: - Reading and

comprehension of PAG Reading and consolidation of large A level texts into notes for

specific vocabulary

their books and/or knowledge organisers Use of mark schemes to self assess exam questions which emphasises exam

#### Biomedical scientist Genetic scientist Medical lab technician Veterinary science Dentistry Ophthalmol ogy Medicine Nursing Clinical

see the relevance of the taught content to their

see the relevance of the taught content to their everyday experiences. Organisation – Completing all homework. Ensuring that they are equipped for lessons. Method writing to help learners sequence processes Resilience – Not giving up when attempting hard skills. Working independently and being prepared to make mistakes in a safe and supportive environment Excellence – Having high expectations with quality of one's own written work and presentation. Using Contextual Science to inspire learners about how science works around them every day. Communicating successes with pastoral leaders and parents/auradians requilatly using the Academy's

parents/guardians regularly using the Academy's behaviour and rewards system

questions, books, videos and topics to research questions, books, videos and topics to research before their September start. Students are provided with handbooks at the start of the course containing all learning outcomes for the year 12 & 13 modules, a practical skills handbook and a data sheet, maths handbook where applicable. Students are also provided with A3 empty knowledge organiser sheets which are used to consolidate learning at the pairs consolidate learning at the end of the topics.

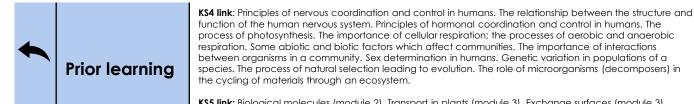
Students are given 5 hours worth of homework every week tailored to their learning needs and exam board. Part of their homework includes the use of exam questions to strengthen their practice

## **CURRICULUM AND ASSESSMENT PLAN** BIOLOGY YEAR 13





Our faculty mission is to create knowledgeable and scientifically literate learners by nurturing students' curiosity and bringing scientific phenomena into the classroom. We will prepare our students to become educated citizens capable of comprehending global and contemporary issues. The Ormiston SWB Science faculty will develop the minds of life-long learners by providing access to a fully inclusive Science education that will support their development through the acquisition of skills and knowledge through a progressively challenging curriculum.



KS5 link: Biological molecules (module 2), Transport in plants (module 3), Exchange surfaces (module 3), Transport in animals (module 3), Cell structure (module 2), Nucleotides and nucleic acids (module 2), Enzymes (module 2), Biodiversity (module 4), Classification and evolution (module 4)

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2	
TOPIC,KNOWLEDGE	<ul> <li>Module 5.1: Communication &amp; Homeostasis</li> <li>PAG 11.2 Daphnia Heart Rate Response to Changes in Surrounding Medium</li> <li>Module 5.2: Excretion</li> <li>Module 5.3: Neuronal Communication</li> <li>Module 5.5: Plant &amp; Animal Responses</li> </ul>	Module 5.4: Hormonal Communications Module 5.6: Photosynthesis Module 5.7: Respiration	Module 6.1: Cellular Control Module 6.2: Patterns of Inheritance Module 6.4: Cloning & Biotechnology - PAG 10.3 Measuring yogurt production - PAG 7.1 The effect of antibiotics on microbial growth	Module 6.3: Manipulating Genomes Module 6.5: Ecosystems Module 6.6: Populations & Sustainability	Bespoke revision created by KSS I to final June exa - Students cov in a series of consisting of - Students also perfect pap talking mock	programme ead leading up ims ver all modules 2-6 booklets complete a	
SPEC	The full specification list including individual learning outcomes can be found in section 2c: <u>https://www.ocr.org.uk/Images,687834-download-a-level-specification.pdf</u>						
SKILLS	The full skills list can be found here: <u>https://www.ocr.org.uk,Images,687834-download-a-level-specification.pdf</u> Section 5c: How science works Section 5d: Mathematical requirements Section 5f: Practical endorsement skills						
ASSESSMENT	Formative: • Live marking • Verbal feedback • 1,2,3 show me • Write, pair, share • Questioning and use of • Practical assessments (P surrounding the module.	AG's) demonstrating skills	Summative: • 2 Synoptic Live mark book assessments per term per staff member • x2 Module 5 assessment during autumn 2 • Full A level mock exam during spring 2 - Biological processes - Biological diversity - Unified biology • Practical assessments (PAG's) completion and feedback of the extended tasks				
VOCAB	Homeostasis, negative feedback, positive feedback, cell signalling, osmoregulation, ADH (antidiuretic hormone), hypothalamus, pituitary gland, nephron, ultrafiltration, selective reabsorption, urine, kidney failure, dialysis, transplant, sensory receptors, action potential, myelinated neurone, synapse, neurotransmitter, summation, endocrine, hormones, pancreas, insulin, glucagon, diabetes (Type 1 and 2), adrenal gland, adrenaline, fight or flight, cerebrum, reflex arc, plant hormones, phototropism, stomatal closure, photosynthesis, chloroplast, thylakoid, grana, photosystems, light-dependent reaction, light-independent reaction (Calvin cycle), triose phosphate (TP), cellular respiration, mitochondria, glycolysis, Krebs cycle, oxidative phosphorylation, electron transport						

