

Topic	New	Deleted	Retained	Modified	Comment
1.1 Cells					
Use of microscope	✓				
Structure of animal cells	✓				Mitochondria as site of cell respiration new for Higher tier only
Structure of plant cells	✓				
Bacterial cells	✓				
Specialisation	✓				

Topic	New	Deleted	Retained	Modified	Comment
1.2 Photosynthesis					
Photosynthesis as endothermic process	✓				2011 - This was assumed understanding derived from the equations now detail clarified.
Equations of photosynthesis				✓	

Topic	New	Deleted	Retained	Modified	Comment
Investigations				✓	2011 - " investigate how light, carbon dioxide and chlorophyll are needed for photosynthesis" 2017 - reduced to " explain investigations..." with the practical reduced to Specified <i>Practical B1</i> " investigate the need for light and chlorophyll... "
Limiting factors				✓	Changed to Higher tier.
Compensation point – title changed to Gas exchange				✓	2011 - " Investigate (using hydrogencarbonate indicator) the relationship between..." reduced in 2017 to " explain the relationship..."
Leaf structure	✓				Details more clearly defined
Products of photosynthesis		✓			
Economic implications		✓			

Topic	New	Deleted	Retained	Modified	Comment
1.3 Nutrition					
Food tests				✓	DCPIP test for vitamin C deleted .
Quantitative use of DCPIP		✓			
Food and energy				✓	2011 - " investigate the energy content of food by burning..." 2017 - <i>Practical B2</i> " investigate the energy content of food by burning... "
Food and health				✓	Moved to Unit 2.6 with detail reduced .

Topic	New	Deleted	Retained	Modified	Comment
1.4 Enzymes and Digestions					
Action of enzymes as catalysts			✓		
Factors affecting action of enzymes				✓	2011 - " Investigate and interpret the effects of temperature, pH and enzyme concentration on the action of enzymes" 2017 - " Interpret how temperature pH and enzyme concentration..." Reduced to Foundation with Inhibitors new at Higher tier. <i>Practical B3 "Investigate the effect of temperature on..."</i>
Names of enzymes		✓			
Structure and function of villus		✓			

Topic	New	Deleted	Retained	Modified	Comment
1.5 Breathing and the respiratory system					
Adaptations of respiratory surfaces			✓		
Effects of exercise on the depth and rate of breathing	✓				
Uses of energy released				✓	“Exothermic” and mitochondria” new for Higher tier only
Equations of respiration				✓	Detail clarified.
Comparison of aerobic and anaerobic				✓	Detail clarified
The factors affecting the respiration of yeast	✓				

Topic	New	Deleted	Retained	Modified	Comment
1.6 Nervous system and Hormones					
Compare the communication systems			✓		
Central nervous system			✓		
Voluntary and reflex compared	✓				
Reflex arc	✓				
Homeostasis	✓				
Hormones				✓	
Diabetes				✓	Difference between Type 1 and type 2 is new at Foundation.
Excretory system	✓				
Osmoregulation	✓				
ADH	✓				
Plant hormones			✓		Action of auxin at HT

Topic	New	Deleted	Retained	Modified	Comment
1.7 Ecological Relationships and Energy flow					2011- Unit 1.1,1.2 and 1.3 2017- Moved to end of Unit 1 (1.7)
Biological terms			✓		
Measure biotic and abiotic factors			✓		
Sampling				✓	Pooter, traps and nets deleted – 2017 limited to quadrats, random sampling and belt transects. 2011 - "Use appropriate sampling techniques..." 2017 - <i>Practical B4 Use quadrats to investigate the abundance of..."</i>
Competition			✓		
Classification		✓			Fieldwork retained
Evaluation of data collected		✓			
Distribution of organisms		✓			
Keys		✓			
Population changes		✓			
Sun as a source of energy			✓		
Food chains and food webs				✓	Detail clarified
Pyramids of number and biomass		✓			
Energy flow			✓		
Carbon cycle			✓		
Decomposition	✓				

