

George Stephenson High School Secondary SCIENCE Scheme of Work: FUNDAMENTALS: Year 7 (4 LESSONS PER WEEK 1 YEAR)

Unit	Key Progression Indicators Knowledge, Understanding and Skills
LINKING KS2-KS3 BRIDGING TOPIC	Baseline test. Skills based topic reviewing scientific method, lab safety, carrying out investigations, graphical skills, analysis and evaluative skills.
PARTICLES	Particle theory and atomic structure. Periodic table of elements
CELLS	Organism – organ system – tissues- cells. Cell organelles and functions
ENERGY	Energy stores and transfers. Energy resources including non- renewable and renewable energies
COMPOUNDS	Elements combining with chemical bonds to form compounds. Simple idea of bonding. Word equations.
DIFFUSION	Transport of gases and nutrients into and out of cells by diffusion passive process requiring a concentration gradient
FORCES	Newtons first law of motion. Balanced and unbalanced forces, including diagrams. Speed, distance and time.
CHEMICAL EQUATIONS	Evidence of chemical reactions, scientific method, recording results and analysis. Recognition of conservation of mass and chemical reactions represented in word and symbol equations.
ELECTRICITY	Electrical circuit design, symbols and initial ideas of electrons carrying electric charges. Introduction to current and potential difference.
ENVIRONMENTAL BIOLOGY	Energy transfer through food chain and webs. Interactions between plants and animals. Environmental impact of human activity.

George Stephenson High School Secondary SCIENCE Scheme of Work: ESTABLISHING: Year 8/9 (4 LESSONS PER WEEK 1.5 YEARS)

Unit	Key Progression Indicators Knowledge, Understanding and Skills
LINKING FUNDAMENTALS TO ESTABLISHING	Retrieval from Fundamentals topics. Linking the key concepts to science the experience every day. Science methodology, numeracy and literacy skills.
MIXTURES AND SOLUTIONS	Define a mixture and solution. Knowledge of key separating techniques and change of state
BODY SYSTEMS (ANIMAL)	Organ systems to include circulatory system, muscles and skeleton and digestive system
WAVES	Waves transfer energy. Light and Sound as examples of waves. Calculate wave speed.
REACTIONS 1 – ACIDS AND ALKALIS	Acidic, Alkaline and neutral solutions. Use of indicator and pH (strong and weak). Neutralisation and reactions of metals and metal oxides
REPRODUCTION AND HEALTH	Human reproductive system and the role of the organs. Menstrual cycle (not hormonal control). Plant reproduction. Health section to include drugs, alcohol and smoking.
HEATING AND COOLING	Conduction, convection and radiation at a particle/wave level. Linking to energy transfer. Insulators and efficiency.
REACTIONS 2 – COMBUSTION, DECOMPOSITION ENDO AND EXO	Combustion and thermal decomposition reaction. Endo and exo thermic reactions (energy transfer). Retrieval and recall of word/symbol equations and conservation of mass
PHOTOSYNTHESIS AND RESPIRATION	Link to cell organelles. Equations and understanding of what p/s and respiration (chemical reactions NOT breathing) show. Aerobic and anaerobic respiration. Factors affecting p/s and importance of p's (intro C cycle – no details) food chains and evolution of the atmosphere
ELECTRICITY AND MAGNETISM	Magnetic field and plotting compass. Magnetism as a vector and draw field lines. Solenoid and electromagnet and brief introduction to the motor effect.
EARTH AND THE ATMOSPHERE	Earth structure. Rocks and rock cycle. C cycle including atmosphere and climate change and recycling
MICROBIOLOGY	Concept of scale and magnification. Types of microbes. Aseptic technique. Immune response to pathogens including phagocytosis and antibody response. Vaccination.
Y9 LINKING Y8 ESTABLISHING TO YEAR 9 TOPIC	Retrieval from Y8 topics. Linking the key concepts to science the experience every day. Science methodology, numeracy and literacy skills.
Y9 EARTH AND BEYOND (INC INTRO TO RADIOACTIVITY)	Gravity and orbiting bodies. The big bang theory. Sun, stars and planets. The seasons.
Y9 REACTIONS 3 – DISPLACEMENT AND REACTIVITY SERIES	Properties of metals and reactivity series. Including how metals are extracted (using C and electricity - no detailed electrolysis)
Y9 NATURAL SELECTION AND GENETICS	Inheritance and monohybrid punnet squares. Structure and role of DNA in making proteins. Continuous and discontinuous variation. Variation and mutations drive evolution.
Y9 FORCES AND ENERGY 2	Investigating moments, elasticity and pressure. Linking fundamental ideas of forces and energy transfer throughout