READING SKILLS	CAREERS	CORE	SUI
<ul> <li>In science we use the careful reading strategy which are demonstrated in the following ways:</li> <li>Reading and comprehension of PAG instructions</li> <li>Reading and consolidation of large A level texts into notes for their books and/or knowledge organisers</li> <li>Use of mark schemes to self assess exam questions which emphasises exam specific vocabulary</li> </ul>	LINKS Biomedical scientist Genetic scientist Medical lab technician Veterinary science Dentistry Ophthalmol ogy Medicine Nursing Clinical researcher	peer feedback. Ensuring learners aspire to high expectations in their attitude to Science because they see the relevance of the taught content to their everyday experiences. Organisation – Completing all homework. Ensuring that they are equipped for lessons. Method writing to help learners sequence processes Resilience – Not giving up when attempting hard skills. Working independently and being prepared to make mistakes in a safe and supportive environment Excellence – Having high expectations with quality of one's own written work and presentation. Using Contextual Science to inspire learners about how science works around them every day. Communicating successes with pastoral leaders and parents/guardians regularly using the Academy's behaviour and rewards system	Stu atten que b provia contri 13 data Stu eve exar use o

### **IPPORTING STUDENT'S AT HOME**

udents are given transition packs when they and sixth form taster day containing knowledge jestions, books, videos and topics to research before their September start. Students are vided with handbooks at the start of the course ntaining all learning outcomes for the year 12 & 3 modules, a practical skills handbook and a to sheet, maths handbook where applicable. Students are also provided with A3 empty lowledge organiser sheets which are used to consolidate learning at the end of the topics.

udents are given 5 hours worth of homework ery week tailored to their learning needs and am board. Part of their homework includes the of exam questions to strengthen their practice.

## **CURRICULUM AND ASSESSMENT PLAN CHEMISTRY YEAR** 12



Our faculty mission is to create knowledgeable and scientifically literate learners by nurturing students' curiosity and bringing scientific phenomena into the classroom. We will prepare our students to become educated citizens capable of comprehending global and contemporary issues. The Ormiston SWB Science faculty will develop the minds of life-long learners INTENT by providing access to a fully inclusive Science education that will support their development through the acquisition of skills and knowledge through a progressively challenging curriculum.

Prior learning	<b>KS4 link</b> : Acids and their reactions with metals, metal oxides, alkalis and carbonates. Knowledge of moles and Avogadro number. Calculating atom economy, percentage yields and theoretical yields. Knowledge of the meaning of the Activation energy. Ideas of how a system at equilibrium can be influenced by changes in conditions. Draw the structural formula for the first five straight chain alkanes and the first three-chain alkenes. Draw structural isomers of butane, pentane and butane.
Extra- curricular	University visits focused on healthcare careers, visits from meducators UK to deliver science/medical based workshops and 1 to 1 careers meetings to help pupils access subject specific work experience.