Topic	New	Deleted	Retained	Modified	Comment
Global warming		✓			
Nitrogen cycle			✓		
Minerals				✓	2011 paragraphs “plants need nitrates”, “other minerals”, “root hairs as specialised for water and mineral uptake” and the details of active transport are in 2017 combined into one paragraph with individual bullet points.
Comparison of fertilisers		✓			
Eutrophication			✓		
Monitoring environmental change		✓			
International treaties		✓			

Topic	New	Deleted	Retained	Modified	Comment
2.1 Osmosis and Plant Transport					
Carry out investigations to demonstrate osmosis				✓	2011 - "Carry out investigations...change in size and mass of plant tissue" 2017 - <i>Practical B5 "Investigate the process of osmosis measuring the change in length or mass of plant tissue"</i>
Identify changes in cell structure			✓		Linked with 1.1.3 – 4 [cell structures]
Explain osmosis			✓		
Explanation of how cells become plasmolysed and turgid			✓		
Potometer				✓	2011 – "use a potometer...to gain an understanding of transpiration in plants" 2017 – <i>Specified Practical B6 Use a potometer to investigate the factors affecting the rate of water uptake..."</i>
Transpiration			✓		Linked with 1.2.6 [leaf structure]
Explain how surface area, wind...affect transpiration and water uptake				✓	Changed from "investigation" to "explain" as Practical 2.1 is the investigation
Uses of water			✓		

Topic	New	Deleted	Retained	Modified	Comment
2.2 Circulatory System					
Use a microscope to examine blood	✓				
Blood components				✓	Clarification of functions of blood components
Cell lysis	✓				Linked to 1.1.2 and 1.6.9
Structure of blood vessels	✓				
Role of blood vessels				✓	2011 – inferred 2017 – detail clarified
Blood vessels entering and leaving main organs				✓	2017 – intestine blood vessels added.
Investigate effects of exercise on heart rate			✓		Linked with 1.5.3 – 5 [Uses of energy]
Explain effects of exercise				✓	2011 – inferred in various parts of specification 2017 – detail clarified Linked to 1.5.3 – 5 [Uses of energy]
Heart			✓		
Heart attacks and strokes			✓		Clarified and moved to 2.6.11

Topic	New	Deleted	Retained	Modified	Comment
2.3 Reproduction					
Structure of male reproductive system	✓				
Structure of female reproductive system	✓				
Sperm formation and pregnancy			✓		
Sex hormones			✓		
Menstrual cycle				✓	2017 - Role of oestrogen and progesterone new .
Infertility				✓	2017 – Higher tier only. Ethical issues deleted .
Contraception			✓		

Topic	New	Deleted	Retained	Modified	Comment
2.4 Genome, chromosomes, DNA and genetics					Combination of 2011 sections 2.4 [Chromosomes, Genes and DNA], 2.5 [Cell division and genetics] and 2.7 [Applied genetics]
Genome	✓				
Chromosomes			✓		
Genes and alleles				✓	2017 Alleles added
Structure of DNA			✓		
Discovery of DNA		✓			
Collaborative development of scientific theory		✓			
Cell division				✓	Idea of 'cell cycle' new
Mitosis				✓	
Asexual reproduction, clones, tissue culture		✓			
Meiosis			✓		
Fertilisation restoring diploid number		✓			

Topic	New	Deleted	Retained	Modified	Comment
Genetic diagrams and terminology			✓		
X and Y chromosomes			✓		
Genetic conditions				✓	2011 – Colour blindness deleted 2017 – Cystic fibrosis [2011 - 2.7.1], Huntington's [new] and Down syndrome [2011 – 2.7.2]
Mutations				✓	Moved to other sections 2.5.2 and 2.6.9
Genetic screening				✓	2011 – 2.7.3 Problem of making genetic information available to others [new]
Genetic engineering			✓		2011 – 2.7.4 2017 – Method HT