George Stephenson High School Secondary SCIENCE Scheme of Work: KS4 COMBINED SCIENCE: BIOLOGY (2.5 years)

Unit	Key Progression Indicators Knowledge, Understanding and Skills
KEY PRINCIPLES: ENZYMES AND TRANSPORT	https://qualifications.pearson.com/content/dam/pdf/GCSE/Science/2016/Specification/GCSE_CombinedScience_Spec.pdf BIOLOGY TOPICS pages: 17-35
DNA GENETIC ENGINEERING	
CELL CYCLE AND VARIATION	
NON –COMMUNICABLE DISEASES	
COMMUNICABLE DISEASE AND IMMUNITY	
SIGNALLING AND CONTROL	

George Stephenson High School Secondary SCIENCE Scheme of Work: KS4 GCSE COMBINED SCIENCE: CHEMISTRY (2.5 years)

Unit	Key Progression Indicators Knowledge, Understanding and Skills
KEY CONCEPTS 1: PT ATOMIC STRUCTURE	https://qualifications.pearson.com/content/dam/pdf/GCSE/Science/2016/Specification/GCSE_CombinedScience_Spec.pdf CHEMISTRY TOPICS pages: 36-57
KEY CONCEPTS 2: BONDING	
STATES OF MATTER	
FUELS AND HYDROCARBONS	
ACIDS	
EARTH SCIENCE	
EXTRACTION OF METALS	
ELECTROLYSIS	
GROUP 1, 7, 0	
RATES OF REACTION	
ENERGY CHANGES	
REVIEW/RETRIVAL	

George Stephenson High School Secondary SCIENCE Scheme of Work: KS4 COMBINED SCIENCE: PHYSICS (2.5 years)

Unit	Lessons	Key Progression Indicators Knowledge, Understanding and Skills
FORCES 1		https://qualifications.pearson.com/content/dam/pdf/GCSE/Science/2016/Specification/GCSE_CombinedScience_Spec.pdf PHYSICS TOPICS pages: 58-83
WAVES		
FORCES 2		
EMS		
ENERGY		
RADIOACTIVITY		
ELECTRICITY IN THE HOME		
CIRCUITS		
MAGNETISM AND INDUCTION		
FORCES, ENERGY		

George Stephenson High School Secondary SCIENCE Scheme of Work: KS4 SEPARATE SCIENCES ADDITIONAL UNITS (2.5 years)

Unit	Key Progression Indicators Knowledge, Understanding and Skills
Additional concepts are taught within topics taught for combined for most of biology, chemistry and physics	https://qualifications.pearson.com/content/dam/pdf/GCSE/Science/2016/Specification/GCSE_Biology_Spec.pdf https://qualifications.pearson.com/content/dam/pdf/GCSE/Science/2016/Specification/GCSE_Chemistry_Spec.pdf https://qualifications.pearson.com/content/dam/pdf/GCSE/Science/2016/Specification/GCSE_Physics_Spec.pdf These additional units are taught after school to a specifically selected group of students
Chemistry includes additional unit	
Physics includes Astronomy	

George Stephenson High School Secondary SCIENCE Scheme of Work: KS4 ENTRY LEVEL (+ GCSE FOUNDATION COMBINED 2.5 years)

Unit	Key Progression Indicators Knowledge, Understanding and Skills
CELLS GENETICS AND INHERITANCE	Entry Level Certificate in Science
HEALTH AND DISEASE	Entry Level Certificate in Further Science
ATOMS, COMPOUNDS AND STATE OF MATTER	
SEPARATING MIXTURES/ACIDS AND METALS	
FORCES, MOVEMENT AND ENERGY	
WAVES AND RADIATION	
PLANTS AND ECOSYSTEMS	
HUMAN BIOLOGY	
CHEMICAL REACTIONS	
CHEMISTRY IN OUR WORLD	
ELECTRICITY AND MAGNETS	
ENERGY AND PARTICLES	

Overall Planning Calendar

This is subject to some possible changes throughout the year as this is a live document. WOW Weeks (careers focus weeks), Assessment weeks and Reading Weeks may change depending on other events throughout the school year.

Key Stage 3											Key Stage 4						
Week Beginning	7 PR	Year 7 (4 lessons/week)		8 PR	Year 8 (4 lessons/week)		9PR	Year 9 (4 lessons/week)		10PR	Year 10 COMBINED			11PR	Year 11 COMBINED		
		A/B/C	D/E		A/B/C	D/E		A/B/C	D/E		Biolog y	Chemist ry	Physic s		Biolog y	Chem istry	Physi cs
8	Week 1 (1)	INTRODUCTIONS/EXPECTATIONS AND METACOGNITION									INTRODUCTIONS/EXPECTATIONS AND METACOGNITION			INTRODUCTIONS/EXPECTATIONS AND METACOGNITION			
	Week 2 (2)	Y7 Linking Topic & KS2 Diagnostic Assessment		Y8 Linking Topic & Fundamentals Diagnostic Assessment		Y9 Linking Topic & Establishing Diagnostic Assessment		Biology 2: first 4 lesson have been taught in Y9 (upto and inc factors affecting diff. Remember to review this	Chemistry 2 - Key Concepts 2	Physics 2 - Waves	DIRT Y10 EXAM						

Week 3 (1) Sept 18th							content fist)						
Week 4 (2) Sept 25th	Particles	Particles	Mixtures and Separating	Waves	Microbiology	Earth and Atmosphere	Biology 2: first 4 lesson have been taught in Y9 (upto and inc factors affecti ng diff. Remember	Chemistry 2 - Key Concepts 2	Physics 2 - Waves	Biology 7 - Signalling and Control	Chemistry 7 - Electrol ysis detaile d	Physics 7- Circuit s	

Week 5 (1)	October 2nd	Particles	Particles	Mixtures and Separating	Waves	Microbiology	Earth and Atmosphere	to review this content first)							
									Biology 2: first 4 lessons have been taught in Y9 (upto and inc factors affecting diff. Remember to review this content first)	Chemistry 2 - Key Concepts 2	Physics 2 - Waves		Reading Week - AI and the Brain. Lead teacher to do with the class	Reading Week - AI and the Brain. Lead teacher to do with the class	Reading Week - AI and the Brain. Lead teacher to do with the class
Week 6 (2)	October 9th	Particles	Particles	Mixtures and Separating	Waves	Forces and Energy	Microbiology	Biology 2: first 4 lessons have been taught in Y9 (upto and inc factors affecting diff. Remember to review	Chemistry 2 - Key Concepts 2	Physics 2 - Waves	PR 1	Biology 7 - Signalling and Control	Chemistry 7 - Electrolysis detailed	Physics 7 - Circuits	

									this content list)							
Week 7 (1)	Oct 16th	Energy	Cells	Waves	Mixtures and Separating	Forces and Energy	Microbiology	PR1	Biology 2: first 4 lessons have been taught in Y9 (upto and inc factors affecting diff. Remember to review this content list)	Chemistry 2 - Key Concepts 3	Physics 2 - Waves		Biology 7 - Signalling and Control	Chemistry 7 - Electrolysis detailed	Physics 7 - Circuits	
Week 8 (2)	Oct 23rd	Energy	Cells	Waves	Mixtures and Separating	Forces and Energy	Microbiology		Biology 2: first 4 lessons have been taught in Y9 (upto and inc factors affecting diff. Remember to review	Chemistry 2 - Key Concepts 4	Physics 2 - Waves		Biology 7 - Signalling and Control	Chemistry 7 - Electrolysis detailed	Physics 7 - Circuits	

Week	13	Dec 4th	PR1	Buffer	Buffer	Buffer	Buffer	Evolution and genetics	Reactions 3 Displacement	Biology 3 - DNA and Genetic Engineering	Chemistry 3 State of Matter and sep tech	Physics 3 - Forces 2	Biology 8 - Plant structures and their functions	Chemistry 8 Earth Sciences	Physics 7 - Circuits	
	14	Dec 11th		Forces	Compounds	Heating and Cooling	Reactions 1 Acid and Alkali	Assessment 1		Biology 3 - DNA and Genetic Engineering	Chemistry 3 State of Matter and sep tech	Physics 3 - Forces 3	Biology 8 - Plant structures and their functions	Chemistry 9 - Groups of the Periodic Table	Physics 7 - Circuits	
	15	Dec 18th		Forces	Compounds	Retrieval		Evolution and genetics	Reactions 3 Displacement	WOW WEEK			WOW WEEK			
				Christmas Break			Christmas Break			Christmas Break			Christmas Break			
				Christmas Break						Biology 4 - Cell Cycle and Variation	Chemistry 3 State of Matter and sep tech	Physics 4 - EMS	PR2	Biology 8 - Plant structures and their functions	Chemistry 9 - Groups of the Periodic Table	Physics 8 - Electricity in the Home