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRIN	G 2	SUMMER 1	SUMMER 2	
TOPIC, KNOWLEDGE	Module 2.1: Atoms & Reactions - PAG 1.1 Determining the composition of copper (II) carbonate - PAG 2.1 determining the concentration of hydrochloric acid Module 2.2: Electrons, Bonding & Structure	Module 3.1: The Periodic Table Module 4.1: Basic Concepts & Hydrocarbons	Module 3.1: The Periodic Table - PAG 4.1 Identifying unknown ions Module 4.1: Basic Concepts & Hydrocarbons	Module 3.2: Pf Chemistry Module 4.2: Al Haloalkanes &	cohols,	Module 3.2: Physical Chemistry - PAG 3.1 Determining enthalpy change of neutralisation Module 4.2: Alcohols, Haloalkanes & Analysis - PAG 5.1 Synthesis of a haloalkane	<ul> <li>PAG 12.1: Investigating Iron Tablets</li> <li>PAG 6.1 synthesis of aspirin</li> <li>Module 5.1: Rates, equilibrium and pH change</li> </ul>	
SPEC	The full specification list including individual learning outcomes can be found in section 2c: <u>https://www.ocr.org.uk,images,171720-specification-accredited-a-level-gce-chemistry-a-h432.pdf</u>							
SKILLS	The full skills list can be found here: <u>https://www.ocr.org.uk.images,171720-specification-accredited-a-level-gce-chemistry-a-h432.pdf</u> Section 5d: How science works Section 5e: Mathematical requirements Section 5g: Practical endorsement skills							
ASSESSMENT	Formative:       Summative:         Live marking       Baseline assessment in Autumn 1         Verbal feedback       2 Synoptic Live mark book assessments per term per staff member         1,2,3 show me       2 X Module 2 mock exams during Autumn 2         Write, pair, share       Breadth mock exam during Summer 2 (UCAS)         Practical assessments (PAG's) demonstrating skills surrounding the module.       Practical assessments (PAG's) completion and feedback of the extended tasks						2 (AS) (S)	
VOCAB	First ionisation energy, E Successive ionisation en Principal quantum num Sub-shell, Electron confi Compound, Ionic Bond Group, Covalent Bond, Covalent Bond (Coordii Electronegativity, Perma covalent bond, Intermo Permanent dipole-dipol Metallic bonding, Deloc Giant Metallic lattice, Si lattice, Giant Molecular	The periodic table, Atomi Period 2, Period 3, Metalli Ionisation energy, Melting covalent lattice, Reactivi Chatelier's principle, Disproportionation, Exothe Endothermic, Enthalpy pr Activation energy, Standa conditions, Enthalpy chang combustion, Enthalpy chang formation, Enthalpy chang neutralisation, q=mcΔT, / enthalpy, Hess's Law, Cat Collision theory, Boltzman Equilibrium	c bonding, g point, Giant ty, Le ermic, ofile, ard nge of le of ange of ge of Average bond talysts, n distribution,	aliphatic h hydrocarb unsaturate displayed f skeletal for isomers, ste fission, hete mechanism electron p dipole, Lor combustioi electrophi hydrogenc polymers, r feedstock,	ydrocarbons, alicyclic ons, nomenclature, all d, general formula, str formula, empirical form mula, alcohols, carbo ereoisomers, isomerism erolytic fission, radicals n, s-bond, orbitals, tetr air repulsion, boiling po	uctural formula, hula, molecular formula, xylic acids, structural , electron, homolytic , covalent bond, rection ahedral, bond angle, bints, induced dipole- combustion, incomplete p-bond, catalyst, n, carbocation, vdration, monomers, recycling, reusing,		