Topic	New	Deleted	Retained	Modified	Comment
2.5 Variation and selection					2011 mainly 2.8 [Variation and Selection]
Investigate variation in living things display data			✓		2017 – hand dominance added
Variation			✓		
Natural selection				✓	Slight changes in order of bullet points from 2011 Idea that evolution may lead to development of new species [new] Role of fossils providing evidence [new]
Selective breeding	✓				

Topic	New	Deleted	Retained	Modified	Comment
2.6 Health, disease, defence mechanisms and treatments					2011 section 2.3 [Defence against disease, Medicines and Drugs]
Health	✓				
Costs to society			✓		

Topic	New	Deleted	Retained	Modified	Comment
Communicable diseases			✓		New title– 2.3.2 [Types of microorganisms] gonorrhoea (bacteria), mumps, measles, polio and rubella(viruses) removed, potato blight (fungi) added
Pasteur’s Swan Neck experiment		✓			
Aseptic techniques				✓	Detail clarified
Body’s defence mechanisms				✓	Role of memory lymphocytes new ; immunity active and passive
Antibiotics				✓	2011 – 2.3.6
Antibiotic resistance				✓	2011 – 2.3.7 2017 – 2.6.7 All Higher tier only
Secondary data on effective measures against antibiotic resistance		✓			
Vaccinations				✓	2011 – 2.3.5 2017 – some reduced to FT ,bullet points on Jenner and importance of immunisation when travelling deleted .
Non-communicable diseases				✓	Content from various sections of 2011 specification. Effects of legislation has been deleted
Heart attacks and strokes			✓		2011 – 2.2.6 2017 – 2.6.11
Treatments for heart attacks	✓				
Risk factors for heart attacks/strokes			✓		
Cancer – types of tumour	✓				
Secondary data on Incidence of cancer in NI		✓			
Causes of cancer				✓	Reworded from 2011

Section and Notes	Content removed	Content moved	Content added/clarified
(1.1) Hazard symbols		Hazard labelling (1.1.1) → 1.8.17	
(1.2) has been removed and redistributed to 1.6 and 1.9	Separation of iron and sulfur (1.2.4)	Element (1.2.1 & 1.2.2) → 1.6.3 Compound (1.2.3) → 1.1.11 Mixtures & separation (1.1) → 1.9 Classifying elements (1.1.9) → 1.6.5	
(1.3) Periodic Table		(1.3) → 1.6	
(1.4) Water, solubility and solubility curves	Water properties (1.4.1) Solubility (1.4.4 to 1.4.13) except (1.4.7) → 1.3.2 and 1.3.5	Test for water (1.4.2) → 1.9.9 Solvent, solute, solution (1.4.3) → 1.9.4 Hydrated and anhydrous (1.4.3) → 2.6.1	Calculate relative atomic mass 1.1.10
1.1 Atomic Structure (was 1.5)		Compound (1.2.3) → 1.1.11	
1.2 Bonding (was 1.6)			Covalent bond as a line 1.2.12
1.3 Structures (was 1.7)		Ionic soluble (1.4.7) → 1.3.2 Molecular covalent insoluble (1.4.7) → 1.3.5	Carbon 4 bonds 1.3.11 Graphene 1.3.12
1.4 Nanoparticles			Nanoparticles size 1.4.1 Risks and benefits 1.4.2
1.5 Symbols, formulae & equations (was 1.8)			Half equations 1.5.9 State symbols 1.5.10

