

Pre Year 7

The main focus of KS2 (lower years) is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. At KS 2 (upper years), students should be deepening their understanding of a wide variety of scientific ideas involving more abstract ideas and continuing to develop working Scientifically skills through the scientific content included in the Programme of Study.

Intent

Students learn science because it provides them with transferable academic, practical and analytical skills which can be used throughout life. It allows students to make informed decisions as well as opening doors to higher education and beyond.

Knowledge and content are delivered thematically which builds upon the main skills and principles within the main scientific disciplines at KS3. At KS4, students are taught through subject specialisms in order to develop a wider appreciation of the knowledge, content and skills underpinning each scientific discipline.

Departmental values – respect, integrity, courteous, honest, motivated, polite/punctual/perseverance.



Year 7						
	Autumn 1 Autumn 2		Spring 1 Spring 2		Summer 1	Summer 2
Topic/Focus	Working Scientifically (WS) Forces (FOR) Cells (CE)		Reproduction (Repro) Particles (PA) Space (SP)		Reproduction (Repro) Separation Techniques (ST) Acids and Alkalis (AA) Microbes & Disease (MD) Healthy Lifestyle (HL)	
Sequencing	Working scientifically is our introductory unit. This introduces all students to scientific safety and methodology which is used and developed over 5 years. We continue this development of skills over the key stage with assessed practicals every term. Forces begins our introduction to physics at KS3. It continues to develop working scientifically skills as well as introducing and developing the key concepts of forces from KS2. This also supports DT in their delivery of the Maritime Curriculum as well as being able to immediately utilise Working Scientifically skills. Cells is the building block of biology teaching and introduces the key concepts of organism development.		Reproduction develops the concepts of puberty and plant reproduction which supports PSHE and builds upon MRS GREN as covered in Cells. Particles is the basis upon which physics and chemistry are built. This introduces these concepts which are refined and developed throughout the scientific career. Space builds upon initial work carried out at KS2, but also develops the work covered in Forces as it develops concepts from that unit.		Reproduction develops the plant reproduction which supon MRS GREN as covere Separation techniques buil first term, developing and a Particles and Working Sciendeveloping key chemical knacids and alkalis introduce chemistry concepts and rescientifically skills and skills Techniques. Healthy Lifestyle builds upon covered in Cells, looking at lifestyle on our body. It als PHSE by covering oral hyging Microbes builds upon key be introduced in the year.	upports PSHE and builds d in Cells. d upon work done in the applying work from ntifically, as well as nowledge. students to basic nforces working introduced in Separating on the initial work the impact of our supports the work of ene. knowledge from Cells but teria and viruses which is
Extended Learning	Homework activity per unit		Homework activity per unit		Homework activity per uni	t
Formal Assessment	WS – Assessed Practical FOR – Assessed Practical CE – Test		Repro – Test PA - Test FOR & SP - Test		ST – Assessed Practical ST & AA – Test HL – Test	