CARFERS **READING SKILLS** CORE SUPPORTING STUDENT'S AT HOME Character – Being a kind critical friend when giving peer feedback. Ensuring learners aspire to high expectations in their attitude to Science because they see the relevance of the taught content to their evenday experiences LINKS In science we use the careful Students are given transition packs when they reading strategy which are demonstrated in the following attend sixth form taster day containing knowledge questions, books, videos and topics to research before their September start. Students are provided with handbooks at the start of the course containing all logma automations for the user 12 % Analytical see the relevance of the taught content to their everyday experiences. Organisation – Completing all homework. Ensuring that they are equipped for lessons. Method writing to help learners sequence processes Resilience – Not giving up when attempting hard skills. Working independently and being prepared to make mistakes in a safe and supportive environment Excellence – Having high expectations with quality of one's own written work and presentation. Using Contextual Science to inspire learners about how science works around them every day. Communicating successes with pastoral leaders and parents/auradians requilatly using the Academy's chemist ways Reading and comprehension of PAG instructions Science teacher Medical lab technician containing all learning outcomes for the year 12 & 13 modules, a practical skills handbook and a Reading and consolidation of large A level texts into notes for data sheet, maths handbook where applicable. Students are also provided with A3 empty knowledge organiser sheets which are used to Biochemist Dentistry Pharmacist their books and/or consolidate learning at the end of the topics. knowledge organisers Use of mark schemes to self assess exam questions Medicine Students are given 5 hours worth of homework every week tailored to their learning needs and Clinical researcher Drug analysis parents/guardians regularly using the Academy's which emphasises exam exam board. Part of their homework includes the behaviour and rewards system

use of exam questions to strengthen their practice

specific vocabulary

## **CURRICULUM AND ASSESSMENT PLAN CHEMISTRY YEAR 13**



Our faculty mission is to create knowledgeable and scientifically literate learners by nurturing students' curiosity and bringing scientific phenomena into the classroom. We will prepare our students to become educated citizens capable **INTENT** of comprehending global and contemporary issues. The Ormiston SWB Science faculty will develop the minds of life-long learners by providing access to a fully inclusive Science education that will support their development through the acquisition of skills and knowledge through a progressively challenging curriculum.

	<b>KS4 link</b> : Rates of reactions and the factors affecting the rates of reaction. The role of a catalyst and how catalyst work in terms of lowering activations energy. Collision theory. Use of simple tangents to calculate the rate of a reaction at the start of a reaction. The study of exothermic and endothermic energy changes and bond energy calculations. Acids and alkalis and understanding the pH scale and what ions are involved in neutralisation. The difference between a dilute and concentrated solution, and how this affects the concentration of hydrogen ions. The study of bases, and how to prepare a salt using an alkali through titrations and making salts using bases.
Prior learning	<b>KS5 link:</b> How to calculate oxidation numbers and predict charges on ions. How to recognise and interpret redox reactions. How to determine enthalpy changes, including from experimental results q = mc x change in T. The definitions of standard enthalpy changes. How to construct an enthalpy cycle using Hess's Law. how to determine oxidation states, acid base titrations and calculations, how to use VSEPR theory to determine shapes of molecules, how to determine the electronic structure of elements and ions using subshell notation, catalyst, Organic analysis using Mass spectrometry and infrared spectroscopy. Reactions of alkanes alkenes and alcohols.