Section and Notes	Content removed	Content moved	Content added/clarified
1.6 Periodic Table (was 1.3)	Newlands (1.6.1)	Element (1.2.1 & 1.2.2) → 1.6.3	Half equations 1.6.13
		Colour of Group 1 compounds (1.9.14) → 1.6.15	Half equations 1.6.22
		Colours of transition metal (mostly copper(II) compounds (1.8.17) → 1.6.27	Explaining reactivity trend in Group 1 1.6.14
			Test for chlorine 1.6.18
			Explaining reactivity trend in Group 7 1.6.20
			Noble gases colourless 1.6.24 and bp trend (1.6.25)
			Transition metals comparison with Group 1 (mp, density & reactivity) 1.6.26
1.7 Quantitative chemistry (was 2.4) A _r and M _r in place of RAM and RFM	Calculations using kg and tonnes (2.4.5)	RFM (M _r), moles, reacting mass calculations (2.4.1 – 2.4.4) and (2.4.6 – 2.4.7) → 1.7.1 – 1.7.5	Limiting reactant 1.7.5 Percentage yield 1.7.5 and 1.7.7
1.8 Acids, bases and salts (was 1.9)	Validity & reliability (1.9.4)	Hazard labelling (1.1.1) → 1.8.17	[H ⁺] related to pH 1.8.4
			Dilute vs concentrated 1.8.8
			Salt definition 1.8.15

Section and Notes	Content removed	Content moved	Content added/clarified
1.9 Chemical analysis		Separating techniques terms (1.2.5 and 1.2.6) → 1.9.4	Pure substance 1.9.1
		Solvent, solute, solution (1.4.3) → 1.9.4	Mp and bp as measure of purity 1.9.2
		Test for water (1.4.2) → 1.9.9	Formulation 1.9.3
			Separation of mixtures including chromatography/mobile phase and stationary phase 1.9.6
			R _f values 1.9.7
			Flame tests 1.9.10 and 1.9.11
1.10 Electrolysis		Moved to 2.7	

Section and Notes	Content removed	Content moved	Content added/clarified
2.1 Reactivity Series of metals		Extraction of iron from its ore (2.1.8) → 2.2.5 Oxidation and reduction in iron extraction (2.1.9) → 2.2.2	Metal tendency to form positive ion link to reactivity 2.1.3
2.2 Redox, rusting & iron (based on old 2.2 Rusting, oxidation and reduction)	Reduction of copper(II) oxide using hydrogen (2.2.5)	Reactions of Mg and S with air included in 2.1 and 2.9 (2.2.5)	
		Extraction of iron (2.1-8) → 2.2.5	
		Iron uses (1.7.8) → 2.2.6	
(2.3) Hard and soft water	(2.3.1 – 2.3.9) All content removed		
2.3 Rates of reaction (was 2.5)		Qualitative effects of rate (2.4.1) → 2.3.4	Sodium thiosulfate with acid 2.3.2
This section has been simplified in terms of layout – statements subsumed into 2.3.4		Explanation of changes in rate (2.5.5 & 2.5.6) → 2.3.4	Catalyst providing an alternative reaction pathway of lower activation energy 2.3.6
2.4 Equilibrium			Reversible reactions 2.4.1 Dynamic equilibrium 2.4.2

Section and Notes	Content removed	Content moved	Content added/clarified
2.5 Organic chemistry (was 2.8)	Renewable and non-renewable (2.8.1)	Toxicity of CO (2.7.5) → 2.5.11	Fuel oil fraction 2.5.7
	Oil spillage (2.8.4)	Combustion of fuels and greenhouse effect (2.7.5) → 2.5.28	Cracking 2.5.8
	Naphtha fraction (2.8.5)		But-1-ene and but-2-ene 2.5.12
	Ethanol in alcoholic drinks (2.8.19)		Reaction of ethene with hydrogen 2.5.114
	Alcohol effects (2.8.19)		Propan-1-ol and propan-2-ol 2.5.20
	Vinegar (2.8.22)		Propanoic acid and butanoic acid 2.5.23
2.6 Quantitative chemistry (was 2.4)		M_r , moles and reacting mass calculations (2.4) → 1.7	Empirical and water of crystallisation 2.6.1
			Heating to constant mass 2.6.2
			M_r of hydrated compounds 2.6.3
			Empirical formula and degree of hydration determination 2.6.4
			Concentration calculation 2.6.5
			Moles from volume and concentration 2.6.6
			Atom economies 2.6.7 & 2.6.8