Year 8						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Energy (ENE) Reproduction and Birth (Repro) Metals & Materials (MM) Energy is a key concept within KS3 physics. It		Respiration & Digestion (RD) Electricity & Magnetism (EM) Energy Resources (ER) Respiration and digestion are two key features of		Motion (MOT) Plants & Photosynthesis (PP) Earth & Atmosphere (EA) Variation (VAR) Energy Resources (ER) Motion builds upon the key ideas covered in Y7	
Sequencing	Energy is a key concept within KS3 physics. It develops concepts such as energy stores and applies concepts using work covered in Particles. It also continues the development of Working Scientifically skills as it contains an Assessed Practical. Reproduction & birth builds upon concepts covered in year 7, giving students a second opportunity to access sex education as well as developing key concepts surrounding reproduction. Metals builds on work from KS2 and uses some of the concepts introduced in Y7. It develops further the chemical nature of scientific study. Materials looks at the properties of different materials which building upon the key properties of metals introduced in the first half of the unit. Homework activity per unit ENE – Assessed Practical		MRS GREN which was introduced in Cell. This unit develops those key concepts of organisation introduced in Cells and begins the introduction of understanding how key organ systems work and interact. Electricity and Magnetism builds upon KS2 content and continues to reinforce and develop working scientifically skills. It covers electrical circuits which develops and understanding of key knowledge for future study and builds the relationship between electricity and magnetism in the development and use of electromagnets, with this being the main assessed practical. Energy Resources is our main unit which links into the Maritime Curriculum. It builds upon the concepts introduced in Energy, looking at how electricity is generated and why it needs to be generated in a more sustainable way, in terms of global warming, making links to local offshore industry.		Forces. It also begins to in concepts as well as contin scientifically skills. Earth and Atmosphere is comorking scientifically skills of the Earth and considers upon the Earth. This unit fieldwork links with CEFAS Plans & photosynthesis but on plant cells and reinforce GREN in a plant. It looks a photosynthesis in detail in Variation also builds upon and takes a more detailed key terminology surround how genetics plays a part also consider the nature of development of DNA as we issues facing society. Energy Resources — this is work carried out last term conditions for wind energy our work on the Maritime	continuing to develop It looks at the structure the impact of pollutants contains cross-curricular and Geography. It looks the work in Y7 es the concept of MRS It the concept of preparation for Y9. work covered in Y7 Cells look at the nucleus, the ing genetic material and in our development. We f science through the ell as considering key building on the initial investigating the best y and is a continuation of
Extended Learning	Homework activity per unit		Homework activity per unit		Homework activity per unit	