			alkanes, alkenes and alcohols. Use of curly arrow mechanism using acidified potassium dichromate. Hydrogen bonding ar						
	AUTUMN 1	AUTUM	N 2	SPRING 1	SPR	RING 2	SUMMER 1	SUMMER 2	
TOPIC, KNOWLEDGE			Metals Metals		<ol> <li>Transition</li> <li>Analysis</li> </ol>	<ul> <li>Bespoke revision programme created by KS5 lead leading up final June exams</li> <li>Students cover all module: 6 in a series of booklets consisting of exam questio</li> <li>Students also complete a perfect paper , walking talk mock for each module and topic led by an expert teacher.</li> </ul>			
SPEC	The full specification list in accredited-a-level-gce-c		arning out	comes can be found	l in section 2c: <u>http</u>	s:,,www.ocr.o	org.uk,images,17172	20-specification-	
SKILLS	The full skills list can be fou Section 5d: How science Section 5e: Mathematica Section 5g: Practical end	works I requirements	w.ocr.org.u	uk,images,171720-spe	ecification-accredi	ited-a-level-go	ce-chemistry-a-h43	<u>2.pdf</u>	
ASSESSMENT	Formative: Live marking Verbal feedback 1,2,3 show me Write, pair, share Questioning and use of cold calling Practical assessments (PAG's) demonstrating skills surrounding the module.			Summative:         • 2 Synoptic Live mark book assessments per term per staff member         • x2 Module 5,6 assessment during autumn 2         • Full A level mock exam during spring 2         • Periodic table, elements and physical chemistry         • Synthesis and analytical techniques         • Unified chemistry         • Practical assessments (PAG's) completion and feedback of the extended tasks					
VOCAB	Directing effect, bromination, electrophile, electrophile substitution on trate of reaction, time, half-life, reaction mechanism, rate-determining step, intermediate, Arrhenius, equilibrium law, homogenous equilibrium, heterogeneous equilibrium, mole fraction, partial pressure, temperature, Bronsted-Lowry acid, Bronsted-Lowry base, titration, neutralisation, alkalis, acid dissociation constant, pH, ionic product of water, buffers, indicators, equivalence point, end point, pH metre, lattice energy, lattice enthalpy, standard enthalpy of formation, first ionisation, endothermic, exothermic, standard enthalpy change of solution, standard enthalpy change of solution, standard enthalpy change of reaction, oxidising agent, reduct, standard electrode potential, half cell, half equation, complex, coordingtion number, bidentate, tridentate, multidentate, stereoisomers, cis-trans, optical isomers, ligand substitution, haemoglobin, precipitation, oxidation, reduction, reduction, adaysis, ions.						ocalised, erivative, reflux, ane, acyl acid, carbonyl, solubility, acid, amide, nydrolysis, alkaline n, alkylation, utes, Stationary e, qualitative		
In science we use the careful reading strategy which are demonstrated in the following ways: - Reading and comprehension of PAG instructions - Reading and consolidation of large A level texts into notes for their books and/or knowledge organisers - Use of mark schemes to self areas - Reading and consolidation of large A level texts into notes for their sooks and/or knowledge organisers - Use of mark schemes to self areas - Reading and consolidation of large A level texts into notes for their sooks and/or knowledge organisers - Use of mark schemes to self areas - Resalience - Reading and consolidation of large A - Dentistry - Use of mark schemes to self areas - Resalience - Reading and consolidation of large A - Dentistry - Use of mark schemes to - Contextual - Contextu			CORE - Being a kind critical frien back. Ensuring learners as ons in their attitude to Scien- evance of the taught con- experiences. an – Completing all homev quipped for lessons. Metho- quence processes - Not giving up when atte dependently and being p a safe and supportive en- a safe and supportive en- barding high expectatio written work and presento iscience to inspire learner orks around them every de with pastoral leaders and uardians regularly using the	aspire to high cience because they ontent to their nework. Ensuring that thod writing to help tempting hard skills. g prepared to make environment tions with quality of nataion. Using news communicating dd the start of containing all learning outcomes for the 13 modules, a practical skills handbook to where ap Students are given transition packs wh attend sixth form taster day containing k questions, books, videos and topics to before their September start. Studer provided with handbooks at the start of containing all learning outcomes for the 13 modules, a practical skills handbook knowledge organiser sheets which are consolidate learning at the end of the Students are given transition packs wh attend sixth form taster day containing k generations, books, videos and topics to before their September start. Studer provided with handbooks at the start of containing all learning outcomes for the 13 modules, a practical skills handbook where ap Students are given to the indeping parts Students are given to the indeping parts the start of the start of			acks when they aining knowledge ppics to research . Students are start of the course s for the year 12 & andbook and a here applicable. with A3 empty hich are used to had of the topics. th of homework		

parents/guardians regularly using the Academy's behaviour and rewards system

analysis

Drug

which emphasises exam

specific vocabulary

Students are given 5 hours worth of homework every week tailored to their learning needs and exam board. Part of their homework includes the use of exam questions to strengthen their practice