6	Week 16 (2)	Jan 8th	Forces	Compounds	Assessment 1		Reactions 3 Displacement	Evolution and genetics	PR2	Biology 4 - Cell Cycle and Variation	Chemistry 3 State of Matter and sep tech	Physics 4 - EMS	Biology 8 - Plant structures and their functions	Chemistry 9 - Groups of the Periodic Table	Physics 8- Electricity in the Home
	Week 17 (1)	Jan 15th	Compounds	Forces	Heating and Cooling	Reactions 1 Acid and Alkali	Reactions 3 Displacement	Evolution and genetics		Biology 4 - Cell Cycle and Variation	Chemistry 3 State of Matter and sep tech	Physics 4 - EMS	Biology 8 - Plant structures and their functions	Chemistry 9 - Groups of the Periodic Table	Physics 8- Electricity in the Home
	Week 18 (2)	Jan 22nd	Compounds	Forces	Heating and Cooling	Reactions 1 Acid and Alkali	Reading Week - Chapter from all that remains. Lead teacher to do with the class	Reading Week - Chapter from all that remains. Lead teacher to do with the class		Biology 4 - Cell Cycle and Variation	Chemistry 3 State of Matter and sep tech	Physics 4 - EMS	Biology 8 - Plant structures and their functions	Chemistry 9 - Groups of the Periodic Table	Physics 8- Electricity in the Home
	Week 19 (1)	Jan 29th	Retrieval		Reactions 1 Acid and Alkali	Heating and Cooling	PR2	Reactions 3 Displacement	Evolution and genetics	Biology 4 - Cell Cycle and Variation	Chemistry 3 State of Matter and sep tech	Physics 4 - EMS	Biology 8 - Plant structures and their functions	Chemistry 10 - Rates of Reaction	Physics 9 - Magnetism and Induction

5	Week 20 (2)	Feb 5th	Assessment 1		Reactions 1 Acid and Alkali	Heating and Cooling	Earth and Beyond (Radioactivity)	Earth and Beyond (Radioactivity)	Biology 4 - Cell Cycle and Variation	Chemistry 4 - Chemical Changes Acids	Physics 4 - EMS	Biology 8 - Plant structures and their functions	Chemistry 10 - Rates of Reaction	Physics 9 - Magnetism and Induction	
	Week 21 (1)	Feb 12th	Compounds	Forces	PR2	Reactions 1 Acid and Alkali	Heating and Cooling	Earth and Beyond (Radioactivity)	Earth and Beyond (Radioactivity)	Biology 4 - Cell Cycle and Variation	Chemistry 4 - Chemical Changes Acids	Physics 4 - EMS	Biology 8 - Plant structures and their functions	Chemistry 10 - Rates of Reaction	Physics 9 - Magnetism and Induction
				Spring half term		Spring half term		Spring half term		Spring half term			Spring half term		
	Week 22 (2)	Feb 26th	Diffusion	Diffusion	Reading Week - Bill Bryson introduction. Lead teacher to do with the class	Reading Week - Bill Bryson introduction. Lead teacher to do with the class	Buffer	Buffer	Biology 4 - Cell Cycle and Variation	Chemistry 4 - Chemical Changes Acids	Physics 5 - Energy	Mocks 2			
Week 23 (1)	Mar 4th	PR2	Diffusion	Diffusion	Reproduction and Health	Reproduction and Health	Retrieval		Biology 5 - Health and disease	Chemistry 4 - Chemical Changes Acids	Physics 5 - Energy	Mocks 2			

Week 24 (2)	Mar 11th	Diffusion	Diffusion	Reproduction and Health	Reproduction and Health	End of KS3 Assessment		Biology 5 - Health and disease	Chemistry 4 - Chemical Changes Acids	Physics 5 - Energy		Biology 9 - Ecosystems and Material Cycles	Chemistry 10 - Rates of Reaction	Physics 10 - Forces and Energy
Week 25 (1)	Mar 18th	Chemical equations	Electricity	Reproduction and Health	Reproduction and Health	B1/C1/P1	B1/C1/P1	Biology 5 - Health and disease	Chemistry 4 - Chemical Changes Acids	Physics 5 - Energy	PR 3	Biology 9 - Ecosystems and Material Cycles	Chemistry 10 - Rates of Reaction	Physics 10 - Forces and Energy
Week 26 (2)	Mar 25th	Chemical equations	Electricity	Reactions 2 Combustion and Energy Changes	Electricity and Magnetism	B1/C1/P1	B1/C1/P1	Work Experience				Biology 9 - Ecosystems and Material Cycles	Chemistry 10 - Rates of Reaction	Physics 10 - Forces and Energy
		Easter Break		Easter Break		Easter Break		Easter Break				Easter Break		
Week 27 (1)	Apr 15th	Retrieval		Reactions 2 Combustion and Energy Changes	Electricity and Magnetism	B1/C1/P1	B1/C1/P1	Biology 5 - Health and disease	Chemistry 4 - Chemical Changes Acids	Physics 5 - Energy		Biology 9 - Ecosystems and Material Cycles	Chemistry 11 - Chemical Energy Changes and Equilibrium	Physics 10 - Forces and Energy

6	Week 28 (2)	April 22nd	Assessment 2		Reactions 2 Combustion and Energy Changes	Electricity and Magnetism	B1/C1/P1	B1/C1/P1	PR3	Reading Week - A Mole of Moles. Lead teacher to do with the class	Reading Week - A Mole of Moles. Lead teacher to do with the class	Reading Week - A Mole of Moles. Lead teacher to do with the class	Biology 9 - Ecosystems and Material Cycles	Chemistry 11 - Chemical Energy Changes and Equilibrium	Physics 10 - Forces and Energy
	Week 29 (1)	April 29th	Chemical equations	Electricity	Electricity and Magnetism	Respiration and Photosynthesis	B1/C1/P1	B1/C1/P1		Biology 5 - Health and disease	Chemistry 4 - Chemical Changes Acids	Physics 6 - Radioactivity	Teaching Completed		
	Week 30 (2)	May 6th	Environmental Sciences	Chemical equations	Retrieval		B1/C1/P1	B1/C1/P1		Biology 5 - Health and disease	Chemistry 5 Extracting metals inc some electrolysis and equil/ reversible (Haber)	Physics 6 - Radioactivity	Revision	Revision	Revision
	Week 31 (1)	May 13th	Environmental Sciences	Chemical equations	Assessment 2		B1/C1/P1	B1/C1/P1		Biology 5 - Health and disease	Chemistry 5 Extracting metals inc some electrolysis and equil/ reversible (Haber)	Physics 6 - Radioactivity	Revision	Revision	Revision

Week 32 (2)	May 20th	Environmental Sciences	Chemical equations	Electricity and Magnetism	Respiration and Photosynthesis	B1/C1/P1	B1/C1/P1	Biology 5 - Health and disease	Chemistry 5 Extracting metals inc some electrolysis and equil/reversible (Haber)	Physics 6 - Radioactivity	EXAM START MID MAY		
		Summer Half Term		Summer Half Term		Summer Half Term		Summer Half Term			Summer Half Term		
Week 33 (1)	June 23rd	Reading Week - Raining cats story. Lead teacher to do with the class	Reading Week - Raining cats story. Lead teacher to do with the class	Electricity and Magnetism	Respiration and Photosynthesis	B1/C1/P1	B1/C1/P1	Biology 5 - Health and disease	Chemistry 5 Extracting metals inc some electrolysis and equil/reversible (Haber)	Physics 6 - Radioactivity			
Week 34 (2)	June 10th	Electricity	Environmental Sciences	Respiration and Photosynthesis	Reactions 2 Combustion and Energy Changes	B1/C1/P1	B1/C1/P1	Biology 5 - Health and disease	Chemistry 5 Extracting metals inc some electrolysis and equil/reversible (Haber)	Physics 6 - Radioactivity			
Week 35 (1)	June 17th	PR3 Electricity	PR3 Environmental Sciences	PR3 Respiration and Photosynthesis	PR3 Reactions 2 Combustion and Energy Changes	B1/C1/P1	B1/C1/P1	END OF YEAR EXAMS Y10 exam paper B, C,P					

7	Week 36 (2)	June 24th	Electricity	Environmental Sciences	Respiration and Photosynthesis	Reactions 2 Combustion and Energy Changes	B1/C1/P1	B1/C1/P1	Biology 5 - Health and disease	Chemistry 6 (paper2) - fuel and hydrocarbon	Physics 6 - Radioactivity					
	Week 37 (1)	July 1st	Buffer	Buffer	Buffer	Buffer	PR3	B1/C1/P1	B1/C1/P1	Biology 5 - Health and disease	Chemistry 6 (paper2) - fuel and hydrocarbon	Physics 6 - Radioactivity				
	Week 38 (2)	July 8th	WOW WEEK		WOW WEEK		B2 First 4 lessons incl core practical and calculating percentage change	B2 First 4 lessons incl core practical and calculating percentage change	Biology 5 - Health and disease	Chemistry 6 (paper2) - fuel and hydrocarbon	Physics 6 - Radioactivity					
	Week 39 (1)	July 15th	Assessment 3		Assessment 3		B2 First 4 lessons incl core practical and calculating percentage change	B2 First 4 lessons incl core practical and calculating percentage change	Biology 5 - Health and disease	Chemistry 6 (paper2) - fuel and hydrocarbon	Physics 6 - Radioactivity					