Formal Assessment	ENE – Assessed Practical Repro – Test MM – Test		EM – Assessed Practical + Test RD – Test		sed Practical + Test MOT – Assessed Practical + Test EA – Test PP - Test	
Year 9	1000				1	



	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	B - Cells and	B - Cells and	B – Variation (VAR)	B - Variation (VAR)	B - Respiration (Resp),	B – Transport in Cells (TIC
Topic/Focus	Microscopy (CAM)	Microscopy (CAM)	C - Chemical Analysis	C - Chemical Analysis (CA)	Plants & Ecosystems (PE)	1)
	C - Intro to Chemistry	C – Intro to Chemistry	(CA)	P - Electricity & Energy	C - Atomic Structure (AS)	C – Types of Reaction (TR)
B - 3h/fortnight	(Intro)	(Intro)	P - Electricity & Energy	(EE)	P – Forces & Pressure	P - States of Matter (SoM)
C - 2h/fortnight	P - Sound (SL)	P - Light (SL)	(EE)		(FOR)	
P - 3h/fortnight						
	· ·	ork done at KS3 and starts	B – Variation also builds u		B – Respiration covers a key	·
	unit looks at the develop	a GCSE perspective. The	takes a more detailed look terminology surrounding g	· · · · · · · · · · · · · · · · · · ·	this unit builds upon the wo	
	organisation. The microsc		genetics plays a part in ou		develop Working Scientifica	
	done in Y7 and incorpora		consider the nature of scie		the links required within bid	
	C – this begins with a bas		development of DNA as w	_	Plants & Ecosystems comple	•
	_	ding a development of gas	issues facing society.	en as considering hey	biology. It builds upon the work covered in Y8 and	
	tests. It also develops the		C - CA builds upon previous teaching in terms of		develops the concepts of feeding relationships within	
	elements, mixtures and compounds started in Y8 and begins to develop the concept of chemical formulae. Separation techniques are revisited with a greater emphasis on explaining these		particle theory and mixtures. It covers a KS3 concept in chromatography in a more detailed way and introduces the mathematical work required for GCSE.		an ecosystem and starts to develop these concepts at a	
					more advanced level in preparation for GCSE. This also	
					allows students to be given the opportunity to be	
					introduced to basic sampling techniques. TIC builds	
	techniques in preparation	n for KS4.	P - EE builds upon the wor	k in Y8 developing further	upon work covered in CAM	at the start of the year and
	P - Sound develops the co		key ideas surrounding elec		builds upon the concept of	
Sequencing	biology with work on hearing. Light continues to			develops the concepts of efficiency and paying for		on and continues to
			electricity whilst developing key maths skills and		develop the working scientifically skills in preparation	
		he concepts introduced in	continuing to work on wo	rking scientifically skills.	for Y10.	
	Sound and reinforces wor	rk on basic wave theory.			C – The term begins with th	
					being carried out. AS Introd	•
					about the atom as the build starts to introduce more co	_
					preparation for Y10.	nceptual lueas III
					TR finishes the KS3 PoS iden	atifying key types of
						e work covered in Y7 and Y8
					and builds to develop the re	
					key reactions which student	•
					allows us to use the work tau	
					equations.	- ·
					P – Forces and Pressure con	npletes the KS3 PoS and
					acts as is a foundation unit	for GCSE. It allows for