Section and Notes	Content removed	Content moved	Content added/clarified
(2.7) Non-metals	Gases in early atmosphere (2.7.10)	Gas tests (2.7.1) → 2.9	
	CO ₂ changes in atmosphere (2.7.11)	Preparation and properties of H ₂ , (2.7.2 – 2.7.4) → 2.9	
	Dry ice (2.7.9)	CO ₂ properties (2.7.6 – 2.7.7) → 2.9	
	Nitric acid and nylon (2.7.14)	Nitrogen lack of reactivity (2.7.12) → 2.9.2	
	Haber process (2.7.15 & 2.7.16)	Uses of nitrogen (2.7.13) → 2.9.3	
		Combustion of carbon (2.7.5) → 2.5.11 and 2.5.26	
		Global warming (2.7.8) → 2.5.26	
2.7 Electrochemistry	Factor affecting siting aluminium extraction site (1.10.7)	This content was moved from 1.10 Electrolysis and extraction of aluminium	
2.8 Energy changes in chemistry (some content from 2.6)	Thermal decomposition (2.6.3)	Exothermic and endothermic (2.6.1) → 2.8.1	Enthalpy profile diagrams 2.8.2
	Limekiln (2.6.4)	Bond breaking and bond making (2.6.2) → 2.8.4	Activation energy defined 2.8.3
	Limestone uses and quarrying (2.6.5 & 2.6.6)		Bond energy calculations 2.8.5
2.9 Gas chemistry		Gas tests (2.7.1) → 2.9	Composition of gases in air 2.9.1
		Preparation and properties of H ₂ , (2.7.2 – 2.7.4) → 2.9	Ammonia reacting with acids forming fertilisers 2.9.4
		CO ₂ properties (2.7.6 – 2.7.7) → 2.9	
		Nitrogen lack of reactivity (2.7.12) → 2.9.2	

P1 PHYSICS		
Off	Changed	Additions to New Specs
Circular motion (1.1.15 – 1.1.17)	Motion and Force two separate sections	Concept of Scalar and vector quantities more embedded in motion 1.1.2
Momentum (1.1.18)	Moments (1.3) → 1.2	Additional formulae for Average speed and Average velocity 1.1.3
Historical theories for structure of atom (1.4.1)	Centre of gravity(1.3) → 1.2 more detail given	Free Fall 1.2.10 & 1.2.11
	Density and kinetic theory (1.1.10 – 1.1.14) → 1.3	Hooke's law, formula and experiment 1.2.12 & 1.2.13
	Radioactivity (1.4) renamed as Atomic and Nuclear Physics (1.5)	Pressure 1.2.14 – 1.2.16
	Equations for nuclear disintegrations given 1.5.7	Uses of radioactivity 1.5.15
		Consideration of half-life of radioactive materials used in their applications 1.5.16
		Fusion – quantisation of energy released compared to fossil fuels and fission 1.5.22

P2 PHYSICS		
Off	Changed	Additions to New Specs
Wavefront diagrams (2.1.3)	Light now a separate section (2.1) → 2.2	Lenses – the two types, measuring focal length, drawing ray diagrams for camera, projector and magnifying glass 2.2.7 – 2.2.11
Analogy between water waves and light (2.1.4)		Filament lamp experiment 2.3.9
Electrostatics- charging by friction, uses and dangers of electrostatic charge (2.1.1 – 2.2.3)		Magnetism 2.4 Magnetic field patterns around bar magnets 2.4.1 Current-carrying coil 2.4.2 Factors affecting strength of electromagnetism 2.4.3
Two-way switching (2.2.22)		
Generation and transmission of electricity (2.2.27 – 2.2.29)		
Transformers (2.2.30 – 2.2.31)		Space physics: Life cycle of stars 2.5.8 – 2.5.9 Supernovae 2.5.10 Black holes 2.5.11 CMBR 2.5.11
Structure of the Earth (2.3.11 – 2.3.13)		