			specialists to check and reinforce the key concepts from Y7 and Y8 and ensure any misconceptions are identified and rectified. The concepts are also developed to incorporate some of the key terminology and concepts required at KS4. Pressure builds upon the work on weight in Forces and continues to develop the mathematical work. This unit would allow more able students to begin to utilise changing the subject of equations which is required for the work on density and beyond in KS4. States of Matter begins key GCSE work linking together the ideas of particles from a physics perspective. It develops the key concept of density in a more complex way introducing the key components needed for GCSE.
Extended Learning	Homework activity per unit	Homework activity per unit	Homework activity per unit
Formal Assessment	Autumn 2 – 3 x 20-minute tests in biology, chemistry and physics based upon prior learning.	Spring 1 - 3 x 20-minute test in biology, chemistry and physics based upon prior learning. Spring 2 - 3 x 20-minute test in biology, chemistry and physics based upon prior learning.	Summer 1 - 3 x 20-minute test in biology, chemistry and physics based upon prior learning. Summer 2 – 3 x 20-minute test in biology, chemistry and physics based upon prior learning.



Year 10							
Qualification	AQA Trilogy						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	
	B – TIC 2	B – Respiration &	B - Enzyme 1/Digestion	B – Circulation, breathing	B - Plant Structure and	B - Adaptations,	
Topic/Focus	C – Atomic Structure	Exercise	(ENZ 2)	& Respiration (CBR)	Photosynthesis 1 (PSP 1)	interdependence and	
	(AS)/Bonding and	C - Reaction of Metals	C - Quantitative	C - Acids, Bases and Salts	C – Rate of Reaction (RoR)	competition (AIC), Disease	
B - 3h/fortnight	Formula (BF)	(RM)	Chemistry (QC), Energy	(ABS)	P - Using Energy (UE2)	& Immunity (DIM 1)	
C - 3h/fortnight	P - Atomic Structure	P - Newton's Law of	Changes (BB)	P - Using Energy (UE)		C – Structures and	
P - 3h/fortnight	(ATM)	Motion (NLM)	P - Change of State			Bonding (SB)	
			(CoS)			P – Forces and Energy	
	B - builds on Y9 and devel		B - Enzyme 1 is needed in		B - PSP 1 builds on the work		
	of transport into cells. Th			builds on enzyme work and	key concepts of photosynth		
	osmosis and active transp		transport to look at anoth		work covered on organisati	<u> </u>	
	RP. Respiration & Exercis	· · · · · · · · · · · · · · · · · · ·	-	introduces the circulatory and breathing systems.		ssues and containing a key	
	work started in Y9 and de		The unit incorporates work on non-communicable		RP. AIC contains development of ecological sampling		
	further which can then be used throughout the biology units in Y10. C – Atomic structure covers the basic structure of the atom which is the building block for work on		diseases and brings the work back to the concept of		techniques within the summer term which is a key RP		
			respiration covered at the start of Y10.		for paper 2 and links key ecological concepts relating to		
			C – QC introduces the basic mathematical concepts		plants. DIM 1 is an introductory unit looking at		
			and introduces higher tier students to mole calculations. Energy changes (BB) looks at		pathogens and the main way disease is spread. Students also learn about the pathogenic diseases in		
	bonding and formula. BF builds upon the atomic		exothermic and endothermic reactions in greater		readiness for Y11.	ie patnogenic diseases in	
	structure and develops the production of		detail and reinforces working scientifically skills		C – RoR builds on key partic	le theory concents severed	
	compounds and how this is shown through		through RP. Also introduces more mathematical		previously. It also introduce	·	
Sequencing	equations. RM builds upon the reactivity series work covered in TR at the end of Y9 and reinforces		concepts for higher tier.		relating to graphical work.		
Sequencing	bonding and equation work.		ABS reinforces work on pH scale covered in Y9. It		contains three RP's.		
	P- ATM builds upon work		contains a large amount of practical work an		SB allows a recap of chemical bonding and is a major		
	some content with chemi		reinforces the separation techniques used in Y9. It		unit looking at the structure and properties of key		
	reminder of key content covered in Y9 through a different scenario. This is also more abstract so content from other area is beneficial here. NLM is covered here to ensure the main forces concepts		also introduces key definitions of acids and alkalis		structures.		
			which are needed for PT unit. It also begins to use		P – Forces and Energy builds upon the work carried out		
			half ionic equations for HT students.		in Using Energy and Forces. It considers the use of		
			<u> </u>	k done in Y9 on SoM. The	work done and energy transfer on an object and also		
	are in place for future learning eg RDS. It builds		maths content is now of higher level, so we carry out		= -		
	upon the concepts covered in KS3 with the greater		his unit here so as students are ready to access the		investigating the relationship between force and		
	detail needed at KS4. RP is contained here, as the		increased maths content. UE is conceptually		extension for a spring. This	is also done late in the year	
	maths level increases.		challenging, and the data handling and formula work		to ensure the maths ability	is great enough for the	
				is mathematically challenging so is left until late in		majority to cope.	
			Y10. This is a major physic	cs unit and contains many			



		concepts so this spans over a term to allow for development and practice of these concepts.	
Extended Learning	Homework activity per unit	Homework activity per unit	Homework activity per unit
Formal Assessment	Assessment task at end of each unit. Autumn 2 - 1h assessment consisting of 1 x 20' test in biology, chemistry and physics based upon prior learning from both Y9 and Y10. This is not tiered. Tests kept in folders and data used to review groupings/intervention strategies.	Assessment task at end of each unit. Spring 2- 1h assessment consisting of 1 x 20' test in biology, chemistry and physics based upon prior learning from both Y9 and Y10 – tiered. Tests kept in folders and data used to review groupings/intervention strategies.	Assessment task at end of each topic. Y10 exams – 3 x 1h papers Tests kept in folders and data used to review groupings/intervention strategies.



Qualification	AQA Trilogy					
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	B – Plant structure and	B - Genetics, variation	B - Nervous System (NS),	B - Humans and the		
	photosynthesis 2 (PSP 2),	and evolution (GVE),	Hormonal Control (HC)	Environment (HIE)		
Topic/Focus	Disease & Immunity 2	C - Oil (OIL)	C - Atmospheric	C - Equilibrium (EQM),		
	(DIM 2)	P - Road Safety (RDS)	Chemistry (AC), Water	Electrolysis (LYS)		
B - 3h/fortnight	C - Periodic Table (PT),		(WAT)	P - Magnetism and		
C - 3h/fortnight	Rate of Reaction (RoR)		P - Waves (WAV)	Electromagnetism		
P - 3h/fortnight	P - Mains Electricity			(MAG), Motors (MOT)		
	(ME), Current and					
	voltage (IV)					
	B – PSP 2 builds upon conc	epts covered in Y9 and	B - NS is a major physiolog	ical unit which requires		
	Y10 and further develops the concepts of		prior knowledge from Cell	s and TIC. It also develops		
	transpiration within the plant. DIM2 builds upon the		a more sequential approach to biology questions			
	work in Y10 and covers the way in which the body		and contains a RP. HC utilises a number of key			
	responds to pathogenic disease. GVE contains a lot		concepts from previous ur	nits and builds upon work		
	of ethical concepts and requires a high degree of		covered in NS. This unit in	troduces key higher tier		
	maturity for this to be covered effectively. It is a		concepts which are distinc	t within the biology		
	large concept and allows us time to develop these		syllabus. HIE is a unit which	ch looks at the		
	key concepts for paper 2.		environmental impact upo	on ecosystems ensuring all		
	C – Periodic Table (PT) builds upon prior work		the ecological and environ	mental aspects of the		
	including atomic structure, properties of structures		specification are reviewed	and covered.		
	and reactivity. RoR builds on key particle theory		C - AC looks at the evolution	on of the atmosphere and		
Sequencing	concepts covered previously. It also introduces key		the impact of global climate	te change on this. It is a		
Sequencing	higher tier concepts relating to graphical work. This		very short unit which links	closely to the work		
	is a major unit as it contains three RP's. Oil is an		covered in OIL. Water also	b brings together key		
	important unit as it reinforces covalent bonding and		concepts covered in previous units and covers the			
	builds upon separating techniques covered in Y9.		final RP, so allowing other mathematical concepts to			
	This unit also contains content on atmospheric		be revisited. Both LYS and EQM are very challenging			
	pollution and global climate change, which is the		for Foundation Tier students, so they are left			
	cornerstone of this paper. it also links together		towards the end to provide a vehicle for revision and			
	challenging concepts, e.g.,	LCA's, sustainability and	allows for increased academic maturity. EQM also			
	global climate change.		must be taken much furth	er at higher tier and		
	P – ME builds upon the firs	t unit in Y11 on electricity.	requires a high degree of higher-level thinking to be			
	It is reliant on some knowl	edge of real life and has	able to fully appreciate this work.			
	some abstract ideas, so thi	s is left until Y11 as it	P – Waves builds upon wo	rk started in Y9. It is a very		
	requires an increased level	of maturity. It links	abstract unit, and the mat	hs skills are also		



Extended Learning	closely with IV and these units cover the electricity aspects of the GCSE and are required for further study of motors and electromagnets. The conceptual and terminology requirements build on work covered in the previous units. The RP is a major one with many facets. RDS builds on Newton's Laws of Motion. Conceptually this is difficult and deals with issues such as RTA casualties so not suitable for younger children. Due to staff issues, this was not completed in Y10. However, it will provide a solid platform to revisit key work on Forces in preparation for the mocks. There is a high degree of maths work in this unit which requires maths ability great enough for the majority to cope with the complexities of the equation work.		challenging, which is why this unit is in Y11. This involves quite a complex RP which requires skills and mathematical concepts from previous years. Magnetism is the final unit for foundation tier and allows many working scientifically concepts to be covered before the exam. It builds upon the electricity work covered at the start of Y11. Motors is the final higher tier concept which relies on students having covered electricity and magnetism in advance.		
3	Assessment task at end of each topic. September - 1h	Mock exam - data benchmarked to previous exam series	Assessment task at end of each topic.	Mock exam - data benchmarked to previous exam series	
Formal Assessment	assessment consisting of 1 x 20' test in biology, chemistry and physics based upon prior learning from both Y9 and Y10. Tests kept in folders and data used to review groupings/intervention strategies	and used to inform tier choice. Tests kept in folders and data used to review groupings/intervention strategies.		and used to inform tier choice. Tests kept in folders and data used to review groupings/intervention strategies.	



Post Year 11	
Further Education/training in: 'A' level sciences or Level 3 scientific qualifications	Employment in: NHS, engineering, offshore work, teaching - science subjects have skills which are transferable to many aspects